TABLE OF CONTENTS

Enclosure 1 contains the Table of Contents.

Enclosure 2 contains the Summary Explanation, or Executive Summary.

Enclosure 3 contains the State and Local Government Official Agreement Documentation.

Enclosure 4 contains the Detailed Justification and is divided into five attachments:

Attachment 1: Red-line of the Technical Basis Document Attachment 2: Clean Copy of the Technical Basis Document Attachment 3: Justification Matrix Attachment 4: EAL Wall Chart ¹ Attachment 5: 10 CFR 50.54(q)

Enclosure 5 contains a compact disk of enclosures, references, and supporting documentation.

¹ When approved, the EAL wall chart will be inserted into the Emergency Plan. Also, the approved wall chart and a clean copy of the technical bases document will be inserted into the EAL implementing procedure (EPIP-AD-02) as attachments.

SUMMARY EXPLANATION

This submittal includes the transmittal letter and five enclosures. The enclosures include a table of contents (Enclosure 1), this summary explanation (Enclosure 2), documentation of state and local government officials agreements (Enclosure 3), detailed justifications for each emergency action level (EAL) (Enclosure 4), and supporting information (Enclosure 5).

The Site Emergency Plan for KNPP currently uses the NUREG-0654 EAL scheme. Nuclear Management Company, LLC (NMC) requests approval to change the existing scheme for KNPP to that described in NEI 99-01, Revision 4, "Methodology for Development of Emergency Action Levels," January 2003, as endorsed by the Nuclear Regulatory Commission (NRC) in Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," Revision 4, July 2003.

The following state and local government officials' agreement is contained in Enclosure 3:

Lori Hucek, Emergency Director, Kewaunee County Emergency Management. Nancy Crowley, Emergency Director, Manitowoc County Emergency Management. Paul Schmidt, Nuclear Engineering Manager, Wisconsin Radiation Protection Section. Bill Clare, Planning Section Supervisor, Wisconsin Emergency Management.

The detailed justification for the proposed EAL changes is contained in Enclosure 4. There are five attachments within Enclosure 4. Attachment 1 contains a red-line, highlighted copy of the Technical Basis Document. This document includes the pertinent information to describe each EAL (category, description, modes, basis, etc). The red-line and highlighted areas indicate changes made to the information contained in NEI 99-01, Revision 4, in order to develop site-specific EALs. All changes are described in the detailed justification matrix (Attachment 3) as either a difference, or a deviation. Attachment 2 contains a clean copy of the Technical Basis Document. Attachment 3 contains the detailed justification matrix. This matrix provides the crossreference comparing the current NEI 99-01, revision 4 EALs, to the proposed EALs, specific identification and discussion of differences and deviations, and mode applicability. Attachment 4 is the Wall Chart and attachment 5 is the 50.54(q) effectiveness evaluation.

The Technical Basis Document, justification matrix, and supporting reference material are contained on compact disk in Enclosure 5.

In summary, this submittal provides the basis and justification for changing the KNPP EAL scheme from the NUREG-0654 requirements to the NEI 99-01 requirements and demonstrates compliance with 10 CFR 50.54(q).

STATE AND LOCAL GOVERNMENT OFFICIAL AGREEMENT DOCUMENTATION

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Kewaunee Nuclear Power Plant N490, State Highway 42 Kewaunee, WI 54216-9511 920-388-2560



Operated by Nuclear Management Company, LLC

and at an arright ways of KNPL 2004-0020

October 7, 2004

Nancy Crowley, Manitowoc Emergency Management 1025 South 9th Street Manitowoc, WI 54220

Dear Nancy:

PROPOSED CONVERSION OF EMERGENCY ACTION LEVEL SCHEME

Thank you for your time to discuss the proposed changes to Kewaunee Nuclear Plant Emergency Action Levels (EALs) at the meeting conducted on Thursday, October 7, 2004, held at Stevens Point.

The purpose of the meeting was to discuss the difference between the current NUREG-0654 scheme EALs and proposed conversion to NEI 99-01, Rev. 4 scheme.

The NRC approved the current Kewaunee Nuclear Plant EALs in their 1982 Safety Evaluation Report. The changes we discussed today will incorporate the NEI 99-01 EAL scheme into the Kewaunee Nuclear Plant EALs. The NRC endorsed the NEI 99-01, Rev. 4 scheme via Reg. Guide 1.101, Rev. 4, July 2003.

10 CFR 50, Appendix E, states "...emergency action levels shall be discussed and agreed on by the applicant and State and local governmental authorities and approved by the NRC."

Please review the Kewaunee EAL Bases document by October 21, 2004. If you have any questions or comments during your review, please contact John Egdorf at (920) 776-2141. To document your agreement with these changes, please sign below and fax this document back to me. My fax number is (920) 388-8117.

Thank you again for your time. If you have any questions, please call me at (920) 388-8719.

Sincerely. a Colesian

rie Coleman Émergency Preparedness Manager Kewaunee

Manitowoc Emergency Management Nancy/Crowle

Date

Tom Coulu, Site Vice President, Kewaunee Nuclear Plant cc: Jerry Riste, Licensing, Kewaunee Nuclear Plant

OCT.22.2004 11:42AM MTWC EMERGENCY GOVT.





MANITOWOC COUNTY EMERGENCY SERVICES DIVISION



October 21, 2004

Nancy Crowley, Manitowoc Emergency Management 1025 South 9th Street Manitowoc, WI 54220

Dear Nancy:

PROPOSED CONVERSION OF EMERGENCY ACTION LEVEL SCHEME

Thank you for your time this morning to discuss the proposed changes to Kewaunee Nuclear Plant Emergency Action Levels (EALs). Listed in Attachment 1 are the significant changes made to the KNPP NEI 99-01 EAL scheme since our meeting on October 7, 2004. The changes are based upon feedback from the NRC, Challenge Board, Plant Operation Review Committee and NMC Peer Group.

10 CFR 50, Appendix E, states "...emergency action levels shall be discussed and agreed on by the applicant and State and local governmental authorities and approved by the NRC."

Based on the discussion we this moming, I understand that you find the changes acceptable and concur with Kewaunee's additional changes to convert to NEI 99-01, Rev. 4 scheme. If you have any questions or comments during your review, please contact John Egdorf at (920) 776-2141. To document your agreement with these changes, please sign below and fax this document back to me. My fax number is (920) 388-8675.

Thank you again for your time. If you have any questions, please call me at (920) 388-8719.

Sincerely,

Jerrie Coleman Emergency Preparedness Manager Kewaunee

ev. Manitowoc Emergency Management

Tom Coutu, Site Vice President, Kewaunee Nuclear Plant Jensy Riste, Licensing, Kewaunce Nuclear Plant

Nancy H. Crowley, R.N., C.E.M **Division Coordinator** Emergency Management Director Phone: 920-683-4207 Fax: 920-683-4568 e-mail: nhcrowley@shcglobal.net

Kay Beilke Administrator Joint Dispatch Center Phone: 920-683-5033 Fax: 920-683-4946 e-mail: klb0803@mtso.manitowoc.wj.us

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Attachment 1

Tab 2 Abnormal Rad Levels / Radiological Effluent Section RU1.1 RA1.1

Radiation values for radiation monitors R-13, R-14, R-12 and R-21 have been corrected for the Alert and Unusual Event setpoints. The value remains two times the ODCM setpoints as stated in the EAL document. Incorrect base numbers led to the error.

Radiation Monitor for Waste Disposal System Liquid (R-18) setpoint was changed to 2x's the Calculated ODCM Setpoint for UE and 200x's the Calculated ODCM Setpoint for Alert. This change was due to alarm setpoint being calculated for each discharge permit and is dependent upon flow rate of discharge.

Normal Effluent Release Monitor Classification Thresholds			
Monitor	Alart	LIE	
Aurillarv Building			
R-13 Aux, Bldg. Vent Exhaust	2.61E+07 cpm	2,61E+05 cpm	
R-14 Aux. Bldg. Vent Exhaust	2.61E+07 cpm	2.62E+05 cpm	
Reactor Bailding			
R-12 Contzirunent Gas	4.41E+07 cpm	4.41E+05 cpm	
R-21 Containment Vent	4.40E+07 cpm	4.40E+05 cpm	
Liquid Redwaste	[
R-18 Waste Disposal System Liquid	200 X Calculated ODCM Setpoint	2 X Calculated ODCM Setpoint	

RA2.2

Based upon a formal calculation performed at KNPP, water level in Refueling Cavity was corrected to 50% Refueling Cavity level

RA3.2

NMC EAL Peer Group discussed the setpoint associated with this EAL and agreed that the method of determining radiation level value should be consistent but the stay times would be site specific. Per discussions with the KNPP Operation Group, it was decided to use 30 minutes (was 15 minutes) as a stay time and therefore changed radiation level value to 6 R/hr from 12 R/hr.

Tab 3 Cold Shutdown / Refueling System Malfunction

CU5

Based upon NRC feedback to the NMC and Challenge Board, it would not be acceptable to delete NEI 99-01 CU5 EAL #1. NEI 99-01 CU5 EAL #1 states, "(Site-specific) radiation monitor readings indicate fuel clad degradation greater than Technical Specification allowable limit". KNPP added an EAL to CU5.1 (CU5.1) to address the NEI EAL. The added KNPP EAL uses R-9, Letdown Radiation Monitor to detect the failed fuel clad at a value of 2.0 R/hr.





Kewaunee Nuclear Power Plant N490, State Highway 42 Kewaunee, WI 54216-9511 920-388-2560



Operated by Nuclear Management Company, LLC

KNPL 2004-0022

October 7, 2004

Paul Schmidt, DHFS-Radiation Protection Section 1 West Wilson Street P.O. Box 2659 Madison, WI 53701-2659

Dear Paul:

PROPOSED CONVERSION OF EMERGENCY ACTION LEVEL SCHEME

Thank you for your time to discuss the proposed changes to Kewaunee Nuclear Plant Emergency Action Levels (EALs) at the meeting conducted on Thursday, October 7, 2004, held at Stevens Point.

The purpose of the meeting was to discuss the difference between the current NUREG-0654 scheme EALs and proposed conversion to NEI 99-01, Rev. 4 scheme.

The NRC approved the current Kewaunee Nuclear Plant EALs in their 1982 Safety Evaluation Report. The changes we discussed today will incorporate the NEI 99-01 EAL scheme into the Kewaunee Nuclear Plant EALs. The NRC endorsed the NEI 99-01, Rev. 4 scheme via Reg. Guide 1.101, Rev. 4, July 2003.

10 CFR 50, Appendix E, states "...emergency action levels shall be discussed and agreed on by the applicant and State and local governmental authorities and approved by the NRC."

Please review the Kewaunee EAL Bases document by October 21, 2004. If you have any questions or comments during your review, please contact John Egdorf at (920) 776-2141. To document your agreement with these changes, please sign below and fax this document back to me. My fax number is (920) 388-8117.

Thank you again for your time. If you have any questions, please call me at (920) 388-8719.

Sincerely,

Jerrie Coleman Emergency Preparedness Manager Kewaunee

Paul Lehmerde

Paul Schmidt, DHFS-Radiation Protection Section

Date

cc: Tom Coutu, Site Vice President, Kewaunee Nuclear Plant Jerry Riste, Licensing, Kewaunee Nuclear Plant KNPL 2004-0026

October 21, 2004

Paul Schmidt, DHFS-Radiation Protection Section 1 West Wilson Street P.O. Box 2659 Madison, WI 53701-2659

Dear Paul:

PROPOSED CONVERSION OF EMERGENCY ACTION LEVEL SCHEME

Thank you for your time this morning to discuss the proposed changes to Kewaunee Nuclear Plant Emergency Action Levels (EALs). Listed in Attachment 1 are the significant changes made to the KNPP NEI 99-01 EAL scheme since our meeting on October 7, 2004. The changes are based upon feedback from the NRC, Challenge Board, Plant Operation Review Committee and NMC Peer Group.

10 CFR 50, Appendix E, states "...emergency action levels shall be discussed and agreed on by the applicant and State and local governmental authorities and approved by the NRC."

Based on the discussion we this morning, I understand that you find the changes acceptable and concur with Kcwaunce's additional changes to convert to NEI 99-01, Rev. 4 scheme. If you have any questions or comments during your review, please contact John Egdorf at (920) 776-2141. To document your agreement with these changes, please sign below and fax this document back to me. My fax number is (920) 388-8675.

Thank you again for your time. If you have any questions, please call me at (920) 388-8719.

Sincerely,

Jerrie Coleman Emergency Preparedness Manager Kewaunee

Paul Schon

Paul Schmidt, DHFS-Radiation Protection Section

Date

cc: Tom Coutu, Site Vice President, Kewaunee Nuclear Plant Jerry Riste, Licensing, Kewaunee Nuclear Plant

PLANS



STATE OF WISCONSIN \ DEPARTMENT OF MILITARY AFFAIRS WISCONSIN EMERGENCY MANAGEMENT

2400 WRIGHT STREET P.O. BOX 7865 MADISON, WISCONSIN 53708-7865

October 21, 2004

Ms. Jerrie Coleman Emergency Preparedness Manager Kewaunee Nuclear Power Plant N490 Hwy. 42 Kewaunee, WI 54216-9511

Dear Ms. Coleman,

Re: October 7 Steven's Point meeting and October 21 conference call regarding EAL changes for Kewaunee Nuclear Power Plant.

The purpose of the meetings was to discuss the difference between the current NUREG-0654 scheme EALs and the proposed conversion to NEI 99-01, Rev. 4 scheme and changes made since the October 7 meeting based on feedback from the NRC, Challenge Board, Plant Operation Review Committee and the NMC Peer Group.

The NRC approved the current Kewaunce Nuclear Plant EALs in their 1982 Safety Evaluation Report. The changes we discussed today will incorporate the NEI 99-01 EAL scheme into the Kewaunce Nuclear Plant EALs. The NRC endorsed the NEI 99-01, Rev. 4 scheme via Reg. Guide 1.101, Rev. 4, July 2003.

Bob Host participated in the October 7 meeting discussion and both Bob Host and Teri Engelhart participated in the October 21 conference call discussion regarding the proposed changes to Kewaunee Nuclear Plant Emergency Action Levels (EALs).

The changes discussed will be included in the Kewaunce Nuclear Power Plant Emergency Plan upon approval by the Nuclear Regulatory Commission.

10 CFR 50, Appendix E, states "... emergency action levels shall be discussed and agreed on by the applicant and State and local governmental authorities and approved by the NRC."

I have reviewed the changes and concur with Kewaunee's plan to implement these changes.

If you have any questions or if I can be of further assistance please contact me.

Sincerely,

William Clare Planning Section Supervisor

October 21, 2004 Page 2

cc: Johnnie Smith, WEM Administrator Tom Coutu, Site Vice President, Kewaunce Nuclear Plant Jerry Riste, Licensing, Kewaunce Nuclear Plant



Kewaunee Nuclear Power Plant N490, State Highway 42 Kewaunee, WI 54216-9511 920-388-2560



Operated by Nuclear Management Company, LLC

KNPL 2004-0019

October 7, 2004

Lori Hucek, Kewaunee Emergency Management 416 Fremont Street Kewaunee, WI 54201

Dear Lori:

PROPOSED CONVERSION OF EMERGENCY ACTION LEVEL SCHEME

Thank you for your time to discuss the proposed changes to Kewaunee Nuclear Plant Emergency Action Levels (EALs) at the meeting conducted on Thursday, October 7, 2004, held at Stevens Point.

The purpose of the meeting was to discuss the difference between the current NUREG-0654 scheme EALs and proposed conversion to NEI 99-01, Rev. 4 scheme.

The NRC approved the current Kewaunee Nuclear Plant EALs in their 1982 Safety Evaluation Report. The changes we discussed today will incorporate the NEI 99-01 EAL scheme into the Kewaunee Nuclear Plant EALs. The NRC endorsed the NEI 99-01, Rev. 4 scheme via Reg. Guide 1.101, Rev. 4, July 2003.

10 CFR 50, Appendix E, states "...emergency action levels shall be discussed and agreed on by the applicant and State and local governmental authorities and approved by the NRC."

Please review the Kewaunee EAL Bases document by October 21, 2004. If you have any questions or comments during your review, please contact John Egdorf at (920) 776-2141. To document your agreement with these changes, please sign below and fax this document back to me. My fax number is (920) 388-8117.

Thank you again for your time. If you have any questions, please call me at (920) 388-8719.

Sincerely,

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Jerrie Coleman Emergency Preparedness Manager Kewaunee

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Lori Hucek, Kewaunee Emergency Management

Date

cc: Tom Coutu, Site Vice President, Kewaunee Nuclear Plant Jerry Riste, Licensing, Kewaunee Nuclear Plant



Attachment 1 Kewaunee County Emergency Management Lori Hucek, Director

KNPL 2004-0023

October 21, 2004

Lori Hucek, Kewaunee Emergency Management 416 Fremont Street Kewaunee, WI 54201

Dear Lori:

PROPOSED CONVERSION OF EMERGENCY ACTION LEVEL SCHEME

Thank you for your time this morning to discuss the proposed changes to Kewaunee Nuclear Plant Emergency Action Levels (EALs). Listed in Attachment 1 are the significant changes made to the KNPP NEI 99-01 EAL scheme since our meeting on October 7, 2004. The changes are based upon feedback from the NRC, Challenge Board, Plant Operation Review Committee and NMC Peer Group.

10 CFR 50, Appendix E, states "... emergency action levels shall be discussed and agreed on by the applicant and State and local governmental authorities and approved by the NRC."

Based on the discussion we this morning, I understand that you find the changes acceptable and concur with Kewaunee's additional changes to convert to NEI 99-01, Rev. 4 scheme. If you have any questions or comments during your review, please contact John Egdorf at (920) 776-2141. To document your agreement with these changes, please sign below and fax this document back to me. My fax number is (920) 388-8675.

Thank you again for your time. If you have any questions, please call me at (920) 388-8719.

Sincerely,

Jerrie Coleman Emergency Preparedness Manager Kewaunee

Lori Hucek, Kewaunee Emergency Management

cc: Tom Coutu, Site Vice President, Kewaunee Nuclear Plant Jerry Riste, Licensing, Kewaunee Nuclear Plant

10/21/04

416 Fremont Street • Algoma, WI 54201 • Phone (920) 487-2940 • Fax (920) 487-2963

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DETAILED JUSTIFICATION

ATTACHMENT 1

RED-LINE TECHNICAL BASIS DOCUMENT

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Emergency Action Level Technical Bases Document

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ACRONYMS

	AC	Alternating Current
	ATWS	Anticipated Transient Without Scram
	CCW	Component Cooling Water
	CDE	Committed Dose Equivalent
	CFR	Code of Federal Regulations
	CMT	Containment
	CSF	Critical Safety Function
	CSFST	Critical Safety Function Status Tree
	DC	Direct Current
1	DHR	-Decay Heat-Removal
1	DOT	Department of Transportation
	EAL	Emergency Action Level
	ECCS	Emergency Core Cooling System
	ECL	Emergency Classification Level
	EOF	Emergency Operations Facility
	EOP	Emergency Operating Procedure
	EPA	Environmental Protection Agency
	EPIP	Emergency Plan Implementing Procedure
	EPRI	Electric Power Research Institute
	ERG	Emergency Response Guideline
	ESF	Engineered Safeguards Feature
	ESW	-Emergency Service Water
I	GE	General Emergency
	HPSI	High Pressure Safety Injection
	IC	Initiating Condition
	IDLH	Immediately Dangerous to Life and Health
	IGLD	International Great Lakes Datum
•	IPEEE	Individual Plant Examination of External Events (Generic Letter 88-20)
	LCO	Limiting Condition of Operation
	LER	Licensee Event Report
	LFL	Lower Flammability Limit
	LOCA	Loss of Coolant Accident

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	LPSI	Low Pressure Safety Injection
	MAT	Main Auxiliary Transformer
'	MSIV	Main Steam Isolation Valve
	mR	milliRem
	Mw	Megawatt
	NEI	Nuclear Energy Institute
	NESP	National Environmental Studies Project
	NRC	Nuclear Regulatory Commission
	NSSS	Nuclear Steam Supply System
	NUMARC	Nuclear Management and Resources Council
	OBE	Operating Basis Earthquake
	ODCM	Offsite Dose Calculation Manual
	PRA/PSA	Probabilistic Risk Assessment / Probabilistic Safety Assessment
	PWR	Pressurized Water Reactor
	PSIG	Pounds per Square Inch Gauge
	R	Rem
	RAT	Reserve Auxiliary Transformer
•	RCS	Reactor Coolant System
	RHR	Residual Heat Removal
•	RPS	Reactor Protection System
	RPV	Reactor-Pressure Vessel
'	RVLIS	Reactor Vessel Level Indicating System
	SAE	Site Area Emergency
	SG	Steam Generator
	SI	Safety Injection
	SPDS	Safety Parameter Display System
	SRO	Senior Reactor Operator
	SSE	Safe Shutdown Earthquake
	SW	Service Water
	TAT	Tertiary Auxiliary Transformer
	TEDE	Total Effective Dose Equivalent
	TOAF	Top of Active Fuel
	TSC	Technical Support Center
	UE	Notification Of Unusual Event

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	USAR	Updated Final Safety Analysis Report
\bigcirc	WE	Westinghouse Electric
	' WOG	Westinghouse Owners Group

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1. PURPOSE

This document provides the detailed set of Emergency Action Levels (EALs) applicable to the Kewaunee Nuclear Plant (KNP) and the associated Technical Bases using the EAL development methodology found in NEI 99-01 Revision 4 [Ref. 2.1]. Personnel responsible for implementation of EPIP-AD-02 "Emergency Class Determination" [Ref. 2.2], and the Emergency Action Level Matrix [Ref. 2.3] may use this document as a technical reference and an aid in EAL interpretation.

The primary tool for determining the emergency classification level is the Emergency Action Level Matrix. The user of the Emergency Action Level Matrix may (but is not required) to) consult the EAL Technical Basis Document in order to obtain additional information concerning the EALs under classification consideration.

2. **REFERENCES**

- 2.1 NEI 99-01 Revision 4, Methodology for Development of Emergency Action Levels, January 2003
- 2.2 EPIP-AD-02-Emergency Class Determination
- 2.3 Emergency-Action-Level-Matrix
- 2.24 KNPP Technical Specifications, Section 1.0 Definitions, Amendments 162, 172 and 176.

3. DISCUSSION

3.1 Background

EALs are the plant-specific indications, conditions or instrument readings that are utilized to classify emergency conditions defined in the KNPP Emergency Plan.

In 1992, the NRC endorsed NUMARC/NESP-007 "Methodology for Development of Emergency Action Levels" as an alternative to NUREG 0654 EAL guidance.

NEI 99-01 (NUMARC/NESP-007) Revision 4 represents the most recent NRC endorsed methodology per RG 1.101 Rev 4, "Emergency Planning and Preparedness for Nuclear Power Reactors." Enhancements over earlier revisions included:

- Consolidating the system malfunction initiating conditions and example emergency action levels which address conditions that may be postulated to occur during plant shutdown conditions.
- Addressing initiating conditions and example emergency action levels that fully address conditions that may be postulated to occur at permanently Defueled Stations and Independent Spent Fuel Storage Installations.
- Simplifying the fission product barrier EAL threshold for a Site Area Emergency.

Using NEI 99-01 Rev. 4, KNPP conducted an EAL implementation upgrade project that produced the EALs discussed herein. While the upgraded EALs are site-specific, an objective of the project was to ensure to the extent possible EAL conformity and consistency between the NMC plant sites.

3.2 Key Definitions in EAL Methodology

The following definitions apply to the generic EAL methodology:

EMERGENCY CLASS: One of a minimum set of names or titles, established by the Nuclear Regulatory Commission (NRC), for grouping of normal nuclear power plant conditions according to (1) their relative radiological seriousness, and (2) the time sensitive onsite and off site radiological emergency preparedness actions necessary to respond to such conditions. The existing radiological emergency classes, in ascending order of seriousness, are called:

- Notification of Unusual Event (UE)
- Alert
- Site Area Emergency (SAE)
- General Emergency (GE)

Section 3.3 provides further discussion of the emergency classes.

INITIATING CONDITION (IC): One of a predetermined subset of nuclear power plant conditions when either the potential exists for a radiological emergency, or such an emergency has occurred.

- An IC is an emergency condition which sets it apart from the broad class of conditions that may or may not have the potential to escalate into a radiological emergency.
- It can be a continuous, measurable function that is outside technical specifications, such as elevated RCS temperature or falling reactor coolant level (a symptom).
- It also encompasses occurrences such as FIRE (an event) or reactor coolant pipe failure (an event or a barrier breach).

EMERGENCY ACTION LEVEL (EAL): A pre determined, site-specific, observable threshold for a plant Initiating Condition that places the plant in a given emergency class. An EAL can be: an instrument reading; an equipment status indicator; a measurable parameter (onsite or offsite); a discrete, observable event; results of analyses; entry into specific emergency operating procedures; or another phenomenon which, if it occurs, indicates entry into a particular emergency class.

- There are times when an EAL will be a threshold point on a measurable continuous function, such as a primary system coolant leak that has exceeded technical specifications.
- At other times, the EAL and the IC will coincide, both identified by a discrete event that places the plant in a particular emergency class.
- 3.3 Recognition Categories

ICs and EALs are grouped in one of several categories. This classification scheme incorporates symptom-based, event-based, and barrier-based ICs and EALs.

- R Abnormal Rad Levels/Radiological Effluent
- C Cold Shutdown./ Refueling System Malfunction
- F Fission Product Barrier Degradation
- H Hazards
- S System Malfunction

Some recognition categories are further divided into one or more subcategories depending on the types and number of plant conditions that dictate emergency classifications. An EAL may or may not exist for each subcategory at all four classification levels. Similarly, more than one EAL may exist for a subcategory in a given emergency classification when appropriate (i.e., no EAL at the General Emergency level but three EALs at the Unusual Event level).

3.4 Emergency Class Descriptions

There are three considerations related to the emergency classes. These are:

- The potential impact on radiological safety, either as now known or as can be reasonably projected.
- How far the plant is beyond its predefined design, safety and operating envelopes.
- Whether or not conditions that threaten health are expected to be confined to within the site boundary.

The ICs deal explicitly with radiological safety affect by escalating from levels corresponding to releases within regulatory limits to releases beyond EPA Protective Action Guideline (PAG) plume exposure levels.

NOTIFICATION-OF-UNUSUAL EVENT: Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

- Potential degradation of the level of safety of the plant is indicated primarily by exceeding plant technical specification Limiting Condition of Operation (LCO) allowable action statement time for achieving required mode change.
- Precursors of more serious events may be included because precursors represent a potential degradation in the level of safety of the plant.
- Minor releases of radioactive materials are included. In this emergency class, however, releases do not require monitoring or offsite response (e.g., dose consequences of less than 10 millirem).

ALERT: Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

SITE AREA EMERGENCY: Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline (PAG) exposure levels beyond the site boundary.

- The discriminator (threshold) between Site Area Emergency and General Emergency is whether or not the EPA PAG plume exposure levels are expected to be exceeded outside the site boundary.
- This threshold, in addition to dynamic dose assessment considerations discussed in the EAL guidelines, clearly addresses NRC and offsite emergency response agency concerns as to timely declaration of a General Emergency.

GENERAL EMERGENCY: Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

- The bottom line for the General Emergency is whether evacuation or sheltering of the general public is indicated based on EPA PAGs and, therefore, should be interpreted to include radionuclide release regardless of cause.
- To better assure timely notification, EALs in this category are primarily expressed in terms of plant function status, with secondary reliance on dose projection. In terms of fission product barriers, loss of two barriers with loss or potential loss of the third barrier constitutes a General Emergency.
- 3.5 Operating Mode Applicability

Technical Specifications [Ref. 2.4] provides definitions for the following operating modes:

1 Operating (OP)

Reactivity $\Delta k/k$ is LESS THAN Technical Specification minimum required (0.25%) and EQUAL TO OR GREATER than 2% fission power.

2 Hot Standby (HSB)

Reactivity $\Delta k/k$ is LESS THAN Technical Specification minimum required (0.25%) and LESS THAN 2% fission power.

3 Hot Shutdown (HSD)

Reactivity $\Delta k/k$ as specified in the Core Operating Limits Report with coolant temperature (Tavg) GREATER THAN OR EQUAL TO 540°F.

4 Intermediate Shutdown (ISD)

Reactivity $\Delta k/k$ as specified in the Core Operating Limits Report with coolant temperature (Tavg) LESS THAN 540°F and GREATER THAN 200°F.

5 Cold Shutdown (CSD)

Reactivity $\Delta k/k$ GREATER THAN OR EQUAL TO Technical Specification minimum required (-1%) with coolant temperature (Tavg) LESS THAN OR EQUAL TO 200°F.

6 <u>Refueling (REF)</u>

Reactivity $\Delta k/k$ GREATER THAN OR EQUAL TO Technical Specification minimum required for refueling operations (-5%) and coolant temperature (Tavg) LESS THAN OR EQUAL TO 140°F.

In addition to the Technical Specification operating modes, NEI 99-01 [Ref. 1] defines the following additional mode:

D <u>Defueled</u>

All reactor fuel removed from Reactor Vessel (full core off load during refueling or extended outage)

The plant operating mode that exists at the time that the event occurs (prior to any protective system or operator action is initiated in response to the condition) should be compared to the mode applicability of the EALs. If a lower or higher plant operating mode is reached before the emergency classification is made, the declaration shall be based on the mode that existed at the time the event occurred.

Recognition categories are associated with the operating modes listed in the following matrix:

	Recognition Category				
Mode	R	С	F	Н	S
Operations	Х		Х	Х	Х
Hot Standby	Х		Х	Х	Х
Hot Shutdown	Х		Х	Х	Х
Intermediate Shutdown	Х		Х	Х	Х
Cold Shutdown	Х	X		Х	
Refueling	Х	X		X	
Defueled	Х	X		Х	

3.6 Fission Product Barriers

Many of the EALs derived from the NEI methodology are fission product barrier based. That is, the conditions that define the EALs are based upon loss of or potential loss of one or more of the three fission product barriers. "Loss" and "potential loss" signify the relative damage and threat of damage to the barrier. "Loss" means the barrier no longer assures containment of radioactive materials and "potential loss" means imminent loss of the barrier.

The primary fission product barriers are:

- <u>Fuel Cladding (FC)</u>: Zirconium tubes which house the ceramic uranium oxide pellets along with the end plugs which are welded into each end of the fuel rods comprise the FC barrier.
- <u>Reactor Coolant System (RCS)</u>: The reactor vessel shell, vessel head, vessel nozzles and penetrations and all primary systems directly connected to the reactor vessel up to the first containment isolation valve comprise the RCS barrier.
- <u>Containment (CMT)</u>: The vapor containment structure and all isolation valves required to maintain containment integrity under accident conditions comprise the Containment barrier.
- 3.7 Emergency Classification Based on Fission Product Barrier Degradation

The following criteria are the bases for event classification related to fission product barrier loss or challenge:

• <u>Notification-of-Unusual_Event</u>:

Any loss or any potential loss of Containment

• <u>Alert</u>:

Any loss or any potential loss of either Fuel Cladding or RCS

• <u>Site Area Emergency</u>:

Loss or potential loss of any two barriers

• General Emergency:

Loss of any two barriers and loss or potential loss of third barrier

3.8 EAL Relationship to EOPs and Critical Safety Function Status

Where possible, the EALs have been made consistent with and utilize the conditions defined in the Critical Safety Function Status Trees (CSFSTs). While the symptoms that drive operator actions specified in the CSFSTs are not indicative of <u>all</u> possible conditions which warrant emergency classification, they define the symptoms, independent of initiating events, for which reactor plant safety and/or fission product barrier integrity are threatened. Where these symptoms are clearly representative of one of the NEI Initiating Conditions, they have been utilized as an EAL. This permits rapid classification of emergency situations based on plant conditions without the need for additional evaluation or event diagnosis. Although some of the EALs presented here are based on conditions defined in the CSFSTs, classification of emergencies using these EALs is not dependent upon Emergency Operating Procedures (EOP) entry or execution. The EALs can be utilized independently or in conjunction with the EOPs.

3.9 Symptom Based vs. Event Based Approach

To the extent possible, the EALs are symptom based. That is, the action level is defined by values of key plant operating parameters that identify emergency or potential emergency conditions. This approach is appropriate because it allows the full scope of variations in the types of events to be classified as emergencies. But, a purely symptom based approach is not sufficient to address all events for which emergency classification is appropriate. Particular events to which no predetermined symptoms can be ascribed have also been utilized as EALs since they may be indicative of potentially more serious conditions not yet fully realized.

Category R - Abnormal Rad Levels/Radiological Effluent and Category F - Fission Product Barrier Degradation are primarily symptom-based. The symptoms are indicative of actual or potential degradation of either fission product barriers or personnel safety.

Other categories tend to be event-based. For example, System Malfunctions are abnormal and emergency events associated with vital plant system failures, while Hazards are those non-plant system related events that have affected or may affect plant safety.

3.10 Treatment of Emergency Class Upgrading

The emergency class is based on the highest EAL reached. For example, two Alerts remain in the Alert category. Or, an Alert and a Site Area Emergency is a Site Area Emergency.

3.11 Classifying Transient Events

For some events, the condition may be corrected before a declaration has been made. For example, an emergency classification is warranted when automatic and manual actions taken within the control room do not result in a required reactor trip. However, it is likely that actions taken outside of the control room will be successful, probably before the Emergency Director classifies the event. The key consideration in this situation is to determine whether or not further plant damage occurred while the corrective actions were being taken. In some situations, this can be readily determined. In other situations, further analyses (e.g., coolant sampling) may be necessary.

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In general, observe the following guidance: Classify the event as indicated and terminate the emergency once assessment shows that there were no consequences from the event and other termination criteria are met. For example, a momentary event, such as an ATWS or an earthquake, requires declaration even though the condition may have been resolved by the time the declaration is made.

- An ATWS represents a failure of a front line Reactor Protection System (RPS) designed to protect the health and safety of the public.
- The affect of an earthquake on plant equipment and structures may not be readily apparent until investigations are conducted.

There may be cases in which a plant condition that exceeded an EAL threshold was not recognized at the time of occurrence, but is identified well after the condition has occurred (e.g., as a result of routine log or record review) and the condition no longer exists. In these cases, an emergency should not be declared. Reporting requirements of 10- CFR CFR 50.72 are applicable and the guidance of NUREG-1022, Rev. 1, Section 3 should be applied.

3.12 Imminent EAL Thresholds

Although the majority of the EALs provide very specific thresholds, the Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent. If, in the judgment of the Emergency Director, an imminent situation is at hand, the classification should be made as if the thresholds has been exceeded. While this is particularly prudent at the higher emergency classes (as the early classification may provide for more effective implementation of protective measures), it is nonetheless applicable to all emergency classes. Explicit EALs, specifying use of Emergency Director judgment, are given in the Hazards, ISFSI and Fission Product Barrier Degradation categories.

4. TECHNICAL BASES INFORMATION

4.1 Recognition Category Organization

The technical bases of the EALs are provided under Recognition Categories R, C, F, H and S of this document. A table summarizing the Initiating Conditions introduces each category. The tables provide an overview of how the ICs are related under each emergency class. ICs within each category are listed according to classification (as as applicable) in the following order: Notification of-Unusual Event, Alert, Site Area Emergency, and General Emergency.

For Recognition Category F, Table F-0 defines the emergency classifications associated with barrier loss and potential loss. Table F-1 lists the thresholds associated with the loss and potential loss of each fission product barrier. The presentation method shown for Table F-1 was chosen to clearly show the synergism among the EALs and to support more accurate dynamic assessments. Basis discussion of the thresholds immediately follows Table F-1.

4.2 Initiating Condition Structure

ICs in Recognition Categories R, C, H and S are structured in the following manner:

- Recognition Category Title
- IC Identifier:
 - o First character identifies the category by letter (R, C, H and S)
 - Second character identifies the emergency classification level (U for Notification of Unusual Event, A for Alert, S for Site Area Emergency, and G for General Emergency)
 - Third character is the numerical sequence as given in Revision 4 of NEI
 NEI 99–01 [Ref. 1] (e.g., SA2). Due to document revisions, certain NEI ICs have been deleted, leaving gaps in the numerical sequence.
- Emergency Class: Notification of Unusual Event, Alert, Site Area Emergency, or General Emergency
- IC Description
- Operating Mode Applicability: Refers to the operating mode during which the IC/EAL is applicable

- Emergency Action Level(s): EALs are the conditions applicable to the criteria of the IC and are used to determine the need to classify an event/condition. If more than one EAL is applicable to an IC, emergency classification is required when any EAL within the IC reaches the EAL threshold. To clarify this intent, ICs with multiple EALs include a parenthetical phrase in the EAL title line, indicating that each constitutes an emergency classification. For example, the phrase "(RA1.1 or RA1.2)" indicates that either EAL is a Notification of Unusual Event.
- Basis: Provides information that explains the IC and EAL(s). Plant source document references are provided as needed to substantiate site-specific information included in the EALs and bases.

4.3 EAL Identification

The EAL identifier is the IC identifier followed by a period and sequence number (e.g., RU1.1, RU1.2, etc.). If only one EAL is assigned to an IC, the EAL is given the number one.

The primary purpose of the EAL identifier is to uniquely distinguish each classifiable condition. Secondary purposes are to assist location of an EAL within the EAL classification scheme and to announce the emergency classification level.

5. **DEFINITIONS**

In the ICs and EALs, selected words are in uppercase print. These words are defined terms. Definitions are provided below.

AFFECTING SAFE SHUTDOWN: event in progress has adversely affected functions that are necessary to bring the plant to and maintain it in the applicable HOT or COLD SHUTDOWN condition. Plant condition applicability is determined by Technical Specification LCOs in effect.

Example 1: Event causes damage that results in entry into an LCO that requires the plant to be placed in HOT SHUTDOWN. HOT SHUTDOWN is achievable, but COLD SHUTDOWN is not. This event is not "AFFECTING SAFE SHUTDOWN."

Example 2: Event causes damage that results in entry into an LCO that requires the plant to be placed in COLD SHUTDOWN. HOT SHUTDOWN is achievable, but COLD SHUTDOWN is not. This event is "AFFECTING SAFE SHUTDOWN."

BOMB: an explosive device suspected of having sufficient force to damage plant systems or structures.

CIVIL DISTURBANCE: a group of unexpected or unauthorized individuals(site-specific #) or-more persons violently protesting station operations or activities at the site.

CONFINEMENT BOUNDARY: the barrier(s) between areas containing radioactive substances and the environment.

CONTAINMENT CLOSURE: defined by N-CCI-56A, "Open Containment Boundary Tracking".

EXPLOSION: a rapid, violent, unconfined combustion, or catastrophic failure of pressurized equipment that imparts energy of sufficient force to potentially damage permanent structures, systems, or components.

EXTORTION: an attempt to cause an action at the station by threat of force.

FAULTED: a steam generator, the existence of secondary side leakage that results in an uncontrolled decrease in steam generator pressure or the steam generator being completely depressurized.

FIRE: combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute FIREs. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.

HOSTAGE: a person(s) held as leverage against the station to ensure that demands will be met by the station.

HOSTILE FORCE: one or more individuals who are engaged in a determined assault, overtly or by stealth and deception, equipped with suitable weapons capable of killing, maiming, or causing destruction.

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IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH): A condition that either poses an immediate threat to life and health or an immediate threat of severe exposure to contaminants which are likely to have adverse delayed effects on health.

INTRUSION / INTRUDER: person(s) present in a specified area without authorization. Discovery of a BOMB in a specified area is indication of INTRUSION into that area by a HOSTILE FORCE.

LOWER FLAMMABILITY LIMIT (LFL): The minimum concentration of a combustible substance that is capable of propagating a flame through a homogenous mixture of the combustible and a gaseous oxidizer.

NORMAL PLANT OPERATIONS: activities at the plant site associated with routine testing, maintenance, or equipment operations, in accordance with normal operating or administrative procedures. Entry into abnormal or emergency operating procedures, or deviation from normal security or radiological controls posture, is a departure from NORMAL PLANT OPERATIONS.

PROTECTED AREA: boundary is-within the security isolation zone-and is defined in the KNPP Security Plan and depicted in Drawing A-449, Plan of Plant Area, Fence, Lighting and CCTV Support.

RUPTURED: In a steam generator, existence of primary-to-secondary leakage of a magnitude sufficient to require or cause a reactor trip and safety injection.

SABOTAGE: deliberate damage, misalignment, or mis-operation of plant equipment with the intent to render the equipment inoperable. Equipment found tampered with or damaged due to malicious mischief may NOT meet the definition of SABOTAGE until this determination is made by security supervision.

SIGNIFICANT TRANSIENT: an UNPLANNED event involving one or more of the following: (1) automatic turbine runback >25% thermal reactor power, (2) electrical load rejection >25% full electrical load, (3) Reactor Trip, (4) Safety Injection Activation, or (5) thermal power oscillations >10%.

STRIKE ACTION: a work stoppage within the PROTECTED AREA by a body of workers to enforce compliance with demands. The STRIKE ACTION must threaten to interrupt NORMAL PLANT OPERATIONS.

UNPLANNED: A parameter change or an event that is not the result of an intended evolution and requires corrective or mitigative actions.

VALID: An indication, report, or condition is considered to be VALID when it is verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel, such that doubt related to the indicator operability, the condition existence, or the report accuracy is removed. Implicit in this definition is the need for timely assessment.

VISIBLE DAMAGE: damage to equipment or structure that is readily observable without measurements, testing, or analysis. Damage is sufficient to cause concern regarding the continued operability or reliability of affected safety structure, system, or component. Example damage includes: deformation due to heat or impact, denting, penetration, rupture, cracking, paint blistering. Surface blemishes (e.g., paint chipping, scratches) should not be included.

VITAL AREA-is any a: Area, normally within the PROTECTED AREA, which contains equipment, systems, components, or material,; the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation.

6. EMERGENCY ACTION LEVEL CATEGORIES

R - Abnormal Rad Levels/Radiological Effluent

C - Cold Shutdown / Refueling System Malfunction

F - Fission Product Barrier Degradation

H - Hazards

S - System Malfunction
Table 5-A-1R-0

Recognition Category AR

Abnormal Rad Levels / Radiological Effluent

INITIATING CONDITION MATRIX

RAU1 Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two Times the Offsite Dose Calculation ManualRadiological Effluent Technical Specifications for 60 Minutes or Longer. Op. Modes: All

NOUE

- RAU2 Unexpected Increase in Plant RAA3 Radiation. Op. Modes: All
- RAA1 Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds 200 Times the Offsite Dose Calculation Manual Radiological Effluent Technical Specifications for 15 Minutes or Longer. Op. Modes: All

ALERT

- 3 Release of Radioactive Material or increases in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown Op. Modes: All
- RAA2 Damage to Irradiated Fuel or Loss of Water Level that Has or Will Result In the Uncovering of Irradiated Fuel Outside the Reactor Vessel. Op. Modes: All

RAS1 Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mRem TEDE or 500 mRem Thyroid CDE for the Actual or Projected Duration of the Release. Op. Modes: All

SITE AREA EMERGENCY

GENERAL EMERGENCY

RAG1 Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 1000 mRem TEDE or 5000 mRem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology. Op. Modes: All

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ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

RAU1

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two Times the Radiological-Effluent Technical-SpecificationsOffsite Dose Calculation Manual for 60 Minutes or Longer.

Operating Mode Applicability: All

Example Emergency Action Levels: Emergency Action Levels: (RU1.1 or RU1.2 or RU1.3 or 4 or 5)

RU1.1. VALID reading on any effluent monitor that exceeds-is GREATER THAN two times the alarm setpoint established by a current radioactivity discharge permit for 60 minutes or longer.

Auxiliary Building	Action Value
R-13 Aux. Bldg. Vent Exhaust	2.61E+05 cpm
R-14 Aux. Bldg. Vent Exhaust	2.62E+05 cpm
Reactor Building	
R-12 Containment Gas	4.41E+05 cpm
R-21 Containment Vent	4.40E+05 cpm
Liquid Radwaste	
R-18 Waste Disposal System Liquid	2 X Calculated

RU1.2. VALID reading on one or more of the following radiation monitors that exceeds-is GREATER THAN the reading shown for 60 minutes or longer.

Liquid Radwaste	Action Value
R-16 Containment FCU SW Return	3.38E+05 cpm
R-19 S/G Blowdown Liquid	2.58E+06 cpm
R-20 Aux Bldg SW Return	1.03E+05 cpm

-(sito-specific-list)

RU1.3. Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates, with a release duration of 60 minutes or longer, in excess of two times (site-specific technical specifications) the ODCM limit.

- 4. ----VALID-reading-on-perimeter-radiation-monitoring-system-greater-than-0.10-mR/hr-above normal-background-sustained-for--60-minutes-or-longer-[for-sites-having-telemetered perimeter-monitors].

Basis:

Refer to Appendix A for a detailed basis of the radiological offluent IC/EALs.

This IC addresses a potential or actual decrease in the level of safety of the plant as indicated by a radiological release that exceeds regulatory commitments for an extended period of time. Nuclear power-plantsKNPP incorporates features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, or control and monitor intentional releases. These controls are located in the Offsite Dose Calculation Manual (ODCM) [Ref. 2, 3], and for-plants-that have-not-implemented-Generic Letter 89-01, in the Radiological-Effluent-Technical-Specifications (RETS). The occurrence of extended, uncontrolled radioactive releases to the environment is indicative of a degradation in these features and/or controls. Some sites-may-find it advantageous to address gaseous and liquid releases with separate initiating conditions and EALs.

The RETS-ODCM multiples are specified in ICs AU1-RU1 and AA1-RA1 only to distinguish between non-emergency conditions, and from each other. While these multiples obviously correspond to an offsite dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, NOT the magnitude of the associated dose or dose rate. Releases should not be prorated or averaged. For example, a release exceeding 4x RETS ODCM for 30 minutes does not meet the threshold for this IC.

UNPLANNED, as used in this context, includes any release for which a radioactivity discharge permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable permit. The Emergency Director should not wait until 60 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 60 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the Emergency Director should, in the absence of data to the contrary, assume that the release has exceeded 60 minutes.

EAL-#1RU1.1 addresses radioactivity releases, that for whatever reason, cause effluent radiation monitor readings to exceed two times the Technical-SpecificationODCM limit and releases are not terminated within 60 minutes. The "UE" values are two times the monitor high alarm setpoints or ODCM release limits. The setpoints are established to ensure the ODCM release limits are not exceeded [Ref. 2, 3]. This-These alarm setpoints may be associated with a planned batch release, or a continuous release path. In either case, the setpoint is established by the ODCM to warn of a release that is not in compliance with the RETSODCM. Indexing the EAL threshold to the ODCM setpoints in this manner insures that the EAL threshold will never be less than the setpoint established by a specific discharge permit. Escalation-will-be-based-on-radiation-readings increasing-per the-followingEach liquid discharge permit includes a value for R-18, calculated in accordance with the ODCM that will vary based on the discharge flow rate. Therefore 2 X

Calculated ODCM Setpoint was used as the threshold. Escalation will be based on radiation readings increasing per the following:

Normal Effluent Release Monitor Classification Thresholds				
Monitor	GE	SAE	Alert	UE
Auxiliary Building				
01-05 Aux. Bidg. SPING Lo Range				
01-07 Aux. Bldg. SPING Mid Range	1.00E+05 cpm	1.00E+04 cpm		
01-09 Aux. Bldg. SPING Hi Range	1.00E+02 cpm	1.00E+01 cpm		
R-13 Aux. Bldg. Vent Exhaust		·	2.61E+07 cpm	2.61E+05 cpm
R-14 Aux. Bidg. Vent Exhaust		· · · · · ·	2.62E+07 cpm	2.62E+05 cpm
Reactor Building				
02-05 Rx Bidg. Vent SPING Lo Range				
02-07 Rx Bldg. Vent SPING Mid Range	-2.00E+04 cpm	2.00E+03 cpm	-	
02-09 Rx Bldg. Vent SPING Hi Range	2.00E+01 cpm	·. —	-	
R-12 Containment Gas			4.41E+07 cpm	4.41E+05 cpm
R-21 Containment Vent			4.40E+07 cpm	4.40E+05 cpm
Liquid Radwaste		ана С		
R-18 Waste Disposal System Liquid	N/A	N/A	200 X Calculated ODCM Setpoint	2 X Calculated ODCM Setpoint

EAL-#2RU1.2 is intended for licensees that have established effluent monitoring on non-routine release pathways for which a discharge permit would not normally be prepared. The ODCM establishes a methodology for determining effluent radiation monitor setpoints. The ODCM specifies default source terms and, for gaseous releases, prescribes the use of pre-determined annual average meteorology in the most limiting downwind sector for showing compliance with the regulatory commitments. These monitor reading EALs should behave been determined using this methodology. The "UE" values are two times the monitor high alarm setpoints or ODCM release limits. The setpoints are established to ensure the ODCM release limits are not exceeded [Ref. 2, 3]. Escalation will be based on radiation readings increasing per the following:

Abnormal Effluent Release Monitor Classification Thresholds				
Monitor	Elite GE	SAE	Alert	UE

Main Steam Line (PORV)			· ·	
R-31 'A' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr		
R-32 'A' Steamline High Range	1.77E+00 R/hr			
R-33 'B' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr		
R-34 'B' Steamline High Range	1.77E+00 R/hr			
Main Steam Line (SG Safety)				
R-31 'A' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr	-	
R-32 'A' Steamline High Range		· · · ·		
R-33 'B' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr		8-9-1
R-34 'B' Steamline High Range		· · · · · · · · · · · · · · · · · · ·		
Liquid Radwaste				
R-16 Containment Fcu SW Return	N/A	N/A	3.38E+07 cpm	3.38E+05 cpm
R-19 S/G Blowdown Liquid	N/A	N/A	2.58E+08 cpm	2.58E+06 cpm
R-20 Aux Bldg SW Return	N/A	N/A	1.03E+07 cpm	1.03E+05 cpm

EAL-#3RU1.3 addresses uncontrolled releases that are detected by sample analyses, particularly on unmonitored pathways, e.g., spills of radioactive liquids into storm drains, heat exchanger leakage in riverlake water systems, etc.

The 0.10 mR/hr value in EAL #4-is based on a release rate not exceeding 500 mrom per year, as provided in the ODCM / RETS, prorated over 8766 hours, multiplied by two, and rounded. (500 + 8766 × 2 = 0.114). This is also the basis of the site specific value in EAL #5.

EALs #1-and #2RU1.1 and RU1.2 directly correlate with the IC since annual average meteorology is required to be used in showing compliance with the RETS-ODCM and is used in calculating the alarm setpoints. EALs #4-and #5 are a function of actual meteorology, which will likely be different from the limiting annual average value. Thus, there will likely be a numerical inconsistency. However, the The fundamental basis of this IC is NOT a dose or dose rate, but rather the degradation in the level of safety of the plant implied by the uncontrolled release. Exceeding EAL #4 or EAL #5 is an indication of an uncontrolled release meeting the fundamental

KNPP Basis Reference(s):

basis for this IC.

- 1. USAR Section 11.2.3 Radiation Monitoring System, Rev. 18
- 2. KNPP ODCM Section 2.0 Gaseous Effluents, Rev. 8
- 3. KNPP ODCM Section 1.2 Liquid Effluent Monitor Setpoint Determination, Rev. 8
- 4. C11620, Evaluation of Radiological Effluent Monitor Response Action Levels, Rev. 0

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

	AU2RU2
	Initiating Condition NOTIFICATION OF UNUSUAL EVENT
	Unexpected Increase-Rise in Plant Radiation.
ļ	Operating Mode Applicability: All
	Example-Emergency-Action-Levels:Emergency Action Levels: (RU2.1 or RU2.2)
	RU2.1. aVALID (site-specific) indication of uncontrolled water level decrease-lowering in the reactor refueling cavity, spent fuel pool, or fuel transfer canal with all irradiated fuel assemblies remaining covered by water as indicated by Spent Fuel Pool low water level alarm setpoint (3 ft 4 in. below floor, SER 159/160) OR visual observation
	AND
	 b.—Any UNPLANNED VALID (site-specific) Direct Area Radiation Monitor reading increases-rises as indicated by: R-2 Containment Area ALERT Alarm R-5 Fuel Handling Area ALERT Alarm R-10 New Fuel Pit Area ALERT Alarm
	RU2.2. Any UNPLANNED VALID Direct -Area Radiation Monitor readings increases-rises by a factor of 1000 over normal* levels.
1	*Normal levels can be considered as the highest reading in the past twenty-four hours excluding the current peak value.
	Basis:
	This IC addresses increased radiation levels as a result of water level decreases above the RPV Reactor Vessel flange or events that have resulted, or may result, in unexpected increases in radiation dose rates within plant buildings. These radiation increases represent a loss of control over radioactive material and may represent a potential degradation in the level of safety of the plant.
	In light of Reactor Cavity Seal failure incidents at two different PWRs and loss of water in the Spent Fuel Pit/Fuel Transfer Canal at a BWR, explicit coverage of these types of events via EAL #1RU2.1 is appropriate given their potential for increased doses to plant staff. Classification as an NOUE is warranted as a precursor to a more serious event. Site-specific iIndications may-include instrumentation such as water level and local area radiation monitors, and personnel (e.g.,

refueling crew) reports. If available, security video cameras may allow remote observation. Depending on available level instrumentation, the declaration threshold may need to be based on indications of water makeup rate or decrease in refueling water storage tank level.

While a radiation monitor could detect an increase in dose rate due to a drop in the water level, it might not be a reliable indication of whether or not the fuel is covered. For example, the reading on an area radiation monitor located on the refueling bridge may increase due to planned evolutions such as head lift, or even a fuel assembly being raised in the manipulator mast. Generally, increased radiation monitor indications will need to combined with another indicator (or personnel report) of water loss. For refueling events where the water level drops below the RPV Reactor Vessel flange classification would be via CU2. This event escalates to an Alert per IC AA2 RA2 if irradiated fuel outside the reactor vessel is uncovered. For events involving irradiated fuel in the reactor vessel, escalation would be via the Fission Product Barrier Matrix for events in Operating through Intermediate Shutdown operating modes-1-4.

The Spent Fuel Pool (SFP) low level alarm is actuated by LA-16640-02 (SER 159) and LA--16641--02 (SER 160) at 3 ft 4 in. below floor level. The North (A) and South (B) Spent Fuel Pools are located in the Auxiliary Building refueling area. The pools can be isolated from each other by a removable gate, which is normally removed. The top of each pool is at 649 ft 6 in. el. and the bottom is at 608 ft el. Fuel occupies the bottom 14 ft. [Ref. 3].

EAL #2RU2.2 addresses UNPLANNED increases in in-plant radiation levels that represent a degradation in the control of radioactive material, and represent a potential degradation in the level of safety of the plant. This event escalates to an Alert per IC AA3-RA3 if the increase in dose rates impedes personnel access necessary for safe operation.

*Normal levels can be considered as the highest reading in the past twenty-four hours excluding the current peak value.

KNPP Basis Reference(s):

- 1. Control Room Alarm Response Procedure 47055-N Spent Fuel Pool Abnormal Beta Window Box 05-N5, Rev. C
- 2. Operating Procedure A-SFP-21 Abnormal Spent Fuel Pool Cooling and Cleanup System Operation, Rev. T
- 3. KNPP System Description 21 Spent Fuel Pool Cooling and Cleanup System (SFP), Rev. 1
- 4. USAR Section 11.2.3 Radiation Monitoring System, Rev. 18
- 5. Control Room Alarm Response Procedure 47011-B Radiation Indication High Beta Window Box 01-B1, Rev. D
- 6. E-2021 Integrated Logic Diagram Radiation Monitoring, Rev. X

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AA1RA1

Initiating Condition – ALERT

Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds 200 Times the Radiological Effluent Technical SpecificationsOffsite Dose Calculation Manual for 15 Minutes or Longer.

Operating Mode Applicability: All

Example Emergency Action Levels: Emergency Action Levels: (RA1.1 or RA1.2 or RA1.3 or 4 or 5)

RA1.1. VALID reading on any effluent monitor that exceeds GREATER THAN 200 times the alarm setpoint established by a current radioactivity discharge permit for 15 minutes or longer.

Auxiliary Building	Action Value
R-13 Aux. Bldg. Vent Exhaust	2.61E+07 cpm
R-14 Aux. Bldg. Vent Exhaust	2.62E+07 cpm
Reactor_Building	
R-12 Containment Gas	4.41E+07 cpm
R-21 Containment Vent	4.40E+07 cpm
Liquid Radwaste	
R-18 Waste Disposal System Liquid	200 X Calculated ODCM Setpoint

RA1.2. VALID reading on one or more of the following radiation monitors that exceeds GREATER THAN the reading shown for 15 minutes or longer:

Liquid Radwaste	Action Value
R-16 Containment FCU SW Return	3.38E+07 cpm
R-19 S/G Blowdown Liquid	2.58E+08 cpm
R-20 Aux Bldg SW Return	1.03E+07 cpm

-(site-specific list)

RA1.3. Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates, with a release duration of 15 minutes or longer, in excess of 200 times (site-specific technical specifications) ODCM limit.

- 4.——VALID-reading-on-perimeter-radiation-monitoring-system-greater-than-10.0-mR/hr-above normal-background-sustained-for-15-minutes-or-longer-[for-sites-having-telemetered perimeter-monitors].
- 5. --VALID-indication-on-automatic-real-time-dose-assessment-capability-greater-than-(sitespecific-value) for 15-minutes or longer-[for sites having such capability].

Basis:

Refer to Appendix A for a detailed basis of the radiological offluent IC/EALs.

This IC addresses a potential or actual decrease in the level of safety of the plant as indicated by a radiological release that exceeds regulatory commitments for an extended period of time. Nuclear power-plantsKNPP incorporates features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, or control and monitor intentional releases. These controls are located in the Offsite Dose Calculation Manual (ODCM)), and for-plants that have not implemented Generic Letter-89-01, in the Radiological Effluent Technical Specifications (RETS). The occurrence of extended, uncontrolled radioactive releases to the environment is indicative of a degradation in these features and/or controls. Some-sites-may-find-it-advantageous-to-address-gaseous-and-liquid releases with separate initiating conditions and EALs.

The RETS-ODCM multiples are multiples are specified in ICs AU1-RU1 and AA1-RA1 only to distinguish between non-emergency conditions, and from each other. While these multiples obviously correspond to an offsite dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, NOT the magnitude of the associated dose or dose rate. Releases should not be prorated or averaged.

UNPLANNED, as used in this context, includes any release for which a radioactivity discharge permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable permit. The Emergency Director should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 15 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the Emergency Director should, in the absence of data to the contrary, assume that the release has exceeded 15 minutes.

EAL-#1RA1.1 addresses radioactivity releases that for whatever reason cause effluent radiation monitor readings that exceed two hundred times the alarm setpoint established by the radioactivity discharge permit. The "Alert" values shown for each monitor are two hundred times the alarm setpoints or calculated ODCM release limits as specified in Reference 4. The setpoints are established to ensure the ODCM release limits are not exceeded [Ref. 2, 3]. This-The alarm setpoints may be associated with a planned batch release, or a continuous release path. In either case, the setpoint is established by the ODCM to warn of a release that is not in compliance with the RETSODCM. Indexing the EAL threshold to the ODCM setpoints in this manner insures that the EAL threshold will never be less than the setpoint established by a specific discharge permit. Each liquid discharge permit includes a value for R-18, calculated in accordance with the ODCM, that will vary based on the discharge flow rate, therefore "200 X Calculated ODCM Setpoint" was used as the threshold. Escalation will be based on radiation readings increasing per the following: Escalation will be based on radiation readings increasing per the following:

	Normal Effluent Release Monitor Classification Thresholds				
1	Monitor	GE	SAE	Alert	UE
	Auxiliary Building	B			
	01-05 Aux. Bldg. SPING Lo Range				
	01-07 Aux. Bldg. SPING Mid Range	1.00E+05 cpm	1.00E+04 cpm		—
	01-09 Aux. Bldg. SPING Hi Range	1.00E+02 cpm	1.00E+01 cpm		
	R-13 Aux. Bldg. Vent Exhaust		·	2.61E+07 cpm	2.61E+05 cpm
	R-14 Aux. Bldg. Vent Exhaust		· · · · · · · · · · · · · · · · · · ·	2.62E+07 cpm	2.62E+05 cpm
	Reactor Building				•
	02-05 Rx Bldg. Vent SPING Lo Range		, ,		· · · · · ·
	02-07 Rx Bldg. Vent SPING Mid Range	2.00E+04 cpm	2.00E+03 cpm		
	02-09 Rx Bldg. Vent SPING Hi Range	2.00E+01 cpm	 ·		
	R-12 Containment Gas			4.41E+07 cpm	4.41E+05 cpm
	R-21 Containment Vent		 .	4.40E+07 cpm	4.40E+05 cpm
l	Liquid Radwaste				
	R-18 Waste Disposal System Liquid	N/A	N/A	200 X Calculated ODCM Setpoint	2 X Calculated ODCM Setpoint

EAL #2-is-similar to EAL #1, but-isRA1.2 intended to addresses effluent or accident radiation monitors on non-routine release pathways (i.e., for which a discharge permit would not normally be prepared) [Ref. 1]. The ODCM establishes a methodology for determining effluent radiation monitor setpoints. The ODCM specifies default source terms and, for gaseous releases, prescribes the use of pre-determined annual average meteorology in the most limiting downwind sector for showing compliance with the regulatory commitments. These monitor reading EALs should behave been determined using this methodology. The "Alert" values for each monitor are two hundred times the alarm setpoints or calculated ODCM release limits as specified in Reference 4. The setpoints are established to ensure the ODCM release limits are not exceeded [Ref. 2, 3]. Escalation will be on based radiation readings increasing per the following:

Abnormal Effluent Release Monitor Classification Thresholds				
Monitor	GE	SAE	Alert	UE

Main Steam Line (PORV)				
R-31 'A' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr		·
R-32 'A' Steamline High Range	1.77E+00 R/hr	<u> </u>		
R-33 'B' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr		
R-34 'B' Steamline High Range	1.77E+00 R/hr			
Main Steam Line (SG Safety)		<i>'</i> .		
R-31 'A' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr		
R-32 'A' Steamline High Range				
R-33 'B' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr		
R-34 'B' Steamline High Range				-
Liquid Radwaste		•		
R-16 Containment Fcu SW Return	N/A	N/A	3.38E+07 cpm	3.38E+05 cpm
R-19 S/G Blowdown Liquid	N/A	N/A	2.58E+08 cpm	2.58E+06 cpm
R-20 Aux Bldg SW Return	N/A	N/A	1.03E+07 cpm	1.03E+05 cpm

EAL #3RA1.3 addresses uncontrolled releases that are detected by sample analyses, particularly on unmonitored pathways, e.g., spills of radioactive liquids into storm drains, heat exchanger leakage in riverlake water systems, etc.

The 10.0 mR/hr value in EAL #4 is based on a release rate not exceeding 500 mrem per year, as provided in the ODCM / RETS, prorated over 8766 hours, multiplied by 200, and rounded. (500 ÷ 8766 × 200 = 11.4). This is also the basis of the site specific value in EAL #5.

EALs #1-and #2RA1.1 and RA1.2 directly correlate with the IC since annual average meteorology is required to be used in showing compliance with the RETS-ODCM and is used in calculating the alarm setpoints. EALs #4-and #5 are a function of actual meteorology, which will likely be different from the limiting-annual average-value. Thus, there will likely be a numerical inconsistency. However, the The fundamental basis of this IC is NOT a dose or dose rate, but rather the degradation in the level of safety of the plant implied by the uncontrolled release. Exceeding EAL #4-or EAL #5 is an indication of an uncontrolled release meeting the fundamental basis for this IC.

Due to the uncertainty associated with meteorology, emergency implementing procedures should call for the timely performance of dose assessments using actual (real-time) meteorology in the event of a gaseous radioactivity release of this magnitude. The results of these assessments should be compared to the ICs AS1-RS1 and AG1-RG1 to determine if the event classification should be escalated.

Contrary-to-the-practices-specified-in-revision-2-of-this-document, classification-should-not-be delayed pending the results of these dose assessments.

KNPP Basis Reference(s):

1. USAR Section 11.2.3 Radiation Monitoring System, Rev. 18

- 2. KNPP ODCM Section 2.0 Gaseous Effluents, Rev. 8
- 3. KNPP ODCM Section 1.2 Liquid Effluent Monitor Setpoint Determination, Rev. 8

KNPP

4. C11620, Evaluation of Radiological Effluent Monitor Response Action Levels, Rev. 0

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AA2RA2

Initiating Condition --- ALERT

Damage to Irradiated Fuel or Loss of Water Level that Has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel.

Operating Mode Applicability: All

Example Emergency Action Levels: Emergency Action Levels: (RA2.1 or RA2.2)

- RA2.1. A VALID radiation indication high (site-specific)-alarm or reading on one or more of the following radiation monitors resulting from damage to irradiated fuel or loss of water level:
 - R-2 Containment Area
 - R-5 Fuel Handling Area
 - R-13 or R-14 Aux Bldg Vent Exhaust
 - R-11 or R-12 Containment Particulate / Gas Ventilation
 - R-21 Containment Vent

-(site-specific monitors)

------Fuel Handling Building Ventilation Monitor

------Refueling-Bridge-Area Radiation Monitor

RA2.2. Water level LESS THAN 50% Wide Range Refueling Water Level Reactor Refueling Cavity-OR GREATER THAN 14 feet below top of Spent Fuel Pool that will result in irradiated fuel uncoveringless than (site-specific) feet for the reactor refueling cavity, spent fuel pool and fuel transfer canal that will result in irradiated fuel uncovering.

Basis:

This IC addresses specific events that have resulted, or may result, in unexpected increases in radiation dose rates within plant buildings, and may be a precursor to a radioactivity release to the environment. These events represent a loss of control over radioactive material and represent a degradation in the level of safety of the plant. These events escalate from IC AU2-RU2 in that fuel activity has been released, or is anticipated due to fuel heatup. This IC applies to spent fuel requiring water coverage and is not intended to address spent fuel which is licensed for dry storage, which is discussed in IC E-AEU1.

EAL-#1RA2.1 addresses radiation monitor indications [Ref. 1, 2, 3] of fuel uncovery and/or fuel damage. Increased readings on ventilation monitors may be indication of a radioactivity release from the fuel, confirming that damage has occurred. Increased background at the monitor due to water level decrease may mask increased ventilation exhaust airborne activity and needs to be considered. While a radiation monitor could detect an increase in dose rate due to a drop in the water level, it might not be a reliable indication of whether or not the fuel is covered. For example, the monitor could in fact be properly responding to a known event involving transfer or relocation

In EAL-#2RA2.2, site-specific-indications may-include instrumentation such as water level and local area radiation monitors, and personnel (e.g., refueling crew) reports. Wide Range Refueling Water Level is measured by L9053A for channel A and L9054A for channel B. If available, security video cameras may allow remote observation. The top of each pool is at 649 ft 6 in. el. and the bottom is at 608 ft el. Fuel occupies the bottom 14 ft. [Ref. 4]. Depending on available level indication, the dDeclaration threshold-may need to be based on indications of water makeup rate or decrease in refueling water storage tank level.

Escalation, if appropriate, would occur via IC AS1-RS1 or AG1-RG1 or Emergency Director judgment.

KNPP Basis Reference(s):

- 1. E-2021 Integrated Logic Diagram Radiation Monitoring, Rev. X
- 2. Control Room Alarm Response Procedure 47055-N Spent Fuel Pool Abnormal Beta Window Box 05-N5, Rev. C
- 3. Operating Procedure A-SFP-21 Abnormal Spent Fuel Pool Cooling and Cleanup System Operation, Rev. T
- 4. KNPP System Description 21, Spent Fuel Pool Cooling and Cleanup System (SFP), Rev. 1
- 5. Manipulator Crane drawing XK-113557-5, Rev. D
- 6. N-RHR-34C RHR Operation at a Reduced Inventory Condition, Rev. N
- 7. C11619 Determination of Cavity Level EAL RA2.2, Rev. 0

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AA3RA3

Initiating Condition -- ALERT

Release of Radioactive Material or Increases-Rise in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown

Operating Mode Applicability: All

Example-Emergency Action Levels: Emergency Action Levels: (RA3.1 or RA3.2)

RA3.1. VALID (site-specific) radiation monitor readings GREATER THAN 15 mR/hr in areas requiring continuous occupancy to maintain plant safety functions:

Control Room (Rad monitor R-1) OR Central Alarm Station (Rad monitor R-1)

OR

Secondary Alarm Station (by survey)

-(Site-specific)-list

- RA3.2. Any VALID (site-specific)-radiation monitor readings GREATER THAN <site-specific> values6 R/hr in areas requiring infrequent access to maintain plant safety functions.
 - Auxiliary Building
 - Safeguards Alley
 - Diesel Generator Rooms (includes "A" Diesel Room to Screen House Tunnel)
 - Screenhouse/Forebay
 - Relay Room
 - Safeguard Battery Room

(Site-specific)-list

Basis:

This IC addresses increased radiation levels that impede necessary access to operating stations, or other areas containing equipment that must be operated manually or that requires local monitoring, in order to maintain safe operation or perform a safe shutdown. It is this impaired ability to operate the plant that results in the actual or potential substantial degradation of the level of safety of the plant. The cause and/or magnitude of the increase in radiation levels is not a concern of this IC. The Emergency Director must consider the source or cause of the increased radiation levels and determine if any other IC may be involved. For example, a dose rate of 45 15 mR/hr in the control room may be a problem in itself. However, the increase may also be indicative of high dose rates in the containment due to a LOCA. In this latter case, an SAE or GE may be indicated by the fission product barrier matrix ICs.

At-multiple-unit-sites,-the example EALs could result in declaration of an Alert at one-unit due to a radioactivity-release or radiation-shine-resulting from a major accident at the other-unit. This is appropriate if the increase impairs operations at the operating unit.

This IC is not meant to apply to increases in the containment dome-radiation monitors, as these are events which are addressed in the fission product barrier matrix ICs. Nor is it intended to apply to anticipated temporary increases due to planned events (e.g., incore-detector-movement, radwaste container movement, depleted resin transfers, etc.)

For RA3.1 areas requiring continuous occupancy include the Control Room and the central alarm station (CAS). The CAS has no installed radiation monitoring capability [Ref. 3]. Areas requiring continuous occupancy includes the control room and, as appropriate to the site, any other control stations that are manned continuously, such as a radwaste control room or a contral security alarm station.—The value of 15mR/hr is derived from the GDC 19 value of 5 rem in 30 days with adjustment for expected occupancy times. Although Section III.D.3 of NUREG-0737, *"Clarification of TMI Action Plan Requirements"* [Ref. 1, 2], provides that the 15 mR/hr value can be averaged over the 30 days, the value is used here without averaging, as a 30 day duration implies an event potentially more significant than an Alert.

For RA3.2 areas requiring infrequent access, the basis of the 6 R/hr value is as follows:

The KNPP annual administrative personnel exposure limit is 2 Rem/Year. Assuming an emergency worker is at his administrative limit, any emergency worker needing access to a plant area for the safe shutdown of the plant could receive up to an additional 3 Rem without exceeding the legal 10CFR20 annual exposure limit of 5 Rem [Ref. 4] and thus the need for emergency exposure authorization. Assuming that an activity required to be performed in the plant would, on average, require a 30 minute stay time in that area, an area exposure rate of 6 R/hr would not unduly impede access to areas necessary for safe plant shutdown.the-site-specific value(s)-should-be based-on-radiation-levels-which-result-in exposure-control measures intended-to-maintain doses within normal-occupational-exposure guidelines-and limits (i.e., 10 CFR 20), and in doing so, will impede necessary access.

As used here, *impede*, includes hindering or interfering provided that the interference or delay is sufficient to significantly threaten the safe operation of the plant. RA3.2 provides the list of safe shutdown areas requiring infrequent access. The listed areas contain functions and systems required for the safe shutdown of the plant. KNPP safe shutdown analyses were consulted for equipment and plant areas required for the applicable mode [Ref 5].

In-plant radiation surveys and Area Radiation Monitor (ARM) readings are methods available to assess this EAL. Radiation monitors are not specified in the EAL wording because portable monitoring devices may be used to determine area accessibility. It would then be possible to erroneously exclude information gained from portable monitor surveys when interpreting the EAL.

Emergency-planners-developing-the-site-specific-lists-may-refer to the-site's abnormal operating procedures, emergency-operating procedures, the 10 CFR 50 Appendix-R-analysis, and/or, the analyses performed in response to Section 2.1.6b of NUREG-0578, "TMI-2-Lessons Learned Task Force-Status Report and Short-term Recommendations"

, when -identifying areas containing safe shutdown equipment. Do not use the dose ratespostulated in the NUREG-0578 analyses as a basis for the radiation monitor readings for this IC,KNPP6-R-1710/22/04

as the design envelope for the NUREG-0578 analyses correspond to general emergency conditions.

KNPP Basis Reference(s):

- 1. GDC 19, January 1, 2004
- 2. NUREG-0737, "Clarification of TMI Action Plan Requirements", Section III.D.3
- 3. E-2021 Integrated Logic Diagram Radiation Monitoring, Rev. X
- 4. EPIP-AD-11, Emergency Radiation Controls, Rev. T
- 5. KNPP Fire Protection Program Plan Section 5.19, Rev. 5

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

Operating Mode Applicability: All Example-Emergency-Action Levels: Emergency Action Levels: (RS1.1 or RS1.2 or RS1.3-or-4) Note: If dose assessment results are available at the time of declaration, the classification should order to determine if the classification should be subsequently escalated. RS1.1. VALID reading on one-or-more any monitors listed of the following radiation-monitors that exceeds or is expected to exceed the reading shown for 15 minutes or longer: **Auxiliary Building Action Value** 01-07 Aux. Bldg. SPING Mid Range 1.00E+04 cpm 01-09 Aux. Bldg. SPING Hi Range 1.00E+01 cpm **Reactor Building** 02-07 Rx Bldg. Vent SPING Mid Range 2.00E+03 cpm Main Steam Line (PORV) 1.77E+02 mR/hr R-31 'A' Steamline Lo Range 1.77E+02 mR/hr R-33 'B' Steamline Lo Range Main Steam Line (SG Safety) 8.30E+01 mR/hr R-31 'A' Steamline Lo Range 8.30E+01 mR/hr R-33 'B' Steamline Lo Range -(site-specific list) RS1.2. Dose assessment using actual meteorology indicates doses GREATER THAN 100 mRem TEDE or 500 mRem thyroid CDE at or beyond the site boundary. A-VALID reading sustained for 15 minutes or longer on perimeter radiation monitoring system greater than 100 mR/hr. [for sites having telemetered perimeter monitors] 4RS1.3. Field survey results indicate closed window dose rates exceeding 100 mRem/hr expected to continue for more than one hour, at or beyond the site boundary; or-OR

Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mRem TEDE or 500 mRem Thyroid CDE for the Actual or Projected Duration of the Release.

be based on EAL #2RS1.2 instead of EAL #1RS1.1. While necessary declarations should not be delayed awaiting results, the dose assessment should be initiated / completed in

AS1RS1

Aanalyses of field survey samples indicate thyroid CDE of 500 mRem for one hour of inhalation, at or beyond the site boundary.

Basis:

Refer to Appendix A for a detailed basis of the radiological effluent IC/EALs.

This IC addresses radioactivity releases that result in doses at or beyond the site boundary that exceed a small fraction of the EPA Protective Action Guides (PAGs). Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public. While these failures are addressed by other ICs, this IC provides appropriate diversity and addresses events which may not be able to be classified on the basis of plant status alone, e.g., fuel handling accident in spent fuel building.

The TEDE dose is set at 10% of the EPA PAG, while the 500 mRem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.

The Emergency Director should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 15 minutes.

The (site specific)-monitor list in EAL-#1-RS1.1 should-includes monitors on all potential release pathways [Ref. 1, 3, 4].

The EPA PAGs are expressed in terms of the sum of the effective dose equivalent (EDE) and the committed effective dose equivalent (CEDE), or as the thyroid committed dose equivalent (CDE). For the purpose of these IC/EALs, the dose quantity total effective dose equivalent (TEDE), as defined in 10 CFR 20, is used in lieu of *"...sum of EDE and CEDE...."* The EPA PAG guidance provides for the use adult thyroid dose conversion factors. However, some states have decided to calculate child thyroid CDE. Utility IC/EALs need to be consistent with those of the states involved in the facility's emergency planning zone.

The "SAE" effluent monitor readings are derived from Reference 2.

The monitor-reading EALs should be determined using a dose assessment method that back calculates from the dose values specified in the IC. The meteorology and source term (noble gases, particulates, and halogens) used should be the same as those used for determining the monitor-reading EALs in ICs AU1 and AA1. This protocol will maintain intervals between the EALs for the four classifications. Since doses are generally not monitored in real-time, it is suggested that a release duration of one hour be assumed, and that the EALs be based on a site boundary (or beyond) dose of 100 mR/hour whole body or 500 mR/hour thyroid, whichever is more limiting (as was done for EALs #3 and #4). If individual site analyses indicate a longer or shorter duration for the period in which the substantial pertion of the activity is released, the longer duration should be used.

Since dose assessment is based on actual meteorology, whereas the monitor reading EALs are not, the results from these assessments may indicate that the classification is not warranted, or may indicate that a higher classification is warranted. For this reason, emergency implementing procedures should-call for the timely performance of dose assessments using actual meteorology and release information. If the results of these dose assessments are available when the classification is made (e.g., initiated at a lower classification level), the dose assessment results override the monitor reading EALs.

Contrary to the practices specified in revision 2 of this document, classification should not be delayed pending the results of these dose assessments.

Escalation will be on based radiation readings increasing per the following:

Normal Effluent Release Monitor Classification Thresholds				
Monitor	GE	SAE	Alert	UE
Auxiliary Building				
01-05 Aux. Bldg. SPING Lo Range			·	
01-07 Aux. Bldg. SPING Mid Range	1.00E+05 cpm	1.00E+04 cpm		
01-09 Aux. Bldg. SPING Hi Range	1.00E+02 cpm	1.00E+01 cpm		, ° ene , , , ,
R-13 Aux. Bldg. Vent Exhaust			2.61E+07 cpm	2.61E+05 cpm
R-14 Aux. Bldg. Vent Exhaust			2.62E+07 cpm	2.62E+05 cpm
Reactor Building				· . · ·
02-05 Rx Bldg. Vent SPING Lo Range				
02-07 Rx Bldg. Vent SPING Mid Range	2.00E+04 cpm	2.00E+03 cpm		
02-09 Rx Bldg. Vent SPING Hi Range	2.00E+01 cpm			
R-12 Containment Gas			4.41E+07 cpm	4.41E+05 cpm
R-21 Containment Vent			4.40E+07 cpm	4.40E+015 cpm
Liquid Radwaste				
R-18 Waste Disposal System Liquid	N/A	N/A		2 X Calculated ODCM Setpoint
			200 X Calculated ODCM Setpoint	

Abnormal Effluent Release Monitor Classification Thresholds						
Monitor	GE	SAE	Alert	UE		
Main Steam Line (PORV)						
R-31 'A' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr		· ·		
R-32 'A' Steamline High Range	1.77E+00 R/hr					
R-33 'B' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr				
R-34 'B' Steamline High Range	1.77E+00 R/hr					
Main Steam Line (SG Safety)			· · ·			
R-31 'A' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr				
R-32 'A' Steamline High Range				· • • • •		
R-33 'B' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr				
R-34 'B' Steamline High Range						
Liquid Radwaste				· ·		
R-16 Containment Fcu SW Return	N/A	N/A	3.38E+07 cpm	3.38E+05 cpm		
R-19 S/G Blowdown Liquid	N/A	N/A	2.58E+08 cpm	2.58E+06 cpm		
R-20 Aux Bldg SW Return	N/A	N/A	1.03E+07 cpm	1.03E+05 cpm		

KNPP Basis Reference(s):

- 1. USAR Section 11.2.3 Radiation Monitoring System, Rev. 18
- 2. C11620, Evaluation of Radiological Effluent Monitor Response Action Levels, Rev. 0
- 3. EPIP-RET-02B Gaseous Effluent Release Path, Radioactivity, and Release Rate Determination, Rev. T
- 4. ODCM Section 2.0 Gaseous Effluents, Rev. 8

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ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AG1RG1

Initiating Condition -- GENERAL EMERGENCY

Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 1000 mRem TEDE or 5000 mRem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology.

Operating Mode Applicability: All

Example Emergency Action Levels:Emergency Action Levels: (RG1.1 or RG1.2 or RG1.3-or-4)

Note: If dose assessment results are available at the time of declaration, the classification should be based on EAL-#2RG1.2 instead of EAL-#1RG1.1.While necessary declarations should not be delayed awaiting results, the dose assessment should be initiated / completed in order to determine if the classification should be subsequently escalated.

RG1.1. VALID reading on one or more any monitors listed of the following radiation monitors that exceeds or expected to exceed the reading shown for 15 minutes or longer:

Auxiliary Building	Action Value
01-07 Aux. Bldg. SPING Mid Range	1.00E+05 cpm
01-09 Aux. Bldg. SPING Hi Range	1.00E+02 cpm
Reactor Building	
02-07 Rx Bldg. Vent SPING Mid Range	2.00E+04 cpm
02-09 Rx Bldg. Vent SPING Hi Range	2.00E+01 cpm
Main Steam Line (PORV)	
R-31 'A' Steamline Lo Range	1.77E+03 mR/hr
R-32 'A' Steamline High Range	1.77E+00 R/hr
R-33 'B' Steamline Lo Range	1.77E+03 mR/hr
R-34 'B' Steamline High Range	1.77E+00 R/hr
<u> Main Steam Line (SG Safety)</u>	
R-31 'A' Steamline Lo Range	8.30E+02 mR/hr
R-33 'B' Steamline Lo Range	8.30E+02 mR/hr

site-specific-list)

RG1.2. Dose assessment using actual meteorology indicates doses GREATER THAN 1000 mRem TEDE or 5000 mRem thyroid CDE at or beyond the site boundary.

- 3. A VALID reading sustained for 15 minutes or longer on perimeter radiation monitoring system greater than 1000 mR/hr. [for sites having telemetered perimeter monitors]
- 4RG1.3. Field survey results indicate closed window dose rates exceeding 1000 mRem/hr expected to continue for more than one hour, at or beyond site boundary.; or a OR

Analyses of field survey samples indicate thyroid CDE of 5000 mRem for one hour of inhalation, at or beyond site boundary.

Basis:

Refer to Appendix A for a detailed basis of the radiological effluent-IC/EALs.

This IC addresses radioactivity releases that result in doses at or beyond the site boundary that exceed the EPA Protective Action Guides (PAGs). Public protective actions will be necessary. Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public and likely involve fuel damage. While these failures are addressed by other ICs, this IC provides appropriate diversity and addresses events which may not be able to be classified on the basis of plant status alone. It is important to note that, for the more severe accidents, the release may be unmonitored or there may be large uncertainties associated with the source term and/or meteorology.

The Emergency Director should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 15 minutes.

The (site specific) monitor list in EAL #1RG1.1 should-includes monitors on all potential release pathways [Ref. 1, 3, 4].

The EPA-PAGs are expressed in terms of the sum of the effective dose equivalent (EDE) and the committed effective dose equivalent (CEDE), or as the thyroid committed dose equivalent (CDE). For the purpose of these IC/EALs, the dose quantity total effective dose equivalent (TEDE), as defined in 10 CFR-20, is used in lieu of "...sum of EDE and CEDE...." The EPA PAG guidance provides for the use adult thyroid dose conversion factors. However, some states have decided to calculate child thyroid CDE. Utility IC/EALs need to be consistent with those of the states involved in the facilities emergency planning zone.

The "GE" effluent monitor readings are derived from Reference 2.

The-monitor-reading EALs should be-determined using a dose assessment method that backcalculates from the dose values specified in the IC. The meteorology and source term (noble gases, particulates, and halogens) used should be the same as those used for determining the monitor reading EALs in ICs AU1 and AA1. This protocol will maintain intervals between the EALs for the four classifications. Since doses are generally not monitored in real-time, it is suggested that a release duration of one hour be assumed, and that the EALs be based on a site boundary (or beyond) dose of 1000 mR/hour whole body or 5000 mR/hour thyroid, whichever is more limiting (as was done for EALs #3 and #4). If individual site analyses indicate a longer or shorter duration

for the period-in which the substantial portion of the activity is released, the longer duration should be used.

Since dose assessment is based on actual meteorology, whereas the monitor reading EALs are not, the results from these assessments may indicate that the classification is not warranted, or may indicate that a higher classification is warranted. For this reason, emergency implementing procedures should-call for the timely performance of dose assessments using actual meteorology and release information. If the results of these dose assessments are available when the classification is made (e.g., initiated at a lower classification level), the dose assessment results override the monitor reading EALs.

Contrary to the practices specified in revision 2 of this document, classification should not be delayed pending the results of these dose assessments.

Normal Effluent Release Monitor Classification Thresholds					
Monitor	GE	SAE	Alert	UE	
Auxiliary Building					
01-05 Aux. Bldg. SPING Lo Range		·			
01-07 Aux. Bldg. SPING Mid Range	1.00E+05 cpm	1.00E+04 cpm			
01-09 Aux. Bldg. SPING Hi Range	1.00E+02 cpm	1.00E+01 cpm			
R-13 Aux. Bldg. Vent Exhaust	·	·	2.61E+07 cpm	2.61E+05 cpm	
R-14 Aux. Bldg. Vent Exhaust			2.62E+07 cpm	2.62E+05 cpm	
Reactor Building					
02-05 Rx Bldg. Vent SPING Lo Range				—	
02-07 Rx Bldg. Vent SPING Mid Range	2.00E+04 cpm	2.00E+03 cpm		-	
02-09 Rx Bldg. Vent SPING Hi Range	2.00E+01 cpm	· · ·			
R-12 Containment Gas			4.41E+07 cpm	4.41E+05 cpm	
R-21 Containment Vent			4.40E+07 cpm	4.40E+05 cpm	
Liquid Radwaste		·.*			
R-18 Waste Disposal System Liquid	N/A	N/A	200 X Calculated ODCM Setpoint	2 X Calculated ODCM Setpoint	

Radiation Monitor readings for all classification levels:

Abnormal Effluent Release Monitor Classification Thresholds					
Monitor	GE	SAE	Alert	UE	
Main Steam Line (PORV)		· · ·			
R-31 'A' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr			
R-32 'A' Steamline High Range	1.77E+00 R/hr	-		· •••	
R-33 'B' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr			
R-34 'B' Steamline High Range	1.77E+00 R/hr		-	,	
Main Steam Line (SG Safety)		· · · ·		. · ·	
R-31 'A' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr		 .	
R-32 'A' Steamline High Range					
R-33 'B' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr			
R-34 'B' Steamline High Range			· · ·	, . , .	
Liquid Radwaste			•••		
R-16 Containment Fcu SW Return	N/A	N/A	3.38E+07 cpm	3.38E+05 cpm	
R-19 S/G Blowdown Liquid	N/A	N/A	2.58E+08 cpm	2.58E+06 cpm	
R-20 Aux Bldg SW Return	N/A	N/A	1.03E+07 cpm	1.03E+05 cpm	

KNPP Basis Reference(s):

- 1. USAR Section 11.2.3 Radiation Monitoring System, Rev. 18
- 2. C11620, Evaluation of Radiological Effluent Monitor Response Action Levels, Rev. 0
- 3. EPIP-RET-02B Gaseous Effluent Release Path, Radioactivity, and Release Rate Determination, Rev. T
- 4. ODCM Section 2.0 Gaseous Effluents, Rev. 8

Table C-0 **Recognition Category C Cold Shutdown/Refueling System Malfunction**

INITIATING CONDITION MATRIX

SITE AREA EMERGENCY

CS1 Loss of RPVReactor Vessel Inventory Affecting Core Decay Heat Removal Capability, Op. Modes: Cold Shutdown

GENERAL EMERGENCY

CG1 Loss of RPVReactor Vessel Inventory Affecting Fuel Clad Integrity with Containment Challenged with Irradiated Fuel in the RPVReactor Vessel. Op. Modes: Cold Shutdown. Refueling

CU2 UNPLANNED Loss of RCS Inventory with Irradiated Fuel in the RPVReactor Vessel **Op. Mode: Refueling**

NOUUE

Op. Mode: Cold Shutdown

. CU1 RCS Leakage.

- CU3 Loss of All Offsite Power to Essential Busses for Greater Than 15 Minutes. Op. Modes: Cold Shutdown, Refueling
- UNPLANNED Loss of Decay CU4 Heat Removal Capability with Irradiated Fuel in the **RPV**Reactor Vessel. OP. Modes: Cold Shutdown, Refueling
- CU5 Fuel Clad Degradation. Op. Modes: Cold Shutdown, Refueling
- CU6 UNPLANNED Loss of All Onsite or Offsite Communications Capabilities. Op. Modes: Cold Shutdown, Refueling
- CU7 UNPLANNED Loss of Required DC Power for Greater than 15 Minutes. Op. Modes: Cold Shutdown, Refuelina

- **Op. Modes: Refueling** CA3 Loss of All Offsite Power and
 - Loss of All Onsite AC Power to Essential Busses. Op. Modes: Cold Shutdown, Refueling, Defueled

ALERT

Op. Modes: Cold Shutdown

CA1 Loss of RCS Inventory.

CA2 Loss of RPVReactor Vessel

the RPVReactor Vessel.

Inventory with Irradiated Fuel in

- CA4 Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the RPVReactor Vessel. Op. Modes: Cold Shutdown. Refuelina
- CS2 Loss of RPVReactor Vessel 'Inventory Affecting Core Decay Heat Removal Capability with Irradiated Fuel in the **RPVReactor Vessel. Op. Modes: Refueling**

CU8 Inadvertent Criticality. Op Modes:, Cold Shutdown, Refueling

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SYSTEM MALFUNCTION

CU1

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

RCS Leakage.

Operating Mode Applicability: Cold Shutdown

Example-Emergency Action Levels: (CU1.1 or CU1.2)

CU1.1. Unidentified or pressure boundary leakage GREATER THAN 10 gpm.

CU1.2. Identified leakage GREATER THAN 25 gpm.

Basis:

This IC is included as a NOUE-UE because it is considered to be a potential degradation of the level of safety of the plant. Positive indications in the Control Room of Reactor Coolant System (RCS) leakage to the containment are provided by equipment that monitors:

- Charging/Letdown flow mismatch
- Containment air activity
- Containment humidity
- Containment Sump A In-leakage

[Ref. 1, 2],

The 10 gpm value for the unidentified and pressure boundary leakage was selected as it is sufficiently large to be observable via normally installed instrumentation (e.g., Pressurizer level, RCS loop level instrumentation, etc...) or reduced inventory instrumentation such as tygon level hese-indication. Lesser values must generally be determined through time-consuming surveillance tests (e.g., mass balances). The EAL for identified leakage is set at a higher value due to the lesser significance of identified leakage in comparison to unidentified or pressure boundary leakage. Prolonged loss of RCS Inventory may result in escalation to the Alert level via either IC CA1 (Loss of RCS Inventory with Irradiated Fuel in the RPVReactor Vessel) or CA4 (Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the RPVReactor Vessel).

The difference between CU1 and CU2 deals with the RCS conditions that exist between cold shutdown and refueling mode applicability. In cold shutdown the RCS will normally be intact and RCS inventory and level monitoring means such as Pressurizer level indication and makeup volume control tank levels are normally available. In the refueling mode the RCS is not intact and RPVReactor Vessel level and inventory are monitored by different means.

Expanded-basis for these assumptions is provided in Appendix-C.

KNPP Basis Reference(s):

1. Technical Specifications LCO 3.1.d, Amendment No. 165

KNPP

2. SP-36-82 Reactor Coolant System Leak Rate Check, Rev. AE

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SYSTEM MALFUNCTION

CU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Loss of RCS Inventory with Irradiated Fuel in the RPVReactor Vessel.

Operating Mode Applicability: Refueling

Example Emergency Action Levels: Emergency Action Levels: (CU2.1 or CU2.2)

- CU2.1. UNPLANNED RCS level decrease-lowering below the RPV-Reactor Vessel flange (21.5%) for >-GREATER THAN OR EQUAL TO 15 minutes
- CU2.2. a.—Loss of RPV-Reactor Vessel inventory as indicated by unexplained Containment Sump A, Containment Sump C or Liquid Waste Disposal System {site-specific}-sump-and tank-level increaserise

AND

b. RPV-Reactor Vessel level cannot be monitored

Basis:

This IC is included as an NOUE-UE because it may be a precursor of more serious conditions and, as result, is considered to be a potential degradation of the level of safety of the plant. Refueling evolutions that decrease RCS water level below the RPV-Reactor Vessel flange are carefully | planned and procedurally controlled. An UNPLANNED event that results in water level decreasing below the RPV-Reactor Vessel flange warrants declaration of an NOUE-Unusual Event due to the | reduced RCS inventory that is available to keep the core covered. The allowance of 15 minutes was chosen because it is reasonable to assume that level can be restored within this time frame using one or more of the redundant means of refill that should be available. If level cannot be restored in this time frame then it may indicate a more serious condition exists. Continued loss of RCS Inventory will result in escalation to the Alert level via either IC CA2 (Loss of RPV-Reactor Vessel Inventory with Irradiated Fuel in the RPVReactor Vessel) or CA4 (Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the RPVReactor Vessel).

The difference between CU1 and CU2 deals with the RCS conditions that exist between cold shutdown and refueling modes. In cold shutdown the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the refueling mode the RCS is not intact and RPV-Reactor Vessel level and inventory are monitored by different means.

In the refueling shutdown mode, normal means of core temperature indication and RCS level indication may not be available. Redundant means of RPVReactor Vessel level indication will normally be installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RPVReactor Vessel inventory loss was occurring by observing sump-Containment Sump A, Containment Sump C and tank Liquid Waste Disposal System level changes [Ref. 1, 2]. Sump-Sump and tank level increaserises KNPP 6-C-6 10/22/04

must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage. When CONTAINMENT SUMP A LEVEL HIGH is received, the corresponding leakrate within containment is calculated from sump pump run history. Escalation to Alert would be via either CA2 or RCS heatup via CA4.

EAL-1CU2.1 involves a decrease in RCS level below the top of the RPVReactor Vessel flange that continues for 15 minutes due to an UNPLANNED event. The level at the Reactor Vessel flange is monitored by:

- Wide Range Refueling Water Level (L9053A for channel A and L9054A for channel B) indication: Reactor Vessel/Refueling level indication: 21.5%
- RVLIS: 52.8%
- Sightglass/Tygon: 340 in. WC

[Ref. 3]-

This EAL is not applicable to decreases in flooded reactor cavity level (covered by AU2 EAL1RU2.1) until such time as the level decreases to the level of the vessel flange. For-BWRs, if RPV-level-continues to decrease and reaches the Low-Low-ECCS Actuation Setpoint then escalation to CA2 would be appropriate. For-PWRs, ilf RPVReactor Vessel level continues to decrease and reaches the Bottom ID of the RCS Loop, (Refueling Level, 0% RVLIS, 252 in. sightglass), then escalation to CA2 would be appropriate. Note that the Bottom ID of the RCS Loop Setpoint should be the level equalcorresponds to the bottom of the RPVReactor Vessel loop penetration (not the low point of the loop).

Expanded basis for these assumptions is provided in Appendix-C.

KNPP Basis Reference(s):

- 1. N-RC-36E Draining the Reactor Coolant System, Rev. AE
- 2. N-RHR-34C RHR Operation at a Reduced Inventory Condition, Rev. N
- 3. SP 36-196A Refueling Water Level Indication System Transmitter Calibration, Rev. G
- 4. SP 36-082 Reactor Coolant System Leak Rate Check, Rev. AE
- 5. ES-1.3 Transfer to Containment Sump Recirculation, Rev. W
- 6. A-MDS-30 Miscellaneous Drains and Sumps (MDS) Abnormal Operation, Rev. N

SYSTEM MALFUNCTION

CU3

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Loss of All Offsite Power to Essential Busses for Greater-ThaREATER THANn 15 Minutes.

Operating Mode Applicability:

Cold Shutdown Refueling

Example-Emergency Action Level:

CU3.1. a.-Loss of all offsite power to (site-specific) transformersBus 5 AND Bus 6 for GREATER THANgreater than 15 minutes.

AND

b.—At least (site-specific)[number-ofone emergency diesel generator is are-supplying power to emergency bussesBus 5 or Bus 6.

Basis:

Prolonged loss of AC power reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete Loss of AC Power (e.g., ., Station Blackout). Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

The 4160 VAC system is divided into six busses, two of which are Engineered Safety Function (ESF) Busses 5 and 6. The ESF busses supply power to Safety Injection (SI) pumps, Residual Heat Removal (RHR) pumps, containment heat removal equipment, etc.

Offsite power is available from the 345 kVAC and 138 kVAC systems. The 345 kVAC system is connected to the North Appleton line, the Point Beach line, the main transformers, and transformer T-10. The 345 kVAC is the normal supply to the 13.8 kVAC system through transformer T-10, which feeds the Tertiary Auxiliary Transformer (TAT). The TAT normally provides power to ESF bus 5. The TAT is not considered available to power both ESF busses in an emergency situation due to its size. As a contingency, however, it is acceptable to use the TAT to power both ESF busses when guidance for sequencing and monitoring TAT loads is available in the Control Room. The Reserve Auxiliary Transformer (RAT) and Main Auxiliary Transformer (MAT) provide backup sources to bus 5, in that order.

The 138 kVAC system is connected to the Shoto/Mishicot line, the East Krok line and transformer T-10. The 138 kVAC system is the normal supply to the Reserve Auxiliary Transformer (RAT) via the East and West substation busses. (When the 345 kVAC system is unavailable, the 138 kVAC system can supply power to transformer T-10 and the TAT.) The RAT normally provides power to ESF bus 6. The TAT and MAT provide backup sources to bus 6 in that order.

When the main turbine generator is on line, generator output supplies power to the Main Auxiliary
Transformer (MAT) and the 4160 VAC busses. When the main turbine generator is off line, the
345 kVAC system can be aligned to backfeed the MAT. Note that the time required to effect the
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backfeed is likely longer than the fifteen-minute interval associated with this EAL. If shutdown plant conditions have already established the backfeed, however, its power to the ESF busses may be considered an offsite power source.

Following a loss of power, ECA 0.0 provides guidance to restore power to ESF busses. For the purpose of classification under this EAL, offsite power sources include any of the following:

- 345 kVAC system supplying power to transformer T-10 and the TAT
- 138 kVAC system supplying power to transformer T-10 and the TAT
- 138 kVAC system supplying power to the RAT
- 345 kVAC system supplying power to the MAT on backfeed through the main transformers when the main turbine generator is off line

Plants that have the capability to cross-tie AC-power from a companion unit-may take credit for-the-redundant-power-source-in-the-associated-EAL-for this-IC. Inability-to-effect-the cross-tie within 15-minutes warrants-declaring a NOUE.

KNPP Basis Reference(s):

- 1. ECA-0.0 Loss of All AC Power, Rev. AB
- 2. USAR Figure 8.2-2, Rev. 16
- 3. USAR Section 8.2.3, Rev. 18
- 4. GNP-08.04.01 Shutdown Safety Assessment, Rev. K
CU4

Initiating Condition - NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Loss of Decay Heat Removal Capability with Irradiated Fuel in the RPVReactor Vessel.

Operating Mode Applicability:

Cold Shutdown Refueling

Example Emergency Action Levels: Emergency Action Levels: (CU4.1 or CU4.2)

- CU4.1. An UNPLANNED event results in RCS temperature exceedingGREATER THAN -the Technical-Specification cold shutdown temperature limit]200°F
- CU4.2. Loss of all RCS temperature and RPVReactor Vessel level indication for >-GREATER THAN 15 minutes.

Basis:

This IC is included as an NOUE-UE because it may be a precursor of more serious conditions and, as a result, is considered to be a potential degradation of the level of safety of the plant. In cold shutdown the ability to remove decay heat relies primarily on forced cooling flow. Operation of the systems that provide this forced cooling may be jeopardized due to the unlikely loss of electrical power or RCS inventory. Since the RCS usually remains intact in the cold shutdown mode a large inventory of water is available to keep the core covered. In cold shutdown the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the refueling mode. Entry into cold shutdown conditions may be attained within hours of operating at power. Entry into the refueling mode procedurally may not occur for typically 100 hours {site specific} or longer after the reactor has been shutdown. Thus the heatup threat | and therefore the threat to damaging the fuel clad may be lower for events that occur in the refueling mode with irradiated fuel in the RPVReactor Vessel (note that the heatup threat could be | lower for cold shutdown conditions if the entry into cold shutdown was following a refueling). In addition, the operators should be able to monitor RCS temperature and RPVReactor Vessel level | so that escalation to the alert level via CA4 or CA1 will occur if required.

During refueling the level in the RPVReactor Vessel will normally be maintained above the RPVReactor Vessel flange. Refueling evolutions that decrease water level below the RPVReactor Vessel flange are carefully planned and procedurally controlled. Loss of forced decay heat removal at reduced inventory may result in more rapid increaserises in RCS/RPVReactor Vessel temperatures depending on the time since shutdown. Escalation to the Alert level via CA4. is provided should an UNPLANNED event result in RCS temperature exceeding the Technical Specification cold shutdown temperature limit for greater than 30 minutes with CONTAINMENT CLOSURE not established.

Unlike the cold shutdown mode, normal means of core temperature indication and RCS level indication may not be available in the refueling mode. Redundant means of RPVReactor Vessel | level indication are therefore procedurally installed to assure that the ability to monitor level will not be interrupted. However, if all level and temperature indication were to be lost in either the cold KNPP 6-C-10 10/22/04 |

shutdown of refueling modes, EAL-2CU4.2 would result in declaration of an NOUE-Unusual Event if either temperature or level indication cannot be restored within 15 minutes from the loss of both means of indication. Escalation to Alert would be via CA2 based on an inventory loss or CA4 based on exceeding its temperature criteria (200°F) [Ref. 1].

Reactor Vessel water level is normally monitored using the following instruments:

- 21158 Refueling Water Level Narrow Range (L9055A)
- 21159 Refueling Water Level B Wide Range (L9054A)
- 24068 Refueling Water Level A Wide Range (L9053A)
- LI-41337 Reactor Cavity Lvl
- Local Rx Vessel Level Sightglass/Tygon (252 in. to 645 in.)
- RVLIS 41622 Train A
- RVLIS 41623 Train B

Refueling Water Level B Wide Range instrument is calibrated to provide indication from the top of active fuel (0% or 200 in. WC) to the refueling floor (68.5% or 645 in. WC). The Reactor Vessel Level Indicating System (RVLIS) is part of the Post Accident Monitoring Instrumentation. RVLIS is provided for verification and long term surveillance of core cooling and indicates from the bottom of the RCS hot leg penetration (0% or 252 in. WC) to above the high point of the Reactor Vessel head (100% or 419 in.). Procedures N-RC-36E, Draining the Reactor Coolant System, and N-RHR-34C, RHR Operation at a Reduced Inventory Condition, provide a cross-reference table of indicated water levels and sightglass readings.

[Ref. 2, 3, 4]

Several instruments are capable of providing indication of RCS temperature with respect to the Technical Specification cold shutdown temperature limit (200°F). N-0-01, Plant Startup from Cold Shutdown Condition to Hot Shutdown Condition, specifies the use of the highest of the wide range, RHR inlet, or Core Exit Thermocouples to monitor RCS temperature in the Cold Shutdown or Refueling Mode.

The Emergency Director must remain attentive to events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent. If, in the judgment of the Emergency Director, an imminent situation is at hand, the classification should be made as if the threshold has been exceeded.

Expanded-basis for these assumptions is provided in Appendix-C.

- 1. Technical Specifications, Modes Definition for Cold Shutdown, Amendment No. 172
- 2. N-RC-36E Draining the Reactor Coolant System, Rev. AE
- 3. N-RHR-34C RHR Operation at a Reduced Inventory Condition, Rev. N
- 4. SP-36-196A Refueling Water Level Indication System Transmitter Calibration, Rev. G
- 5. A-RHR-34 Abnormal Residual Heat Removal System Operation, Rev. Y
- 6. N-0-01 Plant Startup from Cold Shutdown Condition to Hot Shutdown Condition, Rev. Z
- 7. Simulator Control Room walkdownUSAR Figure 7.7-1, Plan-Vertical Panels and Consoles, Rev. 18

CU5

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Fuel Clad Degradation.

Operating Mode Applicability:

Cold Shutdown Refueling

Example Emergency Action Levels:Emergency Action Levels: (CU5.1 or CU5.2)

- CU5.1. RCS Letdown Line (R-9) radiation monitor GREATER THAN 2000 mR/hr indicating fuel clad degradation(Site-specific) radiation monitor readings indicating fuel clad-degradation greater than Technical Specification allowable limits.
- CU5.2. (Site-specific)-Ceoolant sample activity value-GREATER THAN ANY of the following indicating fuel clad degradation:
 - 1.0 µCi/gram dose equivalent lodine-131 for more than 48 hours in one continuous time interval
 - 60 μCi/gram dose equivalent lodine-131.
 - 91/Ē µCi/cc gross radioactivity

indicating fuel clad degradation greater than Technical Specification allowable limits.

Basis:

This IC is included as a NOUE because it is considered to be a potential degradation in the level of safety of the plant and a potential precursor of more serious problems. EAL #CU5.1 addresses RCS Letdown Line (R-9) site-specific radiation monitor readings that provide indication of fuel clad integrity [Ref. 4 & 5]. EAL #2CU5.2 addresses coolant samples exceeding coolant technical specifications for iodine spike [Ref. 1].

2000 mR/hr was calculated using the following:

0.01% fuel cladding defect equals 7.2E+1 mR/hr increase on R-9 [Ref. 4] 0.2745% fuel cladding defect equals 1.0 μCi/gram dose equivalent lodine-131 [Ref. 5].

Therefore 1976.4 mR/hr increase on R-9 is equal to 1.0 μ Ci/gram dose equivalent lodine-131

R-9 background is equivalent to 56 mR/hr [Ref. 4], which is added to the calculated dose rate above.

With the addition of background R-9 will read 2032.4 mR/hr (rounded to 2000 mR/hr) equal to 1.0 μ Ci/gram dose equivalent lodine-131.

Although the Technical Specification is applicable when average reactor coolant temperature is GREATER THAN 500°F, it is appropriate that this EAL be applicable in cold shutdown and refueling modes, as it indicates a potential degradation in the level of safety of the plant.

- 1. Technical Specifications LCO 3.1.c.1.A, Amendment No. 167
- 2. E-2021 Integrated Logic Diagram Radiation Monitoring, Rev. X
- 3. A-RC-36A High Reactor Coolant Activity, Rev. J
- 4. USAR Section 9, Rev. 16
- 5. CN-CRA-99-28 Rev. 1

CU6 Initiating Condition -- NOTIFICATION-OF UNUSUAL EVENT UNPLANNED Loss of All Onsite or Offsite Communications Capabilities. **Operating Mode Applicability:** Cold Shutdown Refueling Example-Emergency-Action-Levels:Emergency Action Levels: (CU6.1 or CU6.2) CU6.1. Loss of all (site-specific list)-Table C-1 onsite communications capability affecting the ability to perform routine operations. Table C-1 Onsite Communications Systems Intraplant Paging (Gai-tronics) Sound powered phones PBX telephone system Personal communications system (PCS phones) Portable radio communications system

CU6.2. Loss of all (site-specific-list)-Table C-2 offsite communications capability.

	Table C-2 Offsite Communications Systems
•	PBX telephone system
•	NRC FTS System (including ENS and HPN)
•	Dial select phones

Basis:

The purpose of this IC and its associated EALs is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks necessary for plant operations or the ability to communicate problems with offsite authorities. The loss of offsite communications ability is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72.

The availability of one method of ordinary offsite communications is sufficient to inform state and local authorities of plant problems. This EAL is intended to be used only when extraordinary means (e.g., relaying of information from radio transmissions, individuals being sent to offsite locations, etc.) are being utilized to make communications possible.

Site-specific-list-forTable C-1 onsite communications loss <u>-must--</u>encompasses the loss of all means of routine communications (e.g., commercial telephones, sound powered phone systems, page party system and radios / walkie talkies). Due to its limited capability, the emergency gaitronics is not listed in Table C-1.

Site-specific list-forTable C-2 offsite communications loss-must— encompasses the loss of all means of communications with offsite authorities. This should_includes the NRC FTS System (including Emergency Notification System - ENS and Health Physics Network - HPN)ENS, commercial telephone lines, telecopy transmissions, and dedicated phone systems.

KNPP Basis Reference(s):

1. N-COM-44-CL Communications Systems CL, Rev. K

CU7

Initiating Condition -- NOTIFICATION-OF UNUSUAL EVENT

UNPLANNED Loss of Required DC Power for Greater-thanGREATER THAN 15 Minutes.

Operating Mode Applicability:

Cold Shutdown Refueling

Example-EmergencyEmergency Action Level:

1.-a. CU7.1 -UNPLANNED Loss of Vital DC power to required DC busses based on (sitespecific) bus voltage indications LESS THAN 105 VDC on Train A <u>AND</u> Train B Safeguards DC Distribution System.

AND

b.-Failure to restore power to at least one required Train of the Safeguards DC Distribution System DC bus-within 15 minutes from the time of loss.

Basis:

The purpose of this IC and its associated EALs is to recognize a loss of DC power compromising the ability to monitor and control the removal of decay heat during Cold Shutdown or Refueling operations. This EAL is intended to be anticipatory in as much as the operating crew may not have necessary indication and control of equipment needed to respond to the loss.

UNPLANNED is included in this IC and EAL to preclude the declaration of an emergency as a result of planned maintenance activities. Routinely plants will perform maintenance on a Train related basis during shutdown periods. It is intended that the loss of the operating (operable) train is to be considered. If this loss results in the inability to maintain cold shutdown, the escalation to an Alert will be per EAL CA4 "Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the RPVReactor Vessel."

(Site-specific)LESS THAN 105 VDC bus voltage should beis based on the minimum bus voltage necessary for the operation of safety related equipment [Ref. 1, 2]. This voltage value should incorporate a margin of at least 15 minutes of operation before the onset of inability to operate those loads. This voltage is usually near the minimum voltage selected when battery sizing is performed. Typically the value for the ontire battery set is approximately 105 VDC. For a 60 cell string of batteries the cell voltage 1.75 Volts per cell. For a 58 string battery set the minimum voltage is typically 1.81 Volts per cell. The loss of a safeguards DC train consists of a combination of loss of power to specified DC distribution panels. These panels include: BRA (BRB)-102, and BRA (BRB)-104. In all cases, BRA (BRB)-102 panel indicating less than 105 VDC constitutes a loss of the associated DC distribution train. However, a loss of power to the BRA (BRB) -104 panel, which does not have voltage indication, also constitutes a loss of the associated DC distribution train.

125 VDC safeguard main distribution cabinets (BRA-102 and BRB-102) supply two safeguard subdistribution cabinets (BRA-104 and BRB-104) and provide for connection of safeguard batteries (BRA-101 and BRB-101) to their associated battery chargers (BRA-108 and BRB-108). The combination of low voltages on the specified distribution cabinets results in a total loss of vital 125 VDC power. The 125 VDC safeguards system powers circuit breaker control, Control Room alarms, Control Room controls, diesel generator controls, and the Reactor Protection System. It is also the standby power source to the AC inverters. BRA-102 and BRB-102 voltage is displayed on Control Room indicators 4494001 and 4494002, respectively. Undervoltage is alarmed on Control Room Sequence of Event Recorder (SER) points 490011196 and 490011200 and annunciators 447101A and 47101B, respectively.

Each of the 125 VDC batteries has been sized to carry the expected shutdown loads following a reactor trip and a loss of all AC power for a period of eight hours without battery terminal voltage falling below 105 VDC. This voltage value therefore incorporates a margin of at least 15 minutes of operation before the onset of inability to operate loads. The nominal battery cell voltage is 2.20 VDC. Low battery terminal voltage activates Control Room SER point 49001832 and annunciator 47105A. The batteries are located in Battery Rooms A and B on the Turbine Building Mezzanine Floor (606 ft el.).

- 1. USAR 8.2.2, Rev. 18
- 2. USAR 8.2.3, Rev. 18
- 3. Technical Specifications 3.7, Amendment No. 122
- 4. A-EDC-38, Abnormal DC Supply and Distribution System, Rev. Z
- 5. Plant Drawing 237127A-E233, Rev. AQ

CU8

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Inadvertent Criticality.

Operating Mode Applicability:

Cold Shutdown Refueling

Example-Emergency-Action Levels:Emergency Action Level:(1-or-2)

1. An UNPLANNED extended positive period observed on nuclear-instrumentation

CU8.21. An UNPLANNED sustained positive startup rate observed on nuclear instrumentation.

Basis:

This IC addresses criticality events that occur in Cold Shutdown or Refueling modes (NUREG NUREG 1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States) such as fuel mis-loading events and inadvertent dilution events. This IC indicates a potential degradation of the level of safety of the plant, warranting an NOUE-Unusual Event | classification. This IC excludes inadvertent criticalities that occur during planned reactivity changes associated with reactor startups (e.g., criticality earlier than estimated) which are addressed in the companion IC SU8.

This condition can be identified using period-monitors/startup rate monitormeters. The terms "extended" and "sustained" are-is used in order to allow exclusion of expected short term positive periods/startup rates from planned fuel bundle or control rod movements during core alteration-for PWRs and BWRs. These short term positive periods/startup rates are the result of the increaserise in neutron population due to subcritical multiplication.

This condition can be identified using startup rate meters (NI-31D/32D - Source Range Startup Rate).

Escalation would be by Emergency Director Judgment.

KNPP Basis Reference(s):

1. N-0-02 Plant Startup from Hot Shutdown to 35% Power, Rev. AN

CA1

Initiating Condition -- ALERT

Loss of RCS Inventory.

Operating Mode Applicability: Cold Shutdown

Example-Emergency Action Levels:Emergency Action Levels: (CA1.1 or CA1.2)

CA1.1. Loss of RCS inventory as indicated by one or more of the following:

- Wide Range Refueling Water Level LESS THAN RPVReactor Vessel level less thanLESS THAN-8%
- RVLIS at 0%
- Sightglass water level LESS THAN 252 in

. {site-specific-level}.

(low-low ECCS actuation setpoint) (BWR) (bottom ID of the RCS loop) (PWR)

CA1.2. a.—Loss of RCS inventory as indicated by unexplained level rise in any of the following:
Containment Sump A

- Containment Sump C
- Liquid Waste Disposal System

{site-specific}-sump-and-tank-level-increase

AND

b.—RCS level cannot be monitored for ≻GREATER THAN 15 minutes

Basis:

These example-EALs serve as precursors to a loss of ability to adequately cool the fuel. The magnitude of this loss of water indicates that makeup systems have not been effective and may not be capable of preventing further RPVReactor Vessel level decrease and potential core uncovery. The 8% Refueling Level (0% RVLIS, 252 in. sightglass) threshold corresponds to the bottom inside diameter of the RCS hot leg [Ref. 2]. This condition will result in a minimum classification of Alert. The BWR Low-Low ECCS Actuation Setpoint was chosen because it is a standard setpoint at which all available injection systems automatically start. The PWR-Bottom ID of the RCS Loop-hot leg Setpoint was chosen because at this level remote RCS level indication may be lost and loss of suction to decay heat removal systems has occurred. The Bottom ID of the RCS hot legLoop Setpoint should be the level equal to the bottom of the RPVReactor Vessel loop penetration (not the low point of the loop). The inability to restore and maintain level after reaching this setpoint would therefore be indicative of a failure of the RCS barrier.

The elevation of the bottom of the RCS hot leg can be monitored by:

KNPP

- Wide Range Refueling Water Level (L9053A for channel A and L9054A for channel B) indication:Reactor-Vessel/Refueling level-indication: 7.95% rounded to 8% for readability
- RVLIS: 0%
- Sightglass/Tygon: 252 in. WC

Reactor Vessel water level is normally monitored using the following instruments:

- 21158 Refueling Water Level Narrow Range (L9055A)
- 21159 Refueling Water Level B Wide Range (L9054A)
- 24068 Refueling Water Level A Wide Range (L9053A)
- LI-41337 Reactor Cavity Lvl
- Local Rx Vessel Level Sightglass/Tygon (252 in. to 645 in.)
- RVLIS 41622 Train A
- RVLIS 41623

RVLIS-41623-Train-B

[Ref 2]

[Ref. 2].

In cold shutdown the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the refueling mode. Entry into cold shutdown conditions may be attained within hours of operating at power or hours after refueling is completed. Entry into the refueling mode procedurally may not occur for typically 100 hours {site-specific}-or longer after the reactor has been shutdown. Thus the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the refueling mode with irradiated fuel in the RPVReactor Vessel (note that the heatup threat could be lower for cold shutdown conditions if the entry into cold shutdown was following a refueling). The above forms the basis for needing both a cold shutdown specific IC (CA1) and a refueling specific IC (CA2).

In the cold shutdown mode, if the RCS is pressurized, then the refueling water level indication (including sightglass / tygon) will not be in service. In this case, RVLIS will serve as the means for declaration of this EAL.normal-RCS-level-and-RPVReactor-Vessel-level-instrumentation-systems will normally be available. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RPVReactor Vessel inventory loss was occurring by observing Containment Sump A, Containment Sump C and Liquid Waste Disposal System level changes [Ref. 1, 5]. Each time annunciator CONTAINMENT SUMP A LEVEL HIGH sump-and-tank-level-changes.- is received, the corresponding leakrate within containment is calculated from sump pump run history. Sump and tank level increaserises must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage [Ref. 1, 2, 4]. The 15-minute duration for the loss of level indication was chosen because it is half of the CS1 Site Area Emergency EAL duration. The 15-minute duration allows CA1 to be an effective precursor to CS1. Significant fuel damage is not expected to occur until the core has been uncovered for greater than 1 hour per the analysis referenced in the CS1 basis. Therefore this EAL meets the definition for an Alert emergency.

The difference between CA1 and CA2 deals with the RCS conditions that exist between cold shutdown and refueling mode applicability. In cold shutdown the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the refueling mode the RCS is not intact and RPVReactor Vessel level and inventory are monitored by different means.

If RPVReactor Vessel level continues to decrease then escalation to Site Area Emergency will be via CS1 (Loss of Inventory Affecting Core Decay Heat Removal Capability with Irradiated Fuel in the RPVReactor Vessel).

Expanded basis for these assumptions is provided in Appendix C.

- 1. N-RC-36E Draining the Reactor Coolant System, Rev. AE
- 2. SP-36-196A Refueling Water Level Indication System Transmitter Calibration, Rev. G
- 3. SP-36-082 Reactor Coolant System Leak Rate Check, Rev. AE
- 4. ES-1.3 Transfer to Containment Sump Recirculation, Rev. W
- 5. N-RHR-34C RHR Operation at a Reduced Inventory Condition, Rev. N

CA2

Initiating Condition -- ALERT

Loss of RPVReactor Vessel Inventory with Irradiated Fuel in the RPVReactor Vessel.

Operating Mode Applicability: Refueling

Example Emergency Action Levels:Emergency Action Levels: (CA2.1 or CA2.2)

- CA2.1. Loss of RCS inventory as indicated by Wide Range Refueling Water Level LESS THAN 8% (0% RVLIS, 252 in. sightglass) Loss of RPVReactor Vessel inventory as indicated by RPVReactor Vessel level less than LESS THAN.
- CA2.2. a.—Loss of RPVReactor Vessel inventory as indicated by unexplained level rise in any of the following:
 - Containment Sump A
 - Containment Sump C
 - Liquid Waste Disposal System

{site-specific}-sump-and-tank-level-increase

AND

b. RPVReactor Vessel level cannot be monitored for >GREATER THAN 15 minutes

Basis:

These example EALs serve as precursors to a loss of heat removal. The magnitude of this loss of water indicates that makeup systems have not been effective and may not be capable of preventing further RPVReactor Vessel level decrease and potential core uncovery. The 8% Refueling Level (0% RVLIS, 252 in. sightglass) threshold corresponds to the bottom inside diameter of the RCS loop [Ref. 2]. This condition will result in a minimum classification of Alert. The BWR Low Low ECCS Actuation Setpoint was chosen because it is a standard setpoint at which all available injection systems automatically start. The Bottom ID of the RCS Loop hot leg Setpoint was chosen because at this level remote RCS level indication may be lost and loss of suction to decay heat removal systems may occur. The Bottom ID of the RCS hot legLoop Setpoint should beis the level equal to the bottom of the RPVReactor Vessel loop penetration (not the low point of the loop). The inability to restore and maintain level after reaching this setpoint would therefore be indicative of a failure of the RCS barrier.

The elevation of the bottom of the RCS hot leg can be monitored by:

- Wide Range Refueling Water Level (L9053A for channel A and L9054A for channel B) indicationReactor Vessel/Refueling level indication: 7.95% rounded to 8% for readability
- RVLIS: 0%

• Sightglass/Tygon: 252 in. WC

Reactor Vessel water level is normally monitored using the following instruments:

- 21158 Refueling Water Level Narrow Range (L9055A)
- 21159 Refueling Water Level B Wide Range (L9054A)
- 24068 Refueling Water Level A Wide Range (L9053A)
- LI-41337 Reactor Cavity Lvl
- Local Rx Vessel Level Sightglass/Tygon (252 in. to 645 in.)
- RVLIS 41622 Train A
- RVLIS 41623 Train B

[Ref. 2]

In cold shutdown the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the refueling mode. Entry into cold shutdown conditions may be attained within hours of operating at power or hours after refueling is completed. Entry into the refueling mode procedurally may not occur for typically 100 hours {site-specific}-or longer after the reactor has been shutdown. Thus the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the refueling mode with irradiated fuel in the RPVReactor Vessel (note that the heatup threat could be lower for cold shutdown conditions if the entry into cold shutdown was following a refueling). The above forms the basis for needing both a cold shutdown specific IC (CA1) and a refueling specific IC (CA2).

In the refueling mode, normal means of RPVReactor Vessel level indication may not be available. Redundant means of RPVReactor Vessel level indication will be normally installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RPVReactor Vessel inventory loss was occurring by observing Containment Sump A, Containment Sump C and Liquid Waste Disposal System level changes [Ref. 1, 5]. Each time annunciator CONTAINMENT SUMP A LEVEL HIGH sump-and-tank-level changes.-is received, the corresponding leakrate within containment is calculated from sump pump run history. [Ref. 1, 2, 3] Sump and tank level increaserises must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage. The 15-minute duration for the loss of level indication was chosen because it is half of the CS2 Site Area Emergency EAL duration. The 15-minute duration allows CA2 to be an effective precursor to CS2. Significant fuel damage is not expected to occur until the core has been uncovered for greater than 1 hour per the analysis referenced in the CS2 basis. Therefore this EAL meets the definition for an Alert.

The difference between CA1 and CA2 deals with the RCS conditions that exist between cold shutdown and refueling mode applicability. In cold shutdown the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the refueling mode the RCS is not intact and RPVReactor Vessel level and inventory are monitored by different means.

If RPVReactor Vessel level continues to decrease then escalation to Site Area Emergency will be via CS1 (Loss of Inventory Affecting Core Decay Heat Removal Capability with Irradiated Fuel in the RPVReactor Vessel).

Expanded basis for these assumptions is provided in Appendix C.

- 1. N-RC-36E Draining the Reactor Coolant System, Rev. AE
- 2. SP-36-196A Refueling Water Level Indication System Transmitter Calibration, Rev. G
- 3. SP-36-082 Reactor Coolant System Leak Rate Check, Rev. AE
- 4. ES-1.3 Transfer to Containment Sump Recirculation, Rev. W
- 5. N- RHR-34C RHR Operation at a Reduced Inventory Condition, Rev. N

CA3

Initiating Condition – ALERT

Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses.

Operating Mode Applicability:

Cold Shutdown Refueling Defueled

Example-EmergencyEmergencyAction Level:

CA3.1. a.-Loss of ALL offsite-power to Bus 5 AND Bus 6 for GREATER THAN 15 minutes.

power-to (site-specific) transformers.

AND

b.-Failure of (site-specific) emergency generators to supply power to

AND

Basis:

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal, Spent Fuel Heat Removal and the Ultimate Heat-SinkService Water System. When in cold shutdown, refueling, or defueled mode the event can be classified as an Alert, because of the significantly reduced decay heat, lower temperature and pressure, increasing the time to restore one of the emergency busses, relative to that specified for the Site Area Emergency EAL. Escalating to Site Area Emergency-IC-SS1, if appropriate, is by Abnormal Rad Levels / Radiological Effluent, or Emergency Director Judgment ICs. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

This EAL is indicated by the loss of all offsite and onsite AC power to the 4160 VAC ESF busses. Offsite power sources include the 345 kVAC system or 138 kVAC system to the Tertiary Auxiliary Transformer (TAT), the 345 kVAC system or 138 kVAC system to the Reserve Auxiliary Transformer (RAT), and the 345 kVAC system to the Main Auxiliary Transformer (MAT) on backfeed through the main transformers. Note that the time required to effect a backfeed to the MAT is likely longer than the fifteen-minute interval. If off-normalshutdown plant conditions have already established the backfeed, however, its power to the ESF busses may be considered an offsite power source. Onsite power sources consist of Diesel Generator A to Bus 5 and Diesel Generator-B to Bus 6. [Ref. 1, 2, 3, 4, 5].

Consideration should be given to operable loads necessary to remove decay heat or provide Reactor Vessel makeup capability when evaluating loss of AC power to essential busses. Even though an essential bus may be energized, if necessary loads (i.e., loads that if lost would inhibit decay heat removal capability or Reactor Vessel makeup capability) are not operable on the energized bus then the bus should not be considered operable.

KNPP

- 1. ECA-0.0 Loss of All AC Power, Rev. AB
- 2. USAR Figure 8.2-2, Rev. 16
- 3. USAR Section 8.2.3, Rev. 18
- 4. USAR Section 8.2.4, Rev. 18
- 5. GNP-08.04.01 Shutdown Safety Assessment, Rev. K

Initiating Condition – ALERT

Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the RPVReactor Vessel.

Operating Mode Applicability:

Cold Shutdown Refueling

Example-Emergency-Action Levels:Emergency Action Levels: (EAL CA4.1 or CA4.2 or CA4.3)

CA4.1. With CONTAINMENT CLOSURE NOT established

and-AND

RCS integrity <u>not-</u>NOT established,-a AAn UNPLANNED event results in RCS temperature <u>exceeding</u>GREATER THAN the <u>Technical Specification cold shutdown temperature limit</u>200°F.

CA4.2. With CONTAINMENT CLOSURE established-and

AND

RCS integrity <u>not</u>-NOT established <u>or</u>-OR Wide Range Refueling Water Level LESS THAN Refueling Level LESS THAN OR EQUAL-TO-17.0%RCS inventory reduced, A

an UNPLANNED event results in RCS temperature exceedingGREATER THAN the Technical Specification cold-shutdown temperature limit200°F for greater thanGREATER THAN 20 minutes*¹.

⁴*NoteNOTE: If RHR system is in operation within this time frame and RCS temperature is being reduced then this EAL is not applicable.

- CA4.3. An UNPLANNED event results in RCS temperature exceedingGREATER THAN the Technical Specification cold shutdown temperature limit200°F for GREATER THANgreater than 60 minutes*.⁴ or
 - OR

Rresults in an RCS pressure increase of GREATER THANgreater-than {site-specific}10 psig.

¹*NOTE Note: If RHR system is in operation within this time frame and RCS temperature is being reduced then this EAL is not applicable.

CA4

⁴Note: if an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced then this EAL is not applicable.

Basis:

EAL-1CA4.1 addresses complete loss of functions required for core cooling during refueling and cold shutdown modes when neither CONTAINMENT CLOSURE nor RCS integrity are established. RCS integrity is in place when the RCS pressure boundary is in its normal condition for the cold shutdown mode of operation (e.g., reactor head on with studs tensioned, S/G and PRZR manways installed, PRZR safety valves installed, no freeze seals or nozzle dams). No delay time is allowed for EAL1-CA4.1 because the evaporated reactor coolant that may be released into the Containment during this heatup condition could also be directly released to the environment.

EAL-2CA4.2 addresses the complete loss of functions required for core cooling for >GREATER THAN 20 minutes during refueling and cold shutdown modes when CONTAINMENT CLOSURE is established but RCS integrity is not established or RCS inventory is reduced (e.g., mid loop operation in PWRs). As in EAL-1CA4.1, RCS integrity should be assumed to be in place when the RCS pressure boundary is in its normal condition for the cold shutdown mode of operation (e.g., reactor head on with studs tensioned, S/G and PRZR man-ways installed, PRZR safety valves installed, no freeze seals or nozzle dams). (e.g., no freeze seals or nozzle dams). The allowed 20 minute time frame was included to allow operator action to restore the heat removal function, if possible. The allowed time frame is consistent with the guidance provided by Generic Letter 88-17, "Loss of Decay Heat Removal" (discussed later in this basis) and is believed to be conservative given that a low pressure Containment barrier to fission product release is established. The Note 4-for CA4.2 indicates that EAL-2CA4.2 is not applicable if actions are successful in restoring an RCS heat removal system to operation and RCS temperature is being reduced within the 20 minute time frame. Wide Range Refueling Water Level is measured by L9053A for channel A and L9054A for channel B.

EAL-3CA4.3 addresses complete loss of functions required for core cooling for >GREATER THAN 60 minutes during refueling and cold shutdown modes when RCS integrity is established. As in EAL-1CA4.1 and 2CA4.2, RCS integrity should be considered to be in place when the RCS pressure boundary is in its normal condition for the cold shutdown mode of operation (e.g., reactor head on with studs tensioned, S/G and PRZR man-ways installed, PRZR safety valves installed, no freeze seals or nozzle dams). The status of CONTAINMENT CLOSURE in this EAL is immaterial given that the RCS is providing a high pressure barrier to fission product release to the environment. The 60 minute time frame should allow sufficient time to restore cooling without there being a substantial degradation in plant safety. The {site-specific}10 psig pressure increaserise covers situations where, due to high decay heat loads, the time provided to restore temperature control, should be less than 60 minutes. RCS Pressure Narrow Range instrument PI-420 and PPCS/SPDS point P0420A are capable of measuring pressure to less than 10 psig. [Ref. 3, 27]. The Note for CA4.3The-RCS-pressure-setpoint-chosen-should-be-10-psig-or-the-lowest pressure-that-the-site-can-read-on-installed-Control-Board-instrumentation-that-is-equal-to-or greater than 10 psig. - Note 1-indicates that EAL-3CA4.3 is not applicable if actions are successful in restoring an-RCS-heat-removal the RHR system to operation and RCS temperature is being reduced within the 60 minute time frame assuming that the RCS pressure increaserise has remained less than the site specific pressure value.

Several instruments are capable of providing indication of RCS temperature with respect to the Technical Specification cold shutdown temperature limit (200°F). N-0-01, Plant Startup from Cold Shutdown Condition to Hot Shutdown Condition, specifies the use of the highest of the wide range, RHR inlet, or Core Exit Thermocouples to monitor RCS temperature in the Cold Shutdown or Refueling Mode.

[Ref. 2, 3,] KNPP Escalation to Site Area Emergency would be via CS1 or CS2 should boiling result in significant RPVReactor Vessel level loss leading to core uncovery.

For PWRs, tThis-IC and its associated EALs are based on concerns raised by Generic Letter 88-17, "Loss of Decay Heat-Removal." A number of phenomena such as pressurization, vortexing, steam-generator U-tube draining, RCS level differences when operating at a mid-loop condition, decay heat-removal system design, and level instrumentation problems can lead to conditions where decay heat removal is lost and core uncovery can occur. NRC analyses show that sequences that can cause core uncovery in 15 to 20 minutes and severe core damage within an hour after decay heat removal is lost.

A loss of Technical Specification components alone is not intended to constitute an Alert. The same is true of a momentary UNPLANNED excursion above 200 degrees _F when the heat | removal function is available.

The Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent. If, in the judgment of the Emergency Director, an imminent situation is at hand, the classification should be made as if the threshold has been exceeded.



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Expanded-basis-for-these-assumptions-is-provided in Appendix-C.

- 1. Technical Specifications, Modes Definition for Cold Shutdown, Amendment No. 172
- 2. A-RHR-34 Abnormal Residual Heat Removal System Operation, Rev. Y
- 3. N-0-01 Plant Startup from Cold Shutdown Condition to Hot Shutdown Condition, Rev. Z Simulator Control-Room walkdown
- 4. N-CCI-56A Open Containment Boundary Tracking, Rev. F
- 5. GNP-08.04.01 Shutdown Safety Assessment, Rev. K
- 6. N-O-05 Plant Cooldown from Hot Shutdown to Cold Shutdown Condition 1, Rev. AY
- 7. N-RC-36E Draining the Reactor Coolant System, Rev. AE

	_			CS1	
Initiati	ing	Condition SITE AREA EMER	RGENCY		
Lo: Ca	ss c ipat	of RPVReactor Vessel Inventory Affe	cting Core Decay Heat Removal		
Operat	ting	g Mode Applicability: C	old Shutdown		
Examp or CS1.	ole 2)	Emergency Action Levels:Em	ergency Action Levels:	(CS1.1	
CS1.1.	Wi	th CONTAINMENT CLOSURE <u>not-NOT</u>	established:		
	a.	RPVReactor Vessel inventory as indicated by Wide Range Refueling Water LevelRPVReactor Vessel level less than LESS THAN 7%-}			
	OR				
	 BREVReactor Vessel level cannot be monitored for >-GREATER THAN 30 minute with a loss of RPVReactor Vessel inventory as indicated by unexplained level rise any of the following: {site-specific} sump and ank level increase Containment Sump A 				
		♣● Containment Sump C			
		♣● Liquid Waste Disposal System			
CS1.2.	With CONTAINMENT CLOSURE established:				
	a.	RPVReactor Vessel inventory as indica RPVReactor Vessel-Llevel less than EC	ited by Wide Range Refueling Water QUAL TO 0% -Refueling Level		
	OR				
	b.	b. RPVReactor Vessel level can minutes with a loss of RPVReactor Ves	not be monitored for ➤-GREATER TH ssel inventory as indicated by either:	IAN 30	
		 5.• Unexplained Containment Sump A, Disposal System level rise {site-specific} sump and tank-level incre Erratic Source Range Monitor Indic 	Containment Sump C, OR Liquid W ease ation	aste	
Basis:					

Under the conditions specified by this IC, continued decrease in RPVReactor Vessel level is indicative of a loss of inventory control. Inventory loss may be due to an RPVReactor Vessel breach, pressure boundary leakage, or continued boiling in the RPVReactor Vessel. KNPP 6-C-33 10/22/04

In cold shutdown the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the refueling mode. Entry into cold shutdown conditions may be attained within hours of operating at power or hours after refueling is completed. Entry into the refueling mode procedurally may not occur for typically 100 hours {site-specific}-or longer after the reactor has been shutdown. Thus the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the refueling mode with irradiated fuel in the RPVReactor Vessel (note that the heatup threat could be lower for cold shutdown conditions if the entry into cold shutdown was following a refueling). The above forms the basis for needing both a cold shutdown specific IC (CS1) and a refueling specific IC (CS2).

In the cold shutdown mode, normal RCS level and reactor vessel level indication systems (RVLIS) will normally be available. If the RCS is pressurized, then the Wide Range Refueling Water Level indication will not be in service. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RPVReactor Vessel inventory loss was occurring by observing sump and tank level changes. RVLIS indication is considered lost if leakage reduces RCS level below its indicating range. Each time annunciator CONTAINMENT SUMP A LEVEL HIGH is received, the corresponding leakrate within containment is calculated from sump pump run history. [Ref. 1, 5] Sump and tank level increases must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage.

These example EALs are based on concerns raised by Generic Letter 88-17, Loss of Decay Heat Removal, SECY 91-283, Evaluation of Shutdown and Low Power Risk Issues, NUREG-1449, Shutdown and Low Power Operation at Commercial Nuclear Power Plants in the United States, and, NUMARC 91-06, Guidelines for Industry Actions to Assess Shutdown Management. A number of variables, (BWRs – e.g., such as initial vessel level, or shutdown heat removal system design) (PWRs – e.g., mid-loop, reduced level/flange level, head in place, or cavity flooded, RCS venting strategy, decay heat removal system design, vortexing pre-disposition, steam generator Utube draining) can have a significant impact on heat removal capability challenging the fuel clad barrier. Analysis in the above references indicates that core damage may occur within an hour following continued core uncovery therefore, conservatively, 30-minutes was chosen.

When Reactor Vessel water level drops to 616 ft 4 in. el., the level associated without CONTAINMENT CLOSURE established, level is six inches below the bottom of the RCS hot leg vessel penetration. This level can be monitored by Wide Range Refueling Water Level (L9053A for channel A and L9054A for channel B) indication at 7.1% (rounded to 7% for readability). The following indications are off scale low and as such are not available:

- RVLIS: <0%
- Sightglass/Tygon level equal to 246 in. WC.

When Reactor Vessel water level drops to 612 ft 4 in. el., the level associated with CONTAINMENT CLOSURE established, core uncovery is about to occur. Wide Range Refueling Water Level indication of 0% is approximately the top of active fuel.

[Ref. 1, 2]

If a PWRs RVLIS is unable to distinguish 6" below the bottom ID of the RCS loop penetration, then the first observable point below the bottom ID of the loop should be chosen as the setpoint. If a RVLIS is not available such that the PWR EAL setpoint cannot be determined, then EAL 1.b should be used to determine if the IC has been met.

The 30-minute duration allowed when CONTAINMENT CLOSURE is established allows sufficient time for actions to be performed to recover needed cooling equipment and is considered to be conservative given that level is being monitored via CS1 and CS2. For PWRs the Eeffluent release is not expected with closure established.

For BWRs releases would be monitored and escalation would be via Category A ICs if required.

Thus, for both PWR and BWR declaration of a Site Area Emergency is warranted under the conditions specified by the IC. Escalation to a General Emergency is via CG1 (Loss of RPVReactor Vessel Inventory Affecting Fuel Clad Integrity with Containment Challenged with Irradiated Fuel in the RPVReactor Vessel) or radiological effluent IC AG1 (Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 1000 mRem TEDE or 5000 mRem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology).

Expanded basis for these assumptions is provided in Appendix-C. KNPP Basis Reference(s):

- 1. N-RC-36E Draining the Reactor Coolant System, Rev. AE
- 2. SP-36-196A Refueling Water Level Indication System Transmitter Calibration, Rev. G
- 3. N-CCI-56A Open Containment Boundary Tracking, Rev. F
- 4. GNP-08.04.01 Shutdown Safety Assessment, Rev. K
- 5. SP-36-082 Reactor Coolant System Leak Rate Check, Rev. AE
- 6. ES-1.3 Transfer to Containment Sump Recirculation, Rev. W
- 7. N-0-02 Plant Startup from Hot Shutdown to 35% Power, Rev. AN
- 8. A-MDS-30 Miscellaneous Drains and Sumps (MDS) Abnormal Operation, Rev. N

CS2

Initiating Condition - SITE AREA EMERGENCY

Loss of RPVReactor Vessel Inventory Affecting Core Decay Heat Removal Capability with Irradiated Fuel in the RPVReactor Vessel.

Operating Mode Applicability: Refueling

Example Emergency Action Levels: Emergency Action Levels: (CS2.1 or CS2.2)

CS2.1. With CONTAINMENT CLOSURE -NOT established:

a. RPVReactor Vessel inventory as indicated by Wide Range Refueling Water Level LESS THAN 7% Reactor-Vessel-inventory-as-indicated-by-RPVReactor-Vessel-level less thanLESS THAN {site-specific level}

OR

- b. RPVReactor Vessel level cannot be monitored with Indication of core uncovery as evidenced by one or more of the following:
 - Containment High-RangeArea Radiation Monitor (R-2) reading GREATER
 THAN 100 mRem/hr
- CS2.2. With CONTAINMENT CLOSURE established
 - a. RPVReactor Vessel inventory as indicated by Wide Range Refueling Water Level RPVReactor Vessel level less than EQUAL TO 0%-Refueling LevelTOAF

OR

- b. RPVReactor Vessel level cannot be monitored with Indication of core uncovery as evidenced by one or more of the following:
 - Containment High-RangeArea Radiation Monitor (R-2) reading >-GREATER THAN {site-specific} setpoint100 mRem/hr
 - Erratic Source Range Monitor Indication
 Other {site-specific} indications

Basis:

Under the conditions specified by this IC, continued decrease in RPVReactor Vessel level is indicative of a loss of inventory control. Inventory loss may be due to an RPVReactor Vessel breach or continued boiling in the RPVReactor Vessel. Since BWRs have RCS penetrations below the setpoint, continued level decrease may be indicative of pressure boundary leakage.

In cold shutdown the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the refueling mode Entry into cold shutdown conditions may be attained within hours of operating at power or hours after refueling is completed. Entry into the refueling mode procedurally may not occur for typically 100 hours {site-specific}-or longer after the reactor has been shutdown. Thus the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the refueling mode with irradiated fuel in the RPVReactor Vessel (note that the heatup threat could be lower for cold shutdown conditions if the entry into cold shutdown was following a refueling). The above forms the basis for needing both a cold shutdown specific IC (CS1) and a refueling specific IC (CS2).

These-example-EALs are based on concerns raised by Generic Letter 88-17, Loss of Decay Heat Removal, SECY-91-283, Evaluation of Shutdown and Low Power Risk Issues, NUREG-1449, Shutdown and Low Power Operation at Commercial Nuclear Power Plants in the United States, and, NUMARC NUMARC 91-06, Guidelines for Industry Actions to Assess Shutdown Management. A number of variables, (BWRs - e.g., such as initial vessel level, or shutdown heat removal system design) (PWRs - (e.g., mid-loop, reduced level/flange-level, head in place, or cavity flooded, RCS venting strategy, decay heat removal system design, vortexing predisposition, steam-generator U--tube-draining) can have a significant impact on heat removal capability challenging the fuel clad barrier. Analysis in the above references indicates that core damage may occur within an hour following continued core uncovery therefore, conservatively, 30 minutes was chosen.

When Reactor Vessel water level drops to 616 ft 4 in. el., the level associated without CONTAINMENT CLOSURE established, level is six inches below the bottom of the RCS hot leg vessel penetration. This level can be monitored by Wide Range Refueling Water Level (L9053A for channel A and L9054A for channel B) indication at 7.1% (rounded to 7% for readability). The following indications are off scale low and as such are not available:

- RVLIS: <0%
- Sightglass/Tygon level equal to 246 in. WC.

When Reactor Vessel water level drops to 612 ft 4 in. el., the level associated with CONTAINMENT CLOSURE established, core uncovery is about to occur. Wide Range Refueling Water Level indication of 0% is approximately the top of active fuel.

[Ref. 1, 2]

If a PWRs RVLIS is unable to distinguish 6"-below the bottom ID of the RCS loop penetration, then the first observable point-below the bottom ID of the loop should be chosen as the setpoint. If a RVLIS is not-available such that the PWR-EAL setpoint cannot be determined, then EAL 1.b should be used to determine if the IC has been met.

In Refuel mode at the levels of interest, RVLIS is unavailable but alternate means of level indication (refueling level) are installed to assure that the ability to monitor level will not be interrupted. If all means of level monitoring are not available, however, the Reactor Vessel inventory loss may be detected by the following indirect methods:

• As water level in the Reactor Vessel lowers, the dose rate above the core will rise. The dose rate due to this core shine should result in an unplanned alarm on the Containment Area Monitor (R-2). R-2 is used instead of the high range containment monitors because if a small amount of fuel was uncovered, the location of the high range monitors would preclude them reading on scale. Therefore the alarm setpoint of R-2 was selected to indicate a rise in containment radiation resulting from the conditions of this EAL [Ref. 8]}.

 Post-TMI studies indicated that the installed nuclear instrumentation will operate erratically when the core is uncovered and Source Range Monitors (SRM) N-31B and N-32B can be used as a tool for making such determinations. SRM count rate can also be indicated in the Control Room by the audible SRM count rate monitor.

As water-level in the RPV-lowers, the dose-rate above the core-will increase. The dose-rate due to this core shine-should result in-up-scaled Containment-High-Range-Monitor indication and possible alarm. EAL 1.b and EAL 2.b calculations should be performed to conservatively estimate a site-specific dose-rate-setpoint-indicative of core-uncovery (ic., level at TOAF). Additionally, post-TMI studies-indicated-that-the-installed-nuclear-instrumentation will-operate-erratically when the core is uncovered and that this should be used as a tool for making such determinations.

For EAL-2-in-the-refueling-mode, normal-means-of-RPV-level-indication-may-not-be-available. Redundant-means-of-RPV-level-indication-will-be-normally-installed-(including-the-ability-to-monitor level visually) to assure that the ability to monitor level-will not be interrupted.

For PWRs the eEffluent release is not expected with closure CONTAINMENT CLOSURE established.

For BWRs releases would be monitored and escalation would be via Category A ICs if required.

Thus, for both PWR and BWR declaration of a Site Area Emergency is warranted under the conditions specified by the IC. Escalation to a General Emergency is via CG1 (Loss of RPVReactor Vessel Inventory Affecting Fuel Clad Integrity with Containment Challenged with Irradiated Fuel in the RPVReactor Vessel) or radiological effluent IC AG1 (Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 1000 mRem TEDE or 5000 mRem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology).

Expanded basis for these assumptions is provided in Appendix C.

- 1. N-RC-36E Draining the Reactor Coolant System, Rev. AE
- 2. SP-36-196A Refueling Water Level Indication System Transmitter Calibration, Rev. G
- 3. N-CCI-56A Open Containment Boundary Tracking, Rev. F
- 4. GNP-08.04.01 Shutdown Safety Assessment, Rev. K
- 5. SP-36-082 Reactor Coolant System Leak Rate Check, Rev. AE
- 6. ES-1.3 Transfer to Containment Sump Recirculation, Rev. W
- 7. N-0-02 Plant Startup from Hot Shutdown to 35% Power, Rev. AN
- 8. C11622, Determination of R-2 Reading with Loss of Inventory, Rev. 0

CG1

Initiating Condition -- GENERAL EMERGENCY

Loss of RPVReactor Vessel Inventory Affecting Fuel Clad Integrity with Containment Challenged with Irradiated Fuel in the RPVReactor Vessel.

Operating Mode Applicability:

Cold Shutdown Refueling

Example-EmergencyEmergency Action Level: -(1 and 2 and 3)

CG1.1. Loss of RPV-Reactor Vessel inventory as indicated by unexplained level rise in Containment Sump A, Containment Sump C <u>OR</u> Liquid Waste Disposal System

AND

Reactor Vessel Level (a or b): -{site-specific}-sump and tank-level increase

2. RPV-Level:

a. EQUAL TO 0% Wide Range Refueling Water Level Refueling-Level-less-than TOAF-for- >GREATER THAN- 30 minutes

OR

- b. cannot be monitored with Indication-indication of core uncovery for >GREATER THAN 30 minutes as evidenced by one or more of the following:
 - Containment High-RangeArea Radiation Monitor (R-2) reading >GREATER THAN {site-specific} setpoint100 mRem/hr
 - Erratic Source Range Monitor Indication

Other-{site-specific}-indications

AND

3___

{Site specific} indication of CONTAINMENT challenged as indicated by one or more of the following:

- Explosive mixture inside GREATER THAN OR EQUAL TO 6% hydrogen in containment
- CONTAINMENT CLOSURE NOT established
- 6.• CONTAINMENT pPressure above {site specific} value:
 - 46 psig <u>IF</u> Containment Integrity or Reduced Inventory Containment Integrity is established

OR

 46 psig <u>IF</u> -Refueling Containment Integrity is established with no loop seal penetrations installed at Penetration 42N or 43N.

OR

• 0.6 psig <u>IF</u> Refueling Containment Integrity is established with loop seal penetration installed at either Penetration 42N or 43N.

7.CONTAINMENT-CLOSURE-not-established

Escondary Containment radiation monitors above {site specific} value (BWR-only)

Basis:

For EAL 1-iIn the cold shutdown mode, normal RCS level and RPV-Reactor Vessel level instrumentation systems will normally be available. If the RCS is pressurized, then the Wide Range Refueling Water Level indication will not be in service. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RPV Reactor Vessel inventory loss was occurring by observing sump and tank level changes. <u>RVLIS indication is considered lost if leakage reduces RCS level below its indicating range.</u>

-Sump and tank level increases must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage.

For-EAL-1-iIn the refueling mode, normal means of RPV-Reactor Vessel level indication may not be available. Redundant means of RPV-Reactor Vessel level indication will be normally installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RPV-Reactor Vessel inventory loss was occurring by observing sump and tank level changes. Wide Range Refueling Water Level is measured by L9053A for channel A and L9054A for channel B.

For-both-cold-shutdown-and-refueling-modes-sump-and-tank-level-increases-must-be-evaluated against-other-potential sources of leakage-such-as-cooling water sources-inside-the-containment to ensure they are indicative of RCS leakage.

Containment Sump A, Containment Sump C or Liquid Waste Disposal System level changes may be indicative of a loss of RCS inventory. Containment Sump A receives all liquid waste from floor and equipment drains inside containment including that from Containment Sump C. Each time annunciator CONTAINMENT SUMP A LEVEL HIGH is received, the corresponding leakrate within containment is calculated from sump pump run history. [Ref. 1, 58] Sump level rises must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage. [Ref. 1419]

EAL-2This EAL represents the inability to restore and maintain RPVReactor Vessel level to above the top of active fuel. Fuel damage is probable if RPVReactor Vessel level cannot be restored, as available decay heat will cause boiling, further reducing the RPVReactor Vessel level. When Reactor Vessel water level drops to 612 ft 4 in. el., core uncovery is about to occur. Wide Range Refueling Water Level indication of 0% is approximately the top of active fuel. [Ref. 2]

These-exampleis EALs isare based on concerns raised by Generic Letter 88-17, Loss of Decay Hoat Removal, SECY 91-283, Evaluation of Shutdown and Low Power Risk Issues, NUREG-1449, Shutdown and Low Power Operation at Commercial Nuclear Power Plants in the United States, and, NUMARC--NUMARC 91-06, Guidelines for Industry Actions to Assess Shutdown Management. A number of variables, (BWRs - e.g., such as initial vessel level, or shutdown heat removal system design) (PWRs --- (e.g., mid-loop, reduced level/flange level, head in place, or cavity_flooded, RCS venting strategy, decay_heat_removal_system_design, vortexing_pre-KNPP 6-C-42 10/22/04 disposition, steam-generator U-tube-draining) can have a significant impact on heat removal capability challenging the fuel clad barrier. Analysis in the above references indicates that core damage may occur within an hour following continued core uncovery therefore, conservatively, 30 minutes was chosen.

If all means of level monitoring are not available, the Reactor Vessel inventory loss may be detected by the following indirect methods:

- As water level in the Reactor Vessel lowers, the dose rate above the core will rise. The
 dose rate due to this core shine should result in an unplanned alarm on the Containment
 Area Monitor (R-2). R-2 is used instead of the high range containment monitors because if
 a small amount of fuel was uncovered, the location of the high range monitors would
 preclude them reading on scale. Therefore the alarm setpoint of R-2 was selected to
 indicate a rise in containment radiation resulting from the conditions of this EAL- [Ref. 3].
- Post-TMI studies indicated that the installed nuclear instrumentation will operate erratically when the core is uncovered and Source Range Monitors (N-31 and N-32) can be used as a tool for making such determinations.

The GE is declared on the occurrence of the loss or imminent loss of function of <u>all three</u> barriers. Based on the above discussion, RCS barrier failure resulting in core uncovery for 30 minutes or more may cause fuel clad failure. With the CONTAINMENT breached or challenged then the potential for unmonitored fission product release to the environment is high. This represents a direct path for radioactive inventory to be released to the environment. This is consistent with the definition of a GE.

In the context of EAL 3, CONTAINMENT CLOSURE is the action taken to secure containment and its associated structures, systems, and components as a functional barrier to fission product release under existing plant conditions. CONTAINMENT CLOSURE should not be confused with Rrefueling Ceontainment lintegrity as described in fined-in technical specificationsN-FH-53-CLA or CLB [Ref 6, 7]. Reduced Inventory Containment Integrity is described in N-CCI-56A–CLA or CLB [Ref 9, 10]. Site shutdown contingency plans typically provide for re-establishing CONTAINMENT CLOSURE following a loss of heat removal or RCS inventory functions. If the closure is re-established prior to exceeding the temperature or level thresholds of the RCS Barrier and Fuel Clad Barrier EALs, escalation to GE would not occur.

The site-specific-pressure at which CONTAINMENT is considered challenged may change is based on the condition of the CONTAINMENT. If-When the Unit is in the cold shutdown mode and the CONTAINMENT is fully intact, Containment is considered challenged at then the site-specific setpoint should be equivalent to the CONTAINMENT design pressure of 46 psig. Refueling CONTAINMENT Integrity establishes normal CONTAINMENT isolation except that penetrations 42N and 43N may have loop seal penetrations installed. When a loop seal penetration is installed, CONTAINMENT is considered challenged when CONTAINMENT pressure exceeds 0.6 psig. If fiber optic penetration is installed with no loop seal penetration installed, CONTAINMENT is considered challenged at full CONTAINMENT design pressure of 46 psig. [Ref. 4520 and 216]This is consistent with typical owner's groups Emergency Response Procedures. If CONTAINMENT CLOSURE is established intentionally by the plant staff in preparations for inspection, maintenance, or refueling then the site-specific setpoint should be based on the sitespecific pressure assumed for CONTAINMENT CLOSURE.

For-BWRs, the use of secondary containment radiation monitors should provide indication of increased release that may be indicative of a challenge to secondary containment. The site

specific-radiation-monitor-values-should-be-based on the EOP "maximum safe values" because these values are easily recognizable and have an emergency basis.

In the early stages of a core uncovery event, it is unlikely that hydrogen buildup due to a core uncovery could result in an explosive mixture of dissolved gasses in CONTAINMENT. However, CONTAINMENT monitoring and/or sampling should be performed to verify this assumption and a General Emergency declared if it is determined that an explosive mixture exists. When hydrogen and oxygen concentrations reach or exceed the deflagration limits (equal to or greater than 6% hydrogen), loss of the containment barrier is possible [Ref. 813, 150, 164]. Containment hydrogen concentration can be obtained from PPCS/SPDS point X8001A and X8002A, or Control Room meters 41615 and 41616.

Expanded-basis for these assumptions is provided in Appendix C.

- 1. N-RC-36E Draining the Reactor Coolant System, Rev. AE
- 2. SP-36-196A Refueling Water Level Indication System Transmitter Calibration, Rev. G
- 3. C11622, Determination of R-2 Reading with Loss of Inventory, Rev. 0
- 4. N-0-02 Plant Startup from Hot Shutdown to 35% Power, Rev. AN
- 5. N-RHR-34C-CL Requirements for Entering Reduced Inventory Checklist, Rev. H
- 6. N-FH-53-CLA Refueling Containment Integrity CL, S/G Secondary Side Intact, Rev. G
- 7. N-FH-53-CLB Refueling Containment Integrity CL, S/G Secondary Side Open, Rev. G
- 8. N-CCI-56A Open Containment Boundary Tracking, Rev. F
- 9. N-CCI-56A-CLA Reduced Inventory Cntmt Integrity Checklist SG Secondary Side Intact, Rev. K
- 10. N-CCI-56A-CLB Reduced Inventory Cntmt Integrity Checklist SG Secondary Side Open, Rev. J
- 11. GNP-08.04.01 Shutdown Safety Assessment, Rev. K
- 12. EPIP-TSC-07 RV Head Venting time Calculation, Rev. J
- 13. M-403 Reactor Building Vent System Post-LOCA Hydrogen Control, Rev. Y
- 14. Technical Specifications Table 3.5.6, Amendment No. 105
- 15. FR-C.1 Response to Inadequate Core Cooling, Rev. N
- 16. N-RBV-18C POST-LOCA Hydrogen Control, Rev. K
- 17. F-0.5 Containment, Rev. F
- 18. USAR Section 5.2.1, Rev. 16
- 19. SP-36-082 Reactor Coolant System Leak Rate Check, Rev. AE
- 20. DCR1811, Refueling Containment Loop Seal
- 21. DCR 2167, New Refueling Containment Cableway

Recognition-Category-D

Permanently-Defueled-Station-Malfunction

INITIATING CONDITION MATRIX

NOUE

- D-AU1 UNPLANNED release of gaseous or liquid radioactivity to the environment ≥2 times the Technical Specification Release Limit for ≥ 60 Minutes. Op. Mode: Not Applicable
- D-AU2 UNCONTROLLED increase in plant radiation levels. Op. Mode: Not-Applicable
- D-SU1
 Decrease in Spent Fuel Pool level OR temperature increase that is not the result of a planned evolution.

 .
 Op. Mode: Not Applicable
- D-HU1 Confirmed security event with potential loss of level of safety of the plant. Op. Mode: Not Applicable
- D-HU2 Other-conditions judged warranting declaration of an UNUSUAL EVENT. Op. Mode: Not Applicable
- D-HU3 Natural OR destructive phenomena inside the Protected Area affecting the ability to maintain spent fuel integrity. Op. Mode: Not Applicable

ALERT

- D-AA1 UNPLANNED release of gaseous or liquid radioactivity to the environment > 200 times the Technical Specification Release Limit for > 15 Minutes. Op. Mode: Not Applicable
- D-AA2 UNCONTROLLED increase in plant radiation levels that impedes operations Op. Mode: Not-Applicable

- D-HA1 Confirmed security event in the Fuel Building or Control Room Op. Mode: Not Applicable
- D-HA2 Other conditions judged warranting declaration of ALERT. Op. Mode: Not Applicable
| KNPP

D-AU1

Initiating Condition --- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED release of gaseous or liquid radioactivity to the environment <u>> 2 times</u> the Technical Specification Release Limit for <u>> 60 Minutes</u>.

Operating-Mode-Applicability: Not-Applicable

Example-Emergency Action-Levels:-(1-or-2)

- 1. UNPLANNED VALID reading on any offluent monitor that exceeds two times the Technical Specification Release Limit for > 60 Minutes.
- 2. Grab-sample-results-indicate-UNPLANNED-gaseous-release-rates-or-liquid-concentrations-2 2-times-the-Technical-Specification-Release-Limit for 2-60-Minutes.

Basis:

An UNPLANNED release that cannot be terminated in 60 minutes represents an uncontrolled situation that is a potential degradation of the level of safety of the plant. The degradation in plant control implied by the fact that the release can not be terminated in 60 minutes is the primary concern. The Emergency Director should not-wait until 60 minutes has elapsed, but should declare an UNUSUAL EVENT as soon as the release is determined to be uncontrolled or projected to be unisolable within 60 minutes.

The EAL-1-limit-ensures-compliance with 10CFR20.1301 dose limits to the public. This limit also ensures the concentration of liquid effluents released is < 2 times the value specified in 10CFR20, Appendix-B.

The-EAL 2 grab samples are used to determine gaseous release rates or liquid concentrations to confirm monitor readings or when the offluent monitors are not in service.

D-AU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNCONTROLLED increase in plant radiation levels.

Operating-Mode Applicability:-----Not Applicable

Example-Emergency-Action-Level:

1.Area-Radiation-Monitor-readings-or-survey-results-indicate-an-uncontrolled-increase-in-radiation level by 25 mR/hr that is not the result of a planned evolution.

Basis:

UNCONTROLLED means an increase in <-12 hours of monitored radiation level that is not the result of a planned evolution and the source of the increased is not immediately recognized and controlled.

Classification-of-an-UNUSUAL EVENT is warranted-as-a-precursor-to-more-serious-events. The concern-of-this-EAL-is-the-loss of control-of-radioactive-material-representing-a-potential degradation of the level of safety of the plant.

D-SU1

Initiating Condition --- NOTIFICATION OF UNUSUAL EVENT

Decrease in Spent Fuel Pool Level OR temperature increase that is not the result of a planned evolution.

Operating-Mode-Applicability: Not Applicable

Example-Emergency-Action-Levels:-(1-or-2)

1.—a. VALID (site-specific) indication of uncontrolled water level decrease in spent fuel pool-with all irradiated fuel assemblies remaining covered by water.

_____AND

------b. UNPLANNED VALID (site-specific)-Direct Area Radiation Monitor reading increases

2. Spent-Fuel-Pool-temperature increase to > [site-specific].⁶F-that is not the result of a planned evolution.

Basis:

Classification of an NOUE for the EAL threshold value is warranted as a precursor to more serious events and a potential degradation in the level of safety of the plant. Since loss of level or continued pool boiling would result in increased radiation levels exceeding the criteria of D-AA2, continued system related loss of level type events are bounded by D-AA2.

The EAL1-site-specific value-for-level-should be based-on-a-calculated-level-that will result in prohibitive-radiation-levels-in-the-Fuel-Building. The-site-specific radiation-monitors should be chosen so that indication of decreasing pool levels is provided.

The EAL2-site-specific temperature should be chosen based on the initial temperature starting point for fuel damage calculations (typically 125 to 150°F) in the Safety Analysis Report (SAR).

D-HU4

Initiating Condition --- NOTIFICATION OF UNUSUAL EVENT

Confirmed Security Event with potential loss of level of safety of the plant.

Operating Mode Applicability: Not Applicable

Example-Emergency-Action-Levels:

1. Security-Event as determined from (site-specific) Safeguards Contingency Plan and reported by the (site-specific) security shift supervision.

Basis:

This-EAL-is based on (site-specific) Site Security Plans. Security events which do not represent a potential degradation in the level of safety of the plant, are reported under 10 CFR-73.71 or in some cases under 10 CFR-50.72.

INTRUSION-into-the-Fuel-Building-or-Control-Room-by-a-HOSTILE-FORCE-would-result-in-EAL escalation to an ALERT.

Reference-is-made to (site-specific) security-shift-supervision-because these-individuals are the designated personnel on site-qualified and trained to confirm that a security event is occurring or has occurred. Training on security event-classification confirmation is closely controlled due to the strict secrecy controls placed on the plant-Security Plan.

÷,

D-HU2

1

Initiating Condition --- NOTIFICATION OF UNUSUAL EVENT

Other conditions judged warranting declaration of an UNUSUAL EVENT

Operating-Mode-Applicability: Not-Applicable

Example-Emergency-Action-Levels:

1. Other-conditions-exist-which-in-the-judgment-of-the-Shift-Supervisor-/Emergency-Director indicate a potential-degradation-in-the-level-of-safety-of-the-plant.

Basis:

Any-condition-not-explicitly-detailed as an EAL-threshold value, which, in the judgment-of-the Emergency-Director, is a potential degradation in the level of safety of the plant. Emergency Director judgment-is to be based on known conditions and the expected response to mitigating activities within a short time period.

D-HU3

Initiating Condition --- NOTIFICATION OF UNUSUAL EVENT

Natural or destructive phenomena inside the PROTECTED AREA affecting the ability to maintain spent-fuel integrity

Operating Mode Applicability: _____Not Applicable

Example-Emergency-Action-Levels: (1 or 2 or 3 or 4 or 5 or 6 or 7 or 8)

- 1. (Site-Specific) method indicates felt earthquake.
- 2. Report-by-plant-personnel of tornado-or-high-winds-greater than (site-specific)-mph-striking within the PROTECTED-AREA that has the potential to affect equipment needed to maintain spent fuel integrity.
- 3. Vehicle-crash-into-plant-structures-or-systems within PROTECTED AREA boundary that has the potential to affect equipment needed to maintain spent-fuel integrity.
- 4.——Report by plant-personnel-of-an-unanticipated_EXPLOSION-within_PROTECTED_AREA boundary-resulting in VISIBLE-DAMAGE that has the potential to affect equipment needed to maintain spent fuel integrity.
- 5. Uncontrolled_flooding_in_(site-specific)_areas_of_the_plant_that_has_the_potential_to_affect equipment_needed_to-maintain_spent_fuel_integrity.
- 6. FIRE in the following (Site-Specific) buildings or areas not extinguished within 15 minutes of Control Room notification or verification of a control room alarm that has the potential to affect equipment needed to maintain spent fuel integrity.
- 7. Toxic or flammable-gas-within-the PROTECTED AREA-that-has-the potential to affect-the operation of equipment needed to maintain spent fuel integrity.
- 8. (Site-Specific) occurrences affecting the PROTECTED AREA that has the potential to affect equipment needed to maintain spent fuel integrity.

Basis:

NOUE-in this IC are categorized on the basis of the occurrence of an event of sufficient magnitude to be of concern to plant-operators. Areas identified in the EALs define the location of the event based on the potential for damage to equipment contained therein.

EAL-#1-should-be-developed on site-specific basis. Damage may be caused to some portions of the site, but should not affect ability to operate spent fuel pool equipment. Method of detection can be based on instrumentation, validated by a reliable source, or operator assessment. As defined in the EPRI-sponsored "Guidelines for Nuclear Plant-Response to an Earthquake", dated October 1989, a "felt earthquake" is: KNPP 56-D-8 An-earthquake of sufficient intensity-such that: (a) the vibratory-ground-motion is felt-at-the nuclear-plant-site and recognized as an earthquake based on a consensus of control room operators on duty-at-the-time, and (b) for-plants with operable seismic instrumentation, the seismic switches of the plant are activated. For most-plants with seismic instrumentation, the seismic switches are set at an acceleration of about 0.01g.

EAL #2-is-based on the assumption that a tornado striking (touching down) or high winds within the protected area may have potentially damaged plant structures containing functions or systems required to maintain spent fuel integrity. The high wind site specific value in EAL#2-should be based on site specific FSAR design basis.

EAL #3-is-intended-to-address-crashes-of-vehicles-that-cause-significant-damage-to-plant structures containing functions-and-systems necessary to maintain-spent-fuel-integrity.

EAL-#4-addresses only those EXPLOSIONs of sufficient force to damage equipment needed to maintain spent-fuel integrity. No attempt is made in this EAL to assess the actual magnitude of the damage. The occurrence of the EXPLOSION with reports of evidence of damage is sufficient for declaration. The Emergency Director also needs to consider any security aspects of the EXPLOSION, if applicable.

EAL #5-addresses the effect of flooding caused by internal events such as component failures or equipment-misalignment that has the potential to affect equipment needed to maintain spent-fuel integrity. The site-specific areas include those areas that contain systems required to maintain fuel integrity, that are not designed to be wetted or submerged.

EAL #6 addresses FIREs that may have the potential to affect the ability to maintain spent fuel integrity. As used here, *Dotection* is visual observation and report by plant personnel or sensor alarm indication. The 15 minute time period begins within a credible notification that a FIRE is occurring, or indication of a VALID fire detection system alarm. Verification of a fire detection system alarm includes actions that can be taken with the control room or other nearby site specific location to ensure that the alarm is not spurious. A verified alarm is assumed to be an indication of a FIRE unless it is disproved within the 15 minute period by personnel dispatched to the scene. In other words, a personnel report from the scene may be used to verify the alarm.

The intent of this 15-minute duration is to size the FIRE and to discriminate against small FIREs that are readily extinguished (e.g., smoldering waste paper basket). The site-specific list should be limited and applies to buildings and areas containing equipment important to maintaining spent fuel integrity. This excludes FIREs within administration buildings, waste basket FIREs, and other small FIREs of no safety consequence.

EAL #7-addresses toxic or-flammable gas in the protected area that has the potential to affect the ability to maintain spent fuel integrity due to the potential damage to equipment or the evacuation of personnel preventing operation or maintenance of spent fuel pool equipment.

EAL #8 covers other site specific phenomena such as hurricane, flood, or seiche that have the potential to result loss of spent fuel integrity.

Escalation to the ALERT-level-will be via D-AA2 if any of the above events has caused damage that results in radiation levels increasing by 100 mr/hr and impedes operation of systems needed to maintain spent fuel integrity.

D-AA1

Initiating Condition – ALERT

UNPLANNED release of gaseous or liquid radioactivity to the environment > 200 times the Technical Specification Release Limit for > 15 Minutes.

Operating-Mode-Applicability: Not-Applicable

Example-Emergency-Action Levels: (1 or 2 or 3)

- 1. UNPLANNED VALID reading on any offluent monitor that exceeds 200 times the Technical Specification Release Limit for-> 15 Minutes.
- 2. Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates, with a duration of 15 minutes or longer, in excess of 200 times (site specific Technical Specifications.

Basis

An UNPLANNED release of this magnitude that cannot be terminated in 15-minutes represents an uncontrolled-situation that is an actual or potential substantial degradation of the level of safety of the plant. The degradation in plant control implied by the fact that the release can not be terminated in 15 minutes is the primary concern. The Emergency Director should not wait until 15 minutes has elapsed, but should declare an ALERT as soon as the release is determined to be uncontrolled or projected to be unisolable within 15 minutes.

The EAL1 release rate limit ensures compliance with 10CFR20.1301 dose limits to the public. This limit-also ensures the concentration of liquid effluents is < 200-times the value specified in 10CFR20, Appendix B.

The-EAL2 grab samples are used to determine gaseous release rates or liquid concentrations to confirm monitor readings or when the effluent monitors are not in service.

D-AA2

Initiating Condition -- ALERT

UNCONTROLLED increase in plant-radiation levels that impede operations

Operating-Mode Applicability: Not Applicable

Example Emergency Action Levels: (1 or 2)

1.— Area Radiation Monitor readings or survey results indicate an UNCONTROLLED increase in radiation level by 100 mR/hr that is not the result of a planned evolution and impedes access to areas needed to maintain control of radioactive material or operation of systems needed to maintain spent fuel integrity.

(Sito-specific) list

2.— VALID (site-specific) radiation monitor readings GREATER THAN 15 mR/hr in areas requiring continuous occupancy:

(Site-specific)-list

Basis:

The site specific list for EAL1-will-include available Fuel Handling building radiation monitors.

An increase in radiation levels that is not the result of a planned evolution that impedes operations necessary to allow maintenance of spent fuel integrity warrants the classification of an ALERT.

Damage-to-spent fuel represents a substantial degradation in the level of safety of the plant-and therefore warrants an ALERT classification.

The value of 15mR/hr is derived from the GDC 19 value of 5 rem in 30 days with adjustment for expected occupancy-times. Although Section III.D.3 of NUREG-0737, "Clarification of TMI Action Plan Requirements", provides that the 15 mR/hr value can be averaged over the 30 days, the value is used here without averaging, as a 30 day duration implies an event potentially more significant than an Alert.

D-HA1

Initiating Condition -- ALERT

Confirmed Security Event in the Fuel-Building or Control Room.

Operating Mode Applicability: _____ Not Applicable

Example-Emergency-Action-Levels:

1. INTRUSION into the Fuel Building or Control Room by a HOSTILE FORCE.

Basis:

This class of security events represents an escalated threat to plant safety above that contained in the NOUE. A confirmed INTRUSION report is satisfied if physical evidence indicates the presence of a HOSTILE FORCE within the Fuel Handling-Building or Control Room.

D-HA2

Initiating Condition -- ALERT

Other-conditions-judged-warranting-declaration-of-ALERT.

Operating-Mode-Applicability: Not-Applicable

Example-Emergency-Action-Levels:

1. Other-conditions-exist which in the judgment of the Emergency Director indicate that plant systems-may-be-substantially-degraded and that increased monitoring of plant functions is warranted. Any releases-are expected to be limited to small fractions of the EPA-Protective Action Guideline exposure levels.

Basis:

A condition exists which, in the judgement of the Emergency Director, presents an actual or potential substantial degradation in the level of safety of the plant. Emergency Director judgement is to be based on known conditions and the expected response to mitigating activities.

Recognition Category E

Events-Related-to-ISFSI-Malfunction

INITIATING CONDITION MATRIX

NOUE

E-HU1 Damage to a loaded cask CONFINEMENT-BOUNDARY. Op. Mode: Not Applicable

E-HU2 Confirmed security event with potential loss of level of safety of the ISFSI Op. Mode: Not Applicable This page intentionally blank.

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This-page-intentionally-blank.

EVENTS RELATED TO ISFSI

E-HU4

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Damage to a loaded cask CONFINEMENT-BOUNDARY.

Operating-Mode-Applicability: Not-applicable

Example-Emergency-Action-Level: (1-or-2-or-3)

1. --- Natural-phenomena-events-affecting-a-loaded-cask-CONFINEMENT-BOUNDARY.

(site-specific-list)

2. Accident-conditions affecting a loaded cask-CONFINEMENT-BOUNDARY.

(site-specific list)

3. Any condition in the opinion of the Emergency Director that indicates loss of loaded fuel storage cask CONFINEMENT-BOUNDARY.

Basis:

A NOUE in this IC is categorized on the basis of the occurrence of an event of sufficient magnitude-that a loaded-cask CONFINEMENT BOUNDARY-is damaged or violated. This-includes-classification-based on a loaded fuel storage cask CONFINEMENT BOUNDARY-loss loading-to-the degradation of the fuel-during storage or posing an operational safety problem with respect to its removal from storage.

For EAL #1-and EAL #2,-the-results of the ISFSI-Safety Analysis-Report (SAR) per NUREG 1536-or SAR referenced in the cask('s) Certificate of Compliance and the related NRC Safety Evaluation Report should be used to develop the site specific list of natural phenomena events and accident conditions. These EALs would address responses to a dropped cask, a tipped over cask, explosion, missile damage, fire damage or natural phenomena affecting a cask (e.g., seismic event, tornado, etc.).

For EAL-#3, any condition not explicitly detailed as an EAL-threshold value, which, in the judgment of the Emergency Director, is a potential degradation in the level of safety of the ISFSI. Emergency Director judgment is to be based on known conditions and the expected response to mitigating activities within a short time period.

EVENTS RELATED TO ISFSI

E-HU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Confirmed-Security-Event-with potential loss of level of safety of the ISFSI.

Operating-Mode-Applicability: Not-applicable

Example-Emergency Action Levels:

1. Security Event as determined from (site-specific) Security Plan and reported by the (site-specific) security shift-supervision.

Basis:

This-EAL is based on (site-specific) Security Plans. Security events which do not represent a potential degradation in the level of safety of the ISFSI, are reported under 10 CFR 73.71 or in some cases under 10 CFR 50.72.

Reference-is-made-to (site-specific) security shift supervision because these-individuals are the designated personnel qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict secrecy controls placed on the Security Plan.

Table 5-F-10

Recognition Category F

Fission Product Barrier Degradation

INITIATING CONDITION MATRIX

See-Table-3 for BWR-Example EALs See-Table 4 for PWR-Example EALs

GENERAL EMERGENCYNO		SITE AREA EMERGENCY		ALERT			UE		
FG1	Loss of ANY Two Barriers AND Loss or Potential Loss of Third Barrier	FS1	Loss or Potential Loss of ANY Two Barriers	FA1	ANY Loss or ANY Potential Loss of EITHER Fuel Clad OR RCS	FU1	ANY Loss or ANY Potential Loss of Containment		
	Op. Modes: Power Operation, Hot Standby, Startup, Hot ShutdownOperating, Hot Standby, Hot Shutdown, Intermediate Shutdown		Op. Modes: Operating, Hot Standby, Hot Shutdown, Intermediate Shutdown Powor Oporation, Hot-Standby, Startup, Hot-Shutdown		Op. Modes: Operating, Hot Standby, Hot Shutdown, Intermediate Shutdown Power Operation, Hot-Standby, Starlup, Hot-Shutdown	Op. Modes: Operating, Hot Standby, Hot Shutdown, Intermediate Shutdown Powor Operation, Hot Standby, Startup, Hot Shutdown			

NOTES

- 1. The logic used for these initiating conditions reflects the following considerations:
 - The Fuel Clad Barrier and the RCS Barrier are weighted more heavily than the Containment Barrier-(See-Sections-3.4-and-3.8). NOUE ICs associated with RCS and Fuel Clad Barriers are addressed under System Malfunction ICs.
 - At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from the threshold for a General
 Emergency. For example, if Fuel Clad and RCS Barrier "Loss" EALs existed, that, in addition to offsite dose assessments, would require continual
 assessments of radioactive inventory and containment integrity. Alternatively, if both Fuel Clad and RCS Barrier "Potential Loss" EALs existed, the
 Emergency Director would have more assurance that there was no immediate need to escalate to a General Emergency.
 - The ability to escalate to higher emergency classes as an event deteriorates must be maintained. For example, RCS leakage steadily increasing would represent an increasing risk to public health and safety.
- Fission Product Barrier ICs must be capable of addressing event dynamics. Thus, the EAL Reference Table 3-and-4F-1 states that imminent (i.e., within 2-2 hours) Loss or Potential Loss should result in a classification as if the affected threshold(s) are already exceeded, particularly for the higher emergency classes.

TABLE 5-F-2

BWR-Emergency-Action-Level

Fission-Product-Barrier-Reference-Table

Thresholds-For-LOSS-or-POTENTIAL-LOSS-of-Barriers*

*Determine which combination of the three barriers are lost or have a potential loss and use the following key to classify the event. Also, multiple events could occur which result in the conclusion that exceeding the loss or Potential loss thresholds are exceeded.

UNUSUAL-EVENT	ALERT	SITE AREA E	MERGENCY	GENERAL EMERGENCY		
ANY-loss-or-ANY-Potential Loss-of Containment	ANY loss or ANY Potential Loss of E Fuel Clad or RCS	ANY Potential Loss of EITHER Loss or Potential Loss of ANY RCS		Loss of ANY-two-Barriers AND Loss or Potential Loss of Third Barrier		
Fuel-Clad-Barrier-Examp	EALS RCS.	Barrier Example EALS	Conta	inment-Barrier-Example-EALS		
LOSS POTI	NTIAL LOSS LOSS	POTENTIAL LO	55 <u>L</u> (DSS POTENTIAL-LOSS		
1. Primary Coolant Activity Level	1. Drywell Pressu	r <u>e</u>	4. Drywell Pre	ssure		
Coolant-Activity Not-Appli GREATER-THAN [(site- specific) value] Value	able Drywell pPressure GREATER-THAN-[t specific value](site- specific) PSIG not c by a loss of DW Coc	Not Applicable site- aused Sling	Rapid-unexplain decrease in-dry pressure followi increase OR Drywell pressure not consistent w conditions indice containment bre	ed Drywell Pressure well GREATER-THAN-(Site- ng-initial specific-value)-PSIG-and increasing OR e-response Explosive-mixture-exists Ath LOCA ating wach		
OR		OR		OR		
2-Reactor-Vessel-Water-Level	2-Reactor-Vesse	el-Water-Level	2-Reactor	2Reactor-Vessel-Water-Level		
Level-LESS-THAN-(site- Level-LE specific-value) specific	SS-THAN-(site-Level-LESS-THAN value) specific-value)	Hoite- Not Applicable	Not Applicat	Primary-containment flooding-required		
		OR		OR		
	<u>3RCS-Leak-Rati</u>	<u>e</u>	<u>3CNMT-Is</u>	olation Failure or Bypass		
	(Site-specific)-Indi an uUnisolable Ma Steamline Break	cation-of ain THAN-50-gpm-inside drywellPrimary Containment OR Unisolable primary sy leakage-outside dryw indicated-by:-area temperature-or-area radiation-alarm	TER Failure of bo -the any one line downstream environment ystem Intentional P rell-as containment progress per Unisolable-p leakage oute indicated by temperature radiation ala	th-valves-in Not-applicable -to-close-AND -pathway-to-the exists OR trimary -venting-in -EOPs OR rimary-system skde-drywell-as -area -or-area rm		
OR		OR		OR		

TABLE-5-F-2

BWR-Emergency-Action-Level

Fission-Product-Barrier-Reference-Table

Thresholds For LOSS or POTENTIAL LOSS of Barriers*

*Determine which combination of the three barriers are lost or have a potential loss and use the following key to classify the event. Also, multiple events could occur which result in the conclusion that exceeding the loss or Potential loss thresholds are exceeded.

		1						
UNUSUAL-E	UNUSUAL-EVENT ANY-loss-or-ANY-Potential-Loss-of ANY-loss-or-/ Containment Fuel-Clad-or-		ALERT	SITE AREA EMERGI	INCY	GENEI	RAL-EMERGENCY	
ANY-loss or ANY-Potential Containment			K-Potential Loss of EITHER Loss or Potential Loss of ANY-two S		wo-Barriers Loss of ANY-two-Barriers AND Loss or Potential Loss of Third-Barrier		Barriers AND HLoss-of-Third-Barrier	
Fuel-Clad-Ba	rrier-Example	EALS	RCS-Barrier-	Example-EALS	Cont	ainment-Barr	ier-Example-EALS	
LOSS	POTEN	TIAL LOSS	LOSS	POTENTIAL-LOSS	L	055	POTENTIAL-LOSS	
3-Drywell-Radiation-Monitoring			4. Drywell Radiation Moni	4-Significant Radioactive Inventory in Containment				
Drywell Containment Hig Range Rad Radiation monitor reading, GREATER-THAN (site- specific-value)) R/hr	h Not Applica	ble	Containment High Range RadDrywell Radiation monitor-reading GREATER THAN (site-specific) R/hr	Not Applicable	No l a pplicat	ble	Containment High-Range RAdDrywell-Radiation monitor reading GREATER THAN (cite-specific) R/hr	
· .	OR			OR				
4Other-(Site-Specific)	Indications		5-Other (Site-Specific) Inc	5-Other (site-specific) Indications				
(Site specifi c) as applicable	(Site specif	ic) as applicable	(Site-specific) as applicable	(Sile-specific) as applicable	(Site specifi	c)-as-applicable	(Site specific) as a pplicable	
OR		OR		OR				
5-Emergency Director-Judgment			6-Emergency Director Jud	dgment	6-Emergency Director-Judgment			
Any-condition in the opinion of the Emergency Director that indicates Loss or Potential Loss of the Fuel Clad Barrier			Any condition in the opinion of the Emergency Director that indicates Loss or Potential Loss of the RCS-Barrier		Any condition in the opinion of the Emergency Director that indicates Loss or Potential Loss of the Containment barrier			

Basis Information For Table 5-F-2 BWR Emergency Action Level Fission Product Barrier Reference Table

FUEL-CLAD BARRIER-EXAMPLE-EAL6: (1 or 2 or 3 or 4 or 5)

The Fuel Clad barrier is the zircalloy or stainless steel tubes that contain the fuel pellets.

1. Primary-Coolant-Activity-Level

This (site-specific)--value corresponds to -300 - µCi/gm -I₁₃₁ - equivalent. Assessment by the NUMARC-EAL Task Force indicates that this amount of coolant activity is well above that expected for iodine spikes and corresponds to less than 5% fuel clad damage. This amount of radioactivity indicates significant clad damage and thus the Fuel Clad Barrier is considered lest. The value expressed can be either in mR/hr observed on the sample or as uCi/gm results from analysis.

There is no equivalent "Potential Loss"-EAL-for this item.

2.----Reactor Vessel Water Level

The "Loss" EAL (site-specific)-value-corresponds to the level which is used in EOPs to indicate challenge of core cooling. Depending on the plant this may be top of active fuel or 2/3 coverage of active-fuel. This is the minimum value to assure core cooling without-further-degradation of the clad. The "Potential Loss" EAL is the same as the RCS barrier "Loss" EAL #2 below and corresponds to the (site-specific) water level at the top of the active fuel. Thus, this EAL indicates a "Loss" of RCS barrier and a "Potential Loss" of the Fuel Clad Barrier. This EAL appropriately escalates the emergency class to a Site Area Emergency. If the "Loss" value is also the Top of Active Fuel, the "Potential Loss" value must be a value indicating a higher level also corresponding to a higher level indicated in the RCS barrier "Loss" EAL #2.

3. Drywell-Radiation-Monitoring

The (site-specific) reading is a value which indicates the release of reactor coolant, with elevated activity indicative of fuel damage, into the drywell. The reading should be calculated assuming the instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with a concentration of 300 µCi/gm dose equivalent I-131 or the calculated concentration equivalent to the clad damage used in EAL #1 into the drywell atmosphere. Reactor coolant concentrations of this magnitude are several times larger than the maximum concentrations (including iodine spiking) allowed within technical specifications and are therefore indicative of fuel damage. This value is higher than that specified for RCS barrier Loss EAL-#4. Thus, this EAL indicates a loss of both Fuel Clad barrier and RCS barrier.

Caution: it is important to recognize that in the event the radiation monitor is sensitive to shine from the reactor vessel or piping, spurious readings will be present and another indicator of fuel clad damage is necessary or compensated for in the threshold value.

There-is-no "Potential-Loss"-EAL-associated with this item.

4. Other (Site-Specific) Indications

This EAL is to cover other (site specific) indications that may indicate loss or potential loss of the Fuel-Clad barrier, including indications from containment air monitors or any other (site specific) instrumentation.

5.----Emergency-Director-Judgment

This EAL addresses any other factors that are to be used by the Emergency Director in determining whether the Fuel Clad barrier is lost or potentially lost. In addition, the inability to monitor the barrier should also be incorporated in this EAL as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost. (See also IC SG1, "Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power", for additional information.)

RCS BARRIER EXAMPLE EALs: (1 or 2 or 3 or 4 or 5 or 6)

The RCS-Barrier is the reactor coolant-system pressure boundary and includes the reactor vessel and all reactor coolant-system piping up to the isolation valves.

1. Drywell Pressure

The (site-specific) drywell pressure is based on the drywell high pressure set point which indicates a LOCA by automatically initiating the ECCS or equivalent makeup system.

There is no "Potential Loss"-EAL corresponding to this item.

2. Reactor Vessel Water Level

This "Loss" EAL-is-the-same-as-"Potential-Loss" Fuel-Clad-Barrier-EAL #2. The (site-specific) water-level corresponds to the level which is used in EOPs to indicate challenge of core cooling. Depending on the plant-this may-be-top of-active fuel or 2/3 coverage of active fuel. This EAL appropriately escalates the emergency class to a Site Area Emergency. Thus, this EAL-indicates a loss of the RCS barrier and a Potential Loss of the Fuel Clad Barrier.

There is no "Potential Loss" EAL corresponding to this item.

3. RCS Leak Rate

An unisolable MSL break is a breach of the RCS barrier. Thus, this EAL is included for consistency with the Alert-emergency classification. The potential loss of RCS based on leakage is set at a level indicative of a small breach of the RCS but which is well within the makeup capability of normal and emergency high pressure systems. Core uncovery is not a significant concern for a 50 gpm leak, however, break propagation leading to significantly larger loss of inventory is possible. Many-BWRs may be unable to measure an RCS leak of this size because the leak would likely increase drywell pressure above the drywell isolation set point. The system normally used to monitor leakage is typically isolated as part of the drywell isolation and is therefore unavailable. If primary system leak rate information is unavailable, other indicators of RCS leakage should be used.

Potential loss of RCS based on primary system leakage outside the drywell is determined from site-specific temperature or area radiation alarms low setpoint in the areas of the main steam line tunnel, main turbine generator, RCIC, HPCI, etc., which indicate a direct path from the RCS to areas outside primary containment. The indicators should be confirmed to be caused by RCS leakage. The area temperature or radiation low alarm setpoints are indicated for this example to Revision 01/2003KNPP 56-F-5 10/22/04

enable-an-Alert-classification.---An-unisolable-leak-which-is-indicated-by-a-high-alarm-setpoint escalates-to-a-Site-Area-Emergency-when-combined-with-Containment-Barrier-EAL-3 (after-a containment-isolation)-and-a-General-Emergency-when-the-Fuel-Clad-Barrier-criteria-is-also exceeded.

4. Drywell-Radiation-Monitoring

The (site-specific) reading is a value which indicates the release of reactor coolant to the drywell. The reading should be calculated assuming the instantaneous release and dispersal of the reactor coolant-noble-gas-and-iodine-inventory-associated with-normal-operating-concentrations-(i.e., within-T/S) into the drywell atmosphere. This reading will be less than that specified for-Fuel-Clad Barrier EAL-#3. Thus, this EAL would be indicative of a RCS leak only. If the radiation monitor reading-increased to that value specified by Fuel-Clad Barrier EAL #3, fuel-damage would also be indicated.

However, if the site specific physical location of the drywell radiation monitor is such that radiation from a cloud of released RCS gases could not be distinguished from radiation from adjacent piping and components containing elevated reactor coolant activity, this EAL should be omitted and other site specific indications of RCS leakage substituted.

There is no "Potential Loss" EAL associated with this item.

5. Other-(Site-Specific) Indications

This EAL is to cover other (site-specific) indications that may indicate loss or potential loss of the RCS barrier.

6. Emergency-Director-Judgment

This-EAL addresses any other factors that are to be used by the Emergency Director in determining whether the RCS barrier is lost or potentially lost. In addition, the inability to monitor the barrier should also be incorporated in this EAL as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost. (See also IC-SG1, "Prolonged Loss of Offsite Power and Prolonged Loss of All Onsite AC Power", for additional information.)

PRIMARY CONTAINMENT BARRIER EXAMPLE EALs: (1 or 2 or 3 or 4 or 5 or 6)

The Primary Containment Barrier includes the drywell, the wetwell, their respective interconnecting paths, and other-connections up to and including the outermost-containment-isolation valves. Containment-Barrier-EALs are used primarily as discriminators for escalation from an Alert to a Site Area Emergency or a General Emergency.

1. Drywell Pressure

Rapid-unexplained-loss-of-pressure (i.e., not-attributable to drywell-spray or condensation effects) following-an-initial-pressure-increase-indicates-a-loss-of-containment-integrity. Drywell-pressure should-increase-as-a-result-of-mass-and-energy-release-into-containment-from-a-LOCA. Thus, drywell-pressure-not-increasing-under-these-conditions-indicates-a-loss-of-containment-integrity. This indicator-relies on-the operators recognition-of-an-unexpected-response for-the-condition-and therefore-does-not-have-a-specific-value-associated. The-unexpected-response-is-important because-it-is-the-indicator-for-a-containment-bypass-condition. The (site-specific) PSIG for-potential loss-of-containment-is-based-on-the-containment-drywell-design-pressure.-Existence-of-an explosive-mixture-means-a-hydrogen-and-oxygen-concentration-of-at-least-the-lower-deflagration

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limit-curve-exists. This-applies-to-BWRs-with-Mark-III-containments, as-well-as-Mark-I-and-II containment designs when they are de-inerted.

2. Reactor-Vessel-Water-Level

The entry into the Primary Containment-Flooding emergency procedure indicates reactor vessel water-level-can not be restored and that a core melt sequence is in progress. EOPs direct the operators to enter Containment Flooding when Reactor Vessel Level cannot be restored to greater than a Site Specific value (generally 2/3 core height) or is unknown. Entry-into Containment Flooding procedures is a logical escalation in response to the inability to maintain reactor vessel level.

The conditions in this potential loss EAL represent imminent core melt sequences which, if not corrected, could lead to vessel failure and increased potential for containment failure. In conjunction with and an escalation of the level EALs in the Fuel and RCS barrier columns, this EAL will result in the declaration of a General Emergency -- loss of two barriers and the potential less of a third. If the emergency operating procedures have been ineffective in restoring reactor vessel level above the RCS and Fuel Clad Barrier Threshold Values, there is not a "success" path and a core melt sequence is in progress. Entry into Containment flooding procedures is a logical escalation in response to the inability to maintain reactor vessel level.

Severe accident analysis (e.g., NUREG-1150) have concluded that function restoration procedures can arrest-core degradation with the reactor vessel in a significant fraction of the core damage scenarios, and the likelihood of containment failure is very small in these events. Given this, it is appropriate to provide a reasonable period to allow emergency operating procedures to arrest the core melt sequence. Whether or not the procedures will be effective should be apparent within the time provided. The Emergency Director should make the declaration as soon as it is determined that the procedures have been, or will be, ineffective. There is no "loss" EAL associated with this item.

3.——Containment-Isolation-Failure-or-Bypass

This EAL is intended to cover the inability to isolate the containment when containment isolation is required. In addition, the presence of area radiation or temperature alarms high setpoint indicating unisolable primary system leakage outside the drywell are covered after a containment-isolation. The indicators should be confirmed to be caused by RCS leakage. Also, an intentional venting of primary containment for pressure control per EOPs to the secondary containment and/or the environment is considered a loss of containment. Containment venting for temperature or pressure when not in an accident situation should not be considered.

There is no "Potential Loss"-EAL associated with this item.

4. Significant-Radioactive Inventory In Containment

The (site-specific) reading is a value which indicates significant fuel damage well in excess of that required for loss of RCS and Fuel Clad. As stated in Section 3.8, a major release of radioactivity requiring offsite-protective actions from core damage is not possible unless a major failure of fuel cladding allows radioactive material to be released from the core into the reactor coolant. Regardless of whether containment is challenged, this amount of activity in containment, if released, could have such severe consequences that it is prudent to treat this as a potential loss of containment, such that a General Emergency declaration is warranted. NUREG-1228, "Source Estimations During Incident Response to Severe Nuclear Power Plant Accidents," indicates that such conditions do not exist when the amount of clad damage is less than 20%. Unless there is a

(site-specific) analysis justifying a higher value, it is recommended that a radiation monitor reading corresponding to 20% fuel clad damage be specified here.

There is no "Loss" EAL associated with this item.

5. Other (Site-Specific) Indications

This EAL is to cover other (site-specific) indications that may indicate loss or potential loss of the containment barrier.

6. Emergency Director Judgment

This EAL addresses any other factors that are to be used by the Emergency-Director in determining whether the Containment barrier is lost or potentially lost. In addition, the inability to monitor the barrier should also be incorporated in this EAL as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost. (See also IC SG1, "Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power", for additional information.)

*Determine which combination of the three barriers are lost or have a potential loss and use the following key to classify the event. Also an event for multiple events could occur which result in the conclusion that exceeding the loss or potential loss thresholds is imminent (i.e., within 1 to 2 hours). In this imminent loss situation use judgment and classify as if the thresholds are exceeded.

UNUSUAL EVENTGENERAL		ALERTSITE AREA EMERGENCY		ALERT SITE AREA EMERGENCY		UNUSUAL EVENT GENERAL			
	Loss of ANY two Barriers AND Loss or Potential Loss of Third Barrier ANY Loss or Potential Loss of Third Barrier ANY ANY-loss or ANY-loss or A loss-or-ANY-Potential Loss of Containment Fuel Clad or F		al Loss of ANY two Barriers IY-Potential Loss of EITHER S EITHER Fuel Clad or RCS		two ntial Loss of Ioss or ANY		Ftwo Barriers-AND ential Loss of Third BarrierANY Potential Loss of Containment		
1	<u>Fuel Clad Barrie</u> LOSS	<u>r Example</u> POTEN	EALS FIAL LOSS	<u>RCS Barrier</u> LOSS	Example-EALS POTENTIAL LOSS	<u>Cont</u> e	ainment Bar 055	rier Example-EALS POTENTIAL LOSS	
	1. Critical Safety Function S	Status		1. Critical Safety Function	1. Critical Safety Function Status			Status	
	Core-Cooling Red	Core Coolin OR Heat Sink-F	g-Orange Red	Not Applicable	RCS Integrity-Red OR Heat Sink-Red	Not Applicat	ble	Containment-Red	
	0	R		(OR				
	2. Primary Coolant Activity	Level		2. RCS Leak Rate		2. Containment Pressure			
	Coolant Activity GREATER THAN 300 µCi/gm I-131 equivalent(site-specific) Value	Not Applica	bie	 GREATER THAN available makeup capacity as indicated by a loss of RCS subcooling LESS THAN 20°F if the reactor is critical LESS THAN 30°F if the reactor is sub-critical 	Unisolable leak exceeding GREATER THAN 60 gpm the capacity of one charging pump in the normal charging mode	Rapid unexp decrease fo increaserise Containmen sump level r consistent w conditions	lained lowing initial OR t pressure or esponse not esponse not ith LOCA	(Site-specific)46 PSIG andPSIG and increasing rising OR Hydrogen concentration GREATER THAN OR EQUAL TO 6%Explosive mixture-exists OR Containment pPressure GREATER -thanTHAN containment depressurizat- ion-actuation-setpoint 23 psig with-less-than LESS THAN one full train of depressurization equipment operating	

OR

OR

	UNUSUAL-EVENTGEN	ERAL	ALERTSITE	AREA EMERGENCY	ALERT SITE AREA EME	RGENCY	บกบรบ	AL EVENT GENERAL
Î	Loss of ANY two Barriers AND Loss or Potential Loss of Third B loss or ANY-Potential Loss of Co	arrier AN¥ ntainment	Loss or Potential L ANY-loss or ANY- Fuel Clad-or-RCS	Loss of ANY two Barriers Potential Loss of EITHER	Loss or Potential Loss of ANY-t BarriersANY loss or ANY Poten EITHER Fuel Clad or RCS	wo tial Loss of	Loss of ANY-t Loss or Poten loss or ANY P	wo Barriers-AND tial Loss of Third BarrierANY otential Loss of Containment
1	Fuel Clad Barrie	Example	EALS	RCS Barrier	Example_EALS	<u>Cont</u>	ainment Ba	rrier Example-EALS
	L033	POTEN	TIAL LOSS	LOSS	POTENTIAL LOSS	L	055	POTENTIAL LOSS
-	3. Core Exit Thermocouple R	<u>teadings</u>				<u>3. Core Ex</u>	it Thermocoup	e Reading
	GREATER THAN OR EQUAL TO 1200-degree-°F (site-specific) degree F	GREATER EQUAL TO specific)700	THAN OR (sito- -degree-°F			Not applicat	ole	Core exit thermocouples in excess of GREATER THAN OR EQUAL TO 1200 degrees ⁶ F and restoration procedures not effective within 15 minutes;-or OR -cCore exit -thermocouples in excess of GREATER THAN OR EQUAL TO 700 degrees ⁶ F with RCPs NOT running <u>AND</u> restoration procedures not effective within 15 minutes OR RVLIS void fraction rising with at least one RCP running and RCS subcooling LESS THAN 30°F [65°F]reactor-vessel level below-top-of-active fuel and restoration procedures not effective within 15 minutes

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	UNUSUAL-EVENTGENERAL ALERTS Loss of ANY two Barriers AND Loss or Potential Loss of Third Barrier ANY Loss or Potential Loss of Containment Loss or Potential Loss of Containment		ALERTSIT	E AREA EMERGENCY	ALERT SITE-AREA-EM	ERGENCY	UNUSUAL EVENT GENERAL		
			Loss or Potentia ANY-loss or AN Fuel Clad or RC	al Loss of ANY two Barriers IV Potential Loss of EITHER GS Loss or Potential Loss of ANY BarriersANY loss or ANY Pol EITHER Fuel Clad or RCS		Y-two Loss of ANY-two Barriers-All tential Loss of Loss or Potential Loss of Thil loss or ANY Potential Loss of Loss or ANY Potential Loss of Thil		wo-Barriers-AND ital Loss of Third-BarrierANY otential Loss of Containment	
1	<u>Fuel Clad Ba</u>	rrier Example	EALS	RCS Barrier	Example-EALS	Cont	ainment Ba	<u> Tier Example-EALS</u>	
	L055	POTEN	TIAL LOSS	LOSS	POTENTIAL LOSS	L	055	POTENTIAL LOSS	
		OR			OR			OR	
	4. Reactor Vessel Wate	er Level		3. SG Tube Rupture		4. SG Seco Secondary	ondary Side Rei Leakage	ease with Primary -to-	
	Not Applicable	Level LESS th specific) value fraction rising AND At least one R AND RCS subcoolin 30°F [65°F]	an (cilo- RVLIS vold CP running ng LESS THAN	SGTR that results in an ECCS (SI) Actuation	Not Applicable	RUPTURED FAULTED of containmen Primary-to-S leakrate gre thanGREAT gpm with no steam relea affected S/C environmen	D S/G is also putside of t OR Secondary aater 'ER THAN 10 onisolable se from S to the t	Not applicable	
								OR	
						5. CNMT Is	solation Valves	Status After CNMT Isolation	
						Containmer vaive(s) not Vaiv AND -Ddownstrea the environr after contair	it isolation closed re(s) not-closed o am pathway to nent exists, nment isolation	Not Applicable	
		OR			OR			OR	

UNUSUAL EVENTGENERAL	ALERTSITE AREA EMERGENCY	ALERT SITE AREA EMERGENCY	UNUSUAL EVENT GENERAL
Loss of ANY two Barriers AND	Loss or Potential Loss of ANY two Barriers	Loss or Potential Loss of ANY-two	Loss of ANY-two Barriers-AND
Loss or Potential Loss of Third Barrier ANY-	ANY-loss or ANY-Potential Loss of EITHER	BarriersANY loss or ANY Potential Loss of	Loss or Potential Loss of Third BarrierANY
loss or ANY-Potential Loss of Containment	Fuel Clad-or RGS	EITHER Fuel Clad or RCS	loss or ANY Potential Loss of Containment

Fuel Clad Barrier Example-EALS		RCS Barrier	Example-EALS	Containment Barrier Example-EALS		
LOSS	POTENTIAL LOSS	L035	POTENTIAL LOSS	LOSS	POTENTIAL LOSS	
5. Containment Radiation Monitoring		4. Containment Radiation	Monitoring	6. Significant Radioactive Inventory in Containment		
Containment rad monitor (R-40/41) reading GREATER THAN (site- specific) 1000 R/hr	Not Applicable	Containment rad monitor (R-40/41) reading GREATER THAN (site- specific) 30 R/hr	Not Applicable	Not Applicable	Containment rad monitor (R-40/41) reading GREATER THAN (site- specific) 4000 R/hr	

1	UNUSUAL EVENTGENERALALERTSITELoss of ANY two Barriers ANDLoss or Potential Loss of Third Barrier ANYLoss or Potential Loss of ContainmentLoss or ANY-Potential Loss of ContainmentFuel Clad or RCS		E AREA EMERGENCY	AREA EMERGENCY ALERT SITE-AREA-EMERGE			GENCY UNUSUAL EVENT GENERAL		
			Loss of ANY two Barriers / Potential Loss of EITHER S	Image: work Loss of ANY-two Barriers AND ial Loss of Loss or Potential Loss of Third- loss or ANY Potential Loss of C Loss of C		Barriers AND Loss of Third BarrierANY ential Loss of Containment			
1	Fuel Clad Barrier Example	FALS	RCS Barrier I	Example FALS	Confr	anment Barri	er Example FALS		
1					1088		DOTENTIAL LOSS		
	LUSS PUTENTIAL LUSS		L033	FOTENTIAL LOSS	£.,	033	FOIENIIAL LUSS		
	OR		c	DR		OF	2		
	6Other (Site-Specific) Indications	. •	<u>δ. Other (Site-Specific) Ind</u>	lications	7. Other (s	ite-specific) Indic	ations		
	(Site specific-) as applicable (Site speci	ic) as a pplicabl o	(Site-specific) as applicable	(Site-specific) as applicable	(Site specifie	c) as applicable	(Site specific) as applicable		
	OR		c	DR		OF	ł		
	76. Emergency Director Judgment		65. Emergency Director Judgment		87, Emergency Director Judgment				
Any condition in the opinion of the Emergency Director that indicates Loss or Potential Loss of the Fuel Clad Barrier			Any condition in the opinion of the Emergency Director that indicate Loss or Potential Loss of the RCS Barrier		Any condition in the opinion of the Emergency Director that indicates Loss or Potential Loss of the Containment barrier				

Basis Information For Table 5-F-41 PWR-KNPP Emergency Action Level Fission Product Barrier Reference Table

FUEL CLAD BARRIER EXAMPLE-EALs: (1 or 2 or 3 or 4 or 5 or 6-or-7)

The Fuel Clad Barrier is the zircalloy or stainless steel tubes that contain the fuel pellets.

1. Critical Safety Function Status

This EAL is for PWRs using Critical Safety Function Status Tree (CSFST) monitoring and functional restoration procedures. For more information, please refer to Section 3.9 of this report. RED path indicates an extreme challenge to the safety function. ORANGE path indicates a severe challenge to the safety function.

Core Cooling - ORANGE indicates subcooling has been lost and that some clad damage may occur. Core Cooling-ORANGE path is entered if:

- RCS subcooling based on CETs is equal to or less than 30°F [65°F] and
- No RCPs are running., and
- Core Exit Thermocouples (CETs) are reading between 700°F and 1200°F

OR

- RCS subcooling based on CETs is equal to or less than 30°F [65°F]-,], and
- At least one RCP is running, and
- RVLIS Void Fraction is Rising

[Ref. 1, 2]

Heat Sink - RED indicates the ultimate heat sink function is under extreme challenge and thus these two items (Core Cooling – ORANGE or Heat Sink – RED) indicate potential loss of the Fuel Clad Barrier. Heat Sink-Red path is entered if narrow range level in both S/Gs is less than 4% [15%] and total feedwater flow to S/Gs is less than 200 gpm.

[Ref. 4, 5]

Core Cooling - RED indicates significant superheating and core uncovery and is considered to indicate loss of the Fuel Clad Barrier. Core Cooling-RED path is entered if Core Exit Thermocouples (CETs) are equal to or greater than 1200°F.

CSFST setpoints enclosed in brackets (e.g., [65°F], etc.) are used under adverse containment conditions. Adverse containment condition thresholds apply when containment pressure is greater than 4 psig or containment radiation exceeds 10E+05 R/hr.

2. Primary Coolant Activity Level

This (site-specific)-value corresponds to is 300 μ Ci/gm I₁₃₁ equivalent. Assessment by the NUMARC EAL Task Force indicates that this amount of coolant activity is well above that expected for iodine spikes and corresponds to less than 5% fuel clad damage. This amount of radioactivity indicates significant clad damage and thus the Fuel Clad Barrier is considered lost. The value expressed can be either in mR/hr observed on the sample or as μ Ci/gm results from analysis.

There is no equivalent "Potential Loss" EAL for this item.

3. Core Exit Thermocouple Readings

Core Exit Thermocouple Readings are included in addition to the Critical Safety Functions to include conditions when the CSFs may not be in use (initiation after SI is blocked). or plants which do not have a CSF scheme.

The "Loss" EAL 1200 degrees F(site-specific) reading should correspond to significant superheating of the coolant. This value typically_corresponds to the temperature reading that indicates core cooling - RED in Fuel Clad Barrier EAL #1 which is usually about-1200 degrees F. [Ref. 1, 6]

The "Potential Loss" EAL 700 degrees F(site-specific) reading should correspond to loss of subcooling. This value typically-corresponds to the temperature reading that indicates core cooling - ORANGE in Fuel Clad Barrier EAL #1 which is usually about-700 to 900-degrees F. [Ref.1, 2]

4. Reactor Vessel Water Level

There is no "Loss" EAL corresponding to this item because it is better covered by the other Fuel Clad Barrier "Loss" EALs.

The (site specific) value for the "Potential Loss" EAL corresponds to is indicative of core uncovery the top of the active fuel. but, when the reactor is at pressure and temperature, RVLIS should not be used for a quantitative value (i.e., top of active fuel). Functional restoration procedure FR-C.2 specifies monitoring of RVLIS void fraction trend and RCS subcooling instead of the water level corresponding to the top of active fuel.

For sites using CSFSTs, tThe "Potential Loss" EAL is therefore defined by the Core Cooling -ORANGE path. -The trend in RVLIS RCS void fraction is used to check the effectiveness of safety injection in restoring RCS inventory. If void fraction percent is decreasing and RCS subcooling based on Core Exit Thermocouples (CETs) is greater than 30°F [65°F], safety injection has been successful in restoring RCS inventory and core cooling. In the event that RCS void fraction is increasing and subcooling requirements are not met, core cooling continues to be degraded and some fuel cladding damage may occur. Setpoints enclosed in brackets are used under adverse containment conditions. Adverse containment condition thresholds apply when containment pressure is greater than 4 psig or containment radiation exceeds 10E+05 R/hr. [Ref. 7] The (site specific) value in this EAL should be consistent with the CSFST-value.

5. Containment Radiation Monitoring

The (site-specific)1000 R/hr reading is a value which indicates the release of reactor coolant, with elevated activity indicative of fuel damage, into the containment. The reading should beis calculated assuming the instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with a concentration of 300 μ Ci/gm dose equivalent I-131 into the

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containment atmosphere. [Ref. 8, 9, 10] Reactor coolant concentrations of this magnitude are several times larger than the maximum concentrations (including iodine spiking) allowed within technical specifications and are therefore indicative of fuel damage. This value is higher than that specified for RCS barrier Loss EAL #4. Thus, this EAL indicates a loss of both the fuel clad barrier and a loss of RCS barrier.

Monitors used for this fission product barrier loss threshold are the containment high-range area monitors R-40 and R-41.

There is no "Potential Loss" EAL associated with this item.

6.——Other (Site-Specific) Indications

This EAL-is to cover other (site-specific) indications that may indicate loss or potential loss of the Fuel-Clad-barrier, including indications from containment air monitors or any other (site-specific) instrumentation.

76. Emergency Director Judgment

This EAL addresses any other factors that are to be used by the Emergency Director in determining whether the Fuel Clad barrier is lost or potentially lost. Such a determination should include imminent barrier degradation, barrier monitoring capability and dominant accident sequences.

- <u>Imminent barrier degradation</u> exists if the degradation will likely occur within two hours based on a projection of current safety system performance. The term "imminent" refers to recognition of the inability to reach safety acceptance criteria before completion of all checks.
- <u>Barrier monitoring</u> capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of offsite monitoring results.
- <u>Dominant accident sequences</u> lead to degradation of all fission product barriers and likely entry to the CSFSTs. The Emergency Director should be mindful of the Loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

In addition, the inability to monitor the barrier should also be incorporated in this EAL as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost. (See also IC-SG1, "Prolonged-Loss or All Offsite-Power and Prolonged-Loss of All-Onsite AC-Power", for additional information.)

RCS BARRIER EXAMPLE-EALs: (1 or 2 or 3 or 4 or 5-or-6)

The RCS Barrier includes the RCS primary side and its connections up to and including the pressurizer safety and relief valves, and other connections up to and including the primary-isolation valves.

1. Critical Safety Function Status

This EAL is for PWRs using Critical Safety Function Status Tree (CSFST) monitoring and functional restoration procedures. For more information, please refer to Section 3.9 of this report. RED path indicates an extreme challenge to the safety function derived from appropriate instrument readings, and these CSFs indicate a potential loss of RCS barrier.

RCS Integrity-Red path is entered if:

- Temperature decrease in both RCS cold legs is equal to or greater than 100°F in the last 60 minutes, and
- Any RCS cold leg temperatures are equal to or less than 274°F.

The combination of these two conditions indicates the RCS barrier is under extreme challenge and should be considered a Potential Loss of the RCS barrier. [Ref. 11, 12] The combination of these two conditions indicates the RCS barrier is under significant challenge and should be considered a challenge of RCS barrier. [Ref.]

Heat Sink-Red path is entered if:

- Narrow range level in both S/Gs is less than 4% [15%]
- Total feedwater flow to S/Gs is less than 200 gpm.

The combination of these two conditions indicates the heat sink function is under extreme challenge. This condition addresses loss of functions required for hot shutdown with the reactor at pressure and temperature and should be considered a Potential Loss of the RCS barrier. [Ref.- 4, 5]

Critical Safety Function Status Tree (CSFST) setpoints enclosed in brackets are used under adverse containment conditions. Adverse containment condition thresholds apply when containment pressure is greater than 4 psig or containment radiation exceeds 10E+05 R/hr.

There is no "Loss" EAL associated with this item.

2. RCS Leak Rate

The "Loss" EAL addresses conditions where leakage from the RCS is greater than available inventory control capacity such that a loss of subcooling has occurred. The loss of subcooling is the fundamental indication that the inventory control systems are inadequate in maintaining RCS pressure and inventory against the mass loss through the leak. Loss of subcooling is defined by:

- LESS THAN 20°F if the reactor is critical
- LESS THAN 30°F if the reactor is sub-critical

Core exit thermocouples LESS THAN 20°F is the subcooling margin threshold while critical. This is based on the minimum subcooling allowed for normal operation defined in Operating Procedure A-RC-36-D. [Ref. 23]

Core exit thermocouples LESS THAN 30°F is the subcooling margin threshold while subcritical. This is the level specified in Critical Safety Function Status Trees. IPEOPs define this value as a loss of RCS subcooling. [Ref. 1]

The "Potential Loss" EAL is based on the inability to maintain normal liquid inventory within the Reactor Coolant System (RCS) by normal operation of the Chemical and Volume Control System which is considered as one centrifugal-variable-speed, positive displacement charging pump discharging to the charging header. A second charging pump being required is indicative of a substantial RCS leak. 60 gpm is the design flow rate for each charging pump. For plants with low capacity charging pumps, a 50 gpm-loak rate value may be used to indicate the Potential Loss. [Ref. 13]

3. SG Tube Rupture

This EAL is intended to address the full spectrum of Steam Generator (SG) tube rupture events in conjunction with Containment Barrier "Loss" EAL #4 and Fuel Clad Barrier EALs. The "Loss" EAL addresses RUPTURED SG(s) for which the leakage is large enough to cause actuation of ECCS (SI). ECCS (SI) actuation is caused by:

- PRZR pressure less than 1815 psig
- S/G pressure less than 500 psig
- Containment pressure greater than 4 psig

Per IPEOP E-0, Reactor Trip or Safety Injection, the Operators are directed to perform a manual Safety Injection actuation if PRZR level is less than 5% or RCS subcooling based on Core Exit Thermocouples (CETs) is less than 30°F.

This is consistent to the RCS-Barrier "Potential Loss" EAL #2. For plants that have implemented W.O.G. emergency response guides, this condition is described by "entry-into E-3 required by EOPs". By itself, this EAL will result in the declaration of an Alert. However, if the SG is also FAULTED (i.e., two barriers failed), the declaration escalates to a Site Area-Emergency per Containment Barrier "Loss" EAL #4. [Ref. 13, 14]

There is no "Potential Loss" EAL.

4. Containment Radiation Monitoring

The (site-specific)30 R/hr reading is a value which indicates the release of reactor coolant to the containment. The reading should-beis calculated assuming the instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with normal operating concentrations (i.e., within T/STechnical Specifications) into the containment atmosphere. [Ref. 8, 9, 10] This reading will-beis less than that specified for Fuel Clad Barrier EAL #5. Thus, this EAL would be indicative of a RCS leak only. If the radiation monitor reading increased to that specified by Fuel Clad Barrier EAL #5, fuel damage would also be indicated.

Monitors used for this fission product barrier loss threshold are the containment high-range area monitors R-40 and R-41.

However, if the site specific physical location of the containment radiation monitor is such that radiation from a cloud of released RCS gases could not be distinguished from radiation from nearby piping and components containing elevated reactor coolant activity, this EAL should be omitted and other site specific indications of RCS leakage substituted.

There is no "Potential Loss" EAL associated with this item.

5.----Other (Site-Specific) Indications

This EAL is to cover other (site-specific) indications that may indicate loss or potential loss of the RCS-barrier, including indications from containment air monitors or any other (site-specific) instrumentation.

65. Emergency Director Judgment

This EAL addresses any other factors that are to be used by the Emergency Director in determining whether the RCS barrier is lost or potentially lost. Such a determination should include imminent barrier degradation, barrier monitoring capability and dominant accident sequences.

- <u>Imminent barrier degradation</u> exists if the degradation will likely occur within two hours based on a projection of current safety system performance. The term "imminent" refers to recognition of the inability to reach safety acceptance criteria before completion of all checks.
- <u>Barrier monitoring</u> capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of offsite monitoring results.
- <u>Dominant accident sequences</u> lead to degradation of all fission product barriers and likely entry to the CSFSTs. The Emergency Director should be mindful of the Loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

-In addition, the inability to monitor the barrier should also be incorporated in this EAL as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost. (See also IC-SG1, "Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC-Power", for additional information.)
CONTAINMENT BARRIER EXAMPLE-EALs: (1 or 2 or 3 or 4 or 5 or 6 or 7-or-8)

The Containment Barrier includes the Shield Building and Ceontainment building, and its connections up to and including the outermost containment isolation valves. This barrier also includes the main steam, feedwater, and blowdown lines extensions +outside the Ceontainment building up to and including the outermost secondary side-isolation valve(s).

1. Critical Safety Function Status

There is no "Loss" EAL associated with this item.

This EAL is for PWRs using Critical Safety Function Status Tree (CSFST) monitoring and functional restoration procedures. For more information, please refer to Section 3.9 of this report. RED path indicates an extreme challenge to the safety function. Containment-Red path is entered if containment pressure is equal to or greater than 46 psig. This pressure is the containment design pressure and is in excess of that expected from the design basis loss of coolant accident derived from appropriate instrument readings and/or sampling results, and thus represents a potential loss of containment. Conditions leading to a containment RED path result from RCS barrier and/or Fuel Clad Barrier Loss. Thus, this EAL is primarily a discriminator between Site Area Emergency and General Emergency representing a potential loss of the third barrier. [Ref. 15, 16, 17]

There is no "Loss" EAL associated with this item.

2. Containment Pressure

Rapid unexplained loss of pressure (i.e., not attributable to containment spray or condensation effects) following an initial pressure increaserise indicates a loss of containment integrity. USAR Section- 14.3.4.2 describes containment pressure response for a bounding LOCA. [Ref. 17]

Containment pressure and sump levels should increaserise as a result of the mass and energy release into containment from a LOCA. Thus, sump level or pressure not increasing indicates containment bypass and a loss of containment integrity.

The (site-specific)-46 PSIG for potential loss of containment is based on the containment design pressure. [Ref.- 15, 16, 17]

If hydrogen concentration reaches or exceeds 6% in an oxygen rich environment, an explosive mixture exists. If the combustible mixture ignites inside containment, loss of the Containment barrier could occur.- To generate such levels of combustible gas, loss of the Fuel Cladding and RCS barriers must also have occurred Existence of an explosive mixture means a hydrogen and exygen concentration of at least the lower deflagration limit curve exists. The indications of potential loss under this EAL corresponds to some of those leading to the RED path in EAL #1 above and may be declared by those sites using CSFSTs. As described above, this EAL is primarily a discriminator between Site Area-Emergency and General Emergency representing a potential loss of the third barrier. [Ref. 6, 18]

The second-third potential loss EAL represents a potential loss of containment in that the containment heat removal/depressurization system (e.g., containment sprays, ice condenser fans, etc., (but not including containment venting strategies) are either lost or performing in a degraded manner, as indicated by containment pressure greater than the setpoint (23 psig) at which the equipment was supposed to have actuated. One internal containment spray pump and two containment fan cooler units comprise one train of depressurization equipment. This equipment

will provide 100% of the required cooling capacity during post-accident conditions. Each internal containment spray system consists of a spray pump, spray header, nozzles, valves, piping, instruments, and controls to ensure an operable flow path capable of taking suction from the RWST upon an ESF actuation signal. Each containment fan cooler unit consists of cooling coils, accident backdraft damper, accident fan, service water outlet valves, and controls necessary to ensure an operable service water flow path.- [Ref. 15, 16, 19, 20, 21]

3. Core Exit Thermocouples

There is no "Loss" EAL associated with this item.

In this EAL, the function restoration procedures are those emergency operating procedures that address the recovery of the core cooling critical safety functions. The procedure is considered effective if the temperature is decreasing or if the vessel water level is increasing. For units using the CSF status trees a direct correlation to those status trees can be made if the effectiveness of the restoration procedures is also evaluated as stated below.

Severe accident analyses (e.g., NUREG-1150) have concluded that function restoration procedures can arrest core degradation within the reactor vessel in a significant fraction of the core damage scenarios, and that the likelihood of containment failure is very small in these events. Given this, it is appropriate to provide a reasonable period to allow function restoration procedures to arrest the core melt sequence. Whether or not the procedures will be effective should be apparent within 15 minutes. The Emergency Director should make the declaration as soon as it is determined that the procedures have been, or will be ineffective. The reactor vessel level chosen should be consistent with the emergency response guides applicable to the facility.

RVLIS void fraction increasing and RCS subcooling less than or equal to 30°F [65°F] is indicative of core uncovery. When the reactor is at pressure and temperature, RVLIS should not be used for a quantitative value (i.e., top of active fuel). Function restoration procedure FR-C.2 specifies monitoring of RVLIS void fraction trend and RCS subcooling instead of the water level corresponding to the top of active fuel. This is defined by the Core Cooling - ORANGE path. The trend in RVLIS RCS void fraction is used to check the effectiveness of safety injection in restoring RCS inventory. If void fraction percent is decreasing and RCS subcooling based on Core Exit Thermocouples (CETs) is greater than 30°F [65°F], safety injection has been successful in restoring RCS inventory and core cooling. In the event that RCS void fraction is increasing and subcooling requirements are not met, core cooling continues to be degraded and some fuel cladding damage may occur. Setpoints enclosed in brackets are used under adverse containment conditions. Adverse containment condition thresholds apply when containment pressure is greater than 4 psig or containment radiation exceeds 10E+05 R/hr.

The conditions in this potential loss EAL represent an imminent core melt sequence which, if not corrected, could lead to vessel failure and an increased potential for containment failure. In conjunction with the Core Cooling and Heat Sink criteria in the Fuel and RCS barrier columns, this EAL would result in the declaration of a General Emergency -- loss of two barriers and the potential loss of a third. If the function restoration procedures are ineffective, the Operating Crew will be directed to go to Severe Accident Management Guidelines (SACRG-1)re-is-no-"success" path. [Ref. 1, 6, 7]

There is no "Loss" EAL associated with this item.

4. SG Secondary Side Release With Primary To Secondary Leakage

This "loss" EAL recognizes that SG tube leakage can represent a bypass of the containment barrier as well as a loss of the RCS barrier. The first "loss" EAL addresses the condition in which a RUPTURED steam generator is also FAULTED. This condition represents a bypass of the RCS and containment barriers. In conjunction with RCS Barrier "loss" EAL #3, this would always result in the declaration of a Site Area-Emergency. A faulted S/G means the existence of secondary side leakage that results in an uncontrolled lowering in steam generator pressure or the steam

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generator being completely depressurized. A ruptured S/G means the existence of primary-tosecondary leakage of a magnitude sufficient to require or cause a reactor trip and safety injection. Confirmation should be based on diagnostic activities consistent with E-0, Reactor Trip or Safety Injection. [Ref. 14]

The second "loss" EAL addresses SG tube leaks that exceed 10 gpm in conjunction with a nonisolable release path to the environment from the affected steam generator. The threshold for establishing the nonisolable secondary side release is intended to be a prolonged release of radioactivity from the RUPTURED steam generator directly to the environment. This could be expected to occur when the main condenser is unavailable to accept the contaminated steam (i.e., ., SGTR with concurrent loss of offsite power and the RUPTURED steam generator is required for plant cooldown or a stuck open relief valve). If the main condenser is available, there may be releases via air ejectors, gland seal exhausters, and other similar controlled, and often monitored, pathways. These pathways do not meet the intent of a nonisolable release path to the environment. This was recognized during the development process. The inclusion of an EAL that uses Emegency Procedure commonly used terms like "ruptured and faulted" adds to the ease of the classification process and has been included based on this human factor concern.

The leakage threshold for this EAL has been increased with Revision 3. In the earlier revision, the threshold was leakage greater than T/S allowable. Since the prior revision, many plants have implemented reduced steam generator T/S limits (e.g., 150 gpd) as a defense in depth associated with alternate steam generator plugging criteria. The 150 gpd threshold is deemed too low for use as an emergency threshold. A pressure boundary leakage of 10 gpm was is used as the threshold in IC SU5.1, RCS Leakage, and is deemed appropriate for this EAL. For smaller breaks, not exceeding the normal charging capacity threshold in RCS Barrier "Potential Loss" EAL #2 (RCS Leak Rate) or not resulting in ECCS actuation in EAL #3 (SG Tube Rupture), this EAL results in a NOUE. For larger breaks, RCS barrier EALs #2 and #3 would result in an Alert. For SG tube ruptures which may involve multiple steam generators or unisolable secondary line breaks, this EAL would exist in conjunction with RCS barrier "Loss" EAL #3 and would result in a Site Area Emergency. Escalation to General Emergency would be based on "Potential Loss" of the Fuel Clad Barrier.

5. Containment Isolation Valve Status After Containment Isolation

This EAL is intended to address incomplete containment isolation that allows direct release to the environment. It represents a loss of the containment barrier.

The use of the modifier "direct" in defining the release path clarifies that release paths through interfacing liquid systems is not applicable to this EALdiscriminates against release paths through interfacing liquid systems. The existence of an in-line charcoal filter does not make a release path indirect since the filter is not effective at removing fission noble gases. Typical filters have an efficiency of 95-99% removal of iodine. Given the magnitude of the core inventory of iodine, significant releases could still occur. In addition, since the fission product release would be driven by boiling in the reactor vessel, the high humidity in the release stream can be expected to render the filters ineffective in a short period.

There is no "Potential Loss" EAL associated with this item.

6. Significant Radioactive Inventory in Containment

There is no "Loss" EAL associated with this item.

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The <u>(site-specific)</u>4000 R/hr reading is a value which indicates significant fuel damage well in excess of the EALs associated with both loss of Fuel Clad and loss of RCS Barriers. [Ref. 8, 9, 10] As stated in Section 3.8, aA major release of radioactivity requiring offsite protective actions from core damage is not possible unless a major failure of fuel cladding allows radioactive material to be released from the core into the reactor coolant.

Regardless of whether containment is challenged, this amount of activity in containment, if released, could have such severe consequences that it is prudent to treat this as a potential loss of containment, such that a General Emergency declaration is warranted. NUREG-1228, "Source Estimations During Incident Response to Severe Nuclear Power Plant Accidents," indicates that such conditions do not exist when the amount of clad damage is less than 20%.

Monitors used for this fission product barrier loss threshold are the containment high-range area monitors R-40 and R-41.

Unless-there_is-a (site-specific) analysis justifying a higher value, it is recommended that a radiation monitor reading corresponding to 20% fuel clad damage be specified here.

There is no "Loss" EAL-associated with this item.

7. --- Other (Site-Specific) Indications

This EAL-should cover other (site-specific)-indications that may unambiguously-indicate-loss or potential loss of the containment barrier, including indications from area or ventilation monitors in containment annulus or other contiguous buildings. If site emergency operating procedures provide for venting of the containment during an emergency as a means of preventing catastrophic failure, a Loss EAL should be included for the containment barrier. This EAL should be declared as soon as such venting is imminent. Containment venting as part of recovery actions is classified in accordance with the radiological effluent ICs.

87. Emergency Director Judgment

This EAL addresses any other factors that are to be used by the Emergency Director in determining whether the Containment barrier is lost or potentially lost. Such a determination should include imminent barrier degradation, barrier monitoring capability and dominant accident sequences.

- <u>Imminent barrier degradation</u> exists if the degradation will likely occur within two hours based on a projection of current safety system performance. The term "imminent" refers to recognition of the inability to reach safety acceptance criteria before completion of all checks.
- <u>Barrier monitoring</u> capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of offsite monitoring results.
- <u>Dominant accident sequences</u> lead to degradation of all fission product barriers and likely entry to the CSFSTs. The Emergency Director should be mindful of the Loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

-In addition, the inability to monitor the barrier should also be incorporated in this EAL as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost. (See also

IC-SG1, "Prolonged-Loss of All-Offsite Power and Prolonged-Loss of All-Onsite AC Power", for additional information.)

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- 1. F-0.2 Core Cooling, Rev. F
- 2. FR-C.2 Response to Degraded Core Cooling, Rev. M
- 3. E-0 QRF Quick Reference Foldout, Section E-0, Rev. H
- 4. F-0.3 Heat Sink, Rev. E
- 5. FR-H.1 Response to Loss of Secondary Heat Sink, Rev. T
- 6. FR-C.1 Response to Inadequate Core Cooling, Rev. N
- 7. BKG FR-C.2 Response to Degraded Core Cooling, Rev. B
- 8. EPIP-TSC-09A Core Damage Assessment, Rev. K
- 9. C11617, Determination of Containment Monitor and Rad. EffluentRadiation Monitor EALs-per NEI-99-01, Rev., Rev 04
- 10. F-0.4 Integrity, Rev. E
- 11. FR-P-1 Response to Imminent Pressurized Thermal Shock, Rev. P
- 12. USAR Section 9.2.2, Rev. 18
- 13. E-0 Reactor Trip or Safety Injection, Rev. V
- 14. F-0.5 Containment, Rev. F
- 15. FR-Z.1 Response to High Containment Pressure, Rev. L
- 16. USAR Section 14.3.4.2, Rev. 18
- 17. N-RBV-18C POST-LOCA Hydrogen Control, Rev. K
- 18. Annunciator 47021F Containment Spray Activated, -Rev. A
- 19. N-CCI-56A-CLA Reduced Inventory Cntmt Integrity Checklist SG Secondary Side Intact, Rev. K
- 20. Technical Specifications LCO 3.3.c, Amendment No. 172
- 21. EOP Setpoints, Rev. 8/31/90
- 22. A-RC-36D Reactor Coolant Leak, Rev. AE

TABLE 5-H-10

Recognition Category H

Hazards and Other Conditions Affecting Plant Safety

INITIATING CONDITION MATRIX

	NOUE		ALERT	S	ITE AREA EMERGENCY	C	GENERAL EMERGENCY	
HU1	Natural and Destructive Phenomena Affecting the PROTECTED AREA. Op. Modes: All	HA1	Natural and Destructive Phenomena Affecting the Plant VITAL AREA. Op. Modes: All					
HU2	FIRE Within PROTECTED AREA Boundary Not Extinguished Within 15 Minutes of Detection. <i>Op. Modes: All</i>	HA2	FIRE or EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown. <i>Op. Modes: All</i>					
HU3	Release of Toxic or Flammable Gases Deemed Detrimental to Safe-Operation of the Plant. <i>Op. Modes: All</i>	НАЗ	Release of Toxic or Flammable Gases Within or Contiguous to a VITAL AREA Which Jeopardizes Operation of Safety-Systems Required to Establish or Maintain Safe Shutdown. Op. Modes: All					
HU4	Confirmed Security Event Which Indicates a Potential Degradation in the Level of Safety of the Plant. <i>Op. Modes: All</i>	HA4	Confirmed Security Event in a Plant PROTECTED AREA. <i>Op. Modes: All</i>	HS1	Confirmed Security Event in a Plant VITAL AREA. <i>Op. Modes: All</i>	HG1	Security Event Resulting in Loss Of Physical Control of the Facility. <i>Op. Modes: All</i>	
HU5	Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of a NOUEUE. Op. Modes: All	ĤA6	Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of an Alert. <i>Op. Modes: All</i>	HS3	Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of Site Area Emergency. Op. Modes: All	HG2	Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of General Emergency. Op. Modes: All	ļ
		HA5	Control Room Evacuation Has Been Initiated. Op. Modes: All	HS2	Control Room Evacuation Has Been Initiated and Plant Control Cannot Be Established. <i>Op. Modes: All</i>			

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HU1

Initiating Condition - NOTIFICATION OF UNUSUAL EVENT

Natural and Destructive Phenomena Affecting the PROTECTED AREA.

Operating Mode Applicability: All

Example EmergencyEmergency Action Level: (HU1.1 or HU1.2 or HU1.3 or HU1.4 or HU1.5 or HU1.6 -or HU1.7)

HU1.1. Earthquake felt in plant as indicated by: {(Site-Specific)-method-of-indicatinges felt earthquake.]

Consensus of Control Room operators on duty **AND** Activation of seismic monitor with Trigger light lit in Relay Room on RR159 (SER 330 Seismic Monitor Event)

- HU1.2. Report by plant personnel of tornado or high winds greater thanGREATER THAN 100(site-specific) mph striking within PROTECTED AREA boundary.
- HU1.3. Vehicle crash into plant structures containing functions and systems required for safe shutdown of the plantor systems within the PROTECTED AREA boundary.
- HU1.4. Report by plant personnel of an unanticipated EXPLOSION within PROTECTED AREA boundary resulting in VISIBLE DAMAGE to permanent structure or equipment.
- HU1.5. Report of turbine failure resulting in casing penetration or damage to turbine or generator seals.
- HU1.6. Uncontrolled flooding in the following(site-specific)- areas of the plant that has the potential to affect safety related equipment needed for the current operating mode:
 - Diesel Generator A Room
 - Diesel Generator B Room
 - Safeguards Alley
 - Relay Room
 - CRDM Equipment Room
 - RHR Pump Pits
 - Auxiliary Building Basement
 - Screen House

HU1.7. High or low lake level in excess of column "Unusual Event", Lake-Forebay Level Thresholds, Table H-2 for >GREATER THAN 15 minutes.

(Site-Specific) occurrences affecting the PROTECTED AREA.							
Table H-2 Lake-Forebay Level Thresholds (GREATER THAN 15 min.)							
	Unusual	Event		_ Alert			
Level	Num Circulating	ber of Runn Water Pun Pumps	ing nps Water	Level	ing umps		
	0	1	2	i	0	1	2
High GREATER THAN OR EQUAL TO 586.0 ft	Above bottom of bar #2 on south wall	GREATER THAN OR EQUAL TO 98%*	GREATER THAN OR EQUAL TO 88%*	High GREATER THAN OR EQUAL TO 589.9 ft	Above bottom of bar #3 on south wall	Above bottom of bar #1 on south wall	GREATER THAN OR EQUAL TO 94%*
Low LESS THAN 569.5 ft	LESS THAN 53.1%*	LESS THAN 46.9%*	N/A .	Low LESS THAN 568.5 ft	LESS THAN 50.0%*	N/A	N/A

* Computer point L9075A

Basis:

NOUEs in this IC are categorized on the basis of the occurrence of an event of sufficient | magnitude to be of concern to plant operators. Areas identified in the EALs define the location of the event based on the potential for damage to equipment contained therein. Escalation of the event to an Alert occurs when the magnitude of the event is sufficient to result in damage to equipment contained in the specified location.

EAL-#1HU1.1-should-be-developed-on-site-specific basis. Damage may be caused to some portions of the site, but should not affect ability of safety functions to operate. Method of detection can be based on instrumentation, validated by a reliable source, or operator assessment [Ref. 1, 2]. Consensus of the Control Room operators with respect to ground motion helps avoid unnecessary classification if the seismic switches inadvertently trip or detect vibrations not related to an earthquake. As defined in the EPRI-sponsored "Guidelines for Nuclear Plant Response to an Earthquake", dated October 1989, a "felt earthquake" is:

An earthquake of sufficient intensity such that: (a) the vibratory ground motion is felt at the nuclear plant site and recognized as an earthquake based on a consensus of control room operators on duty at the time, and (b) for plants with operable seismic instrumentation, the seismic switches of the plant are activated. For most plants with seismic instrumentation, the seismic switches are set at an acceleration of about 0.01g.

EAL #2HU1.2 is based on the assumption that a tornado striking (touching down) or high winds within the PROTECTED AREA may have potentially damaged plant structures containing functions or systems required for safe shutdown of the plant. The high wind site-specific-value in EAL#2-should beis based on site-specific FSAR design basis [Ref. 3]. If such damage is confirmed visually or by other in-plant indications, the event may be escalated to Alert. Even though the

meteorological towers are outside of the Protected Area, winds in excess of 100 mph detected there can be assumed to be inside of the Protected Area.

EAL-#3HU1.3 is intended to address crashes of vehicle types large enough to cause significant | damage to plant structures containing functions and systems required for safe shutdown of the plant [Ref.- 4]. If the crash is confirmed to affect a plant VITAL AREA, the event may be escalated | to Alert.

For EAL #4HU1.4 only those EXPLOSIONs of sufficient force to damage permanent structures or equipment within the PROTECTED AREA should be considered [Ref. 4]. No attempt is made in this EAL to assess the actual magnitude of the damage. The occurrence of the EXPLOSION with reports of evidence of damage is sufficient for declaration. The Emergency director also needs to consider any security aspects of the EXPLOSION, if applicable.

EAL #5HU1.5 is intended to address main turbine rotating component failures of sufficient magnitude to cause observable damage to the turbine casing or to the seals of the turbine generator. Of major concern is the potential for leakage of combustible fluids (lubricating oils) and gases (hydrogen cooling) to the plant environs. Actual FIREs and flammable gas build up are appropriately classified via HU2 and HU3. Generator seal damage observed after generator purge does not meet the intent of this EAL because it did not impact normal operation of the plant. This EAL is consistent with the definition of a NOUEUE while maintaining the anticipatory nature desired and recognizing the risk to non-safety related equipment. Escalation of the emergency classification is based on potential damage done by missiles generated by the failure or by the radiological releases for a BWR, or in conjunction with a steam generator tube rupture, for a PWR. These latter events would be classified by the radiological ICs or Fission Product Barrier ICs.

EAL #6HU1.6 addresses the effect of flooding caused by internal events such as component failures, equipment misalignment, or outage activity mishaps. The site-specific-listed internal flooding areas are those vulnerable areas indicated in the KNPP PRA that, should significant internal flooding occur (such as a Service Water or Circulating Water pipe rupture), could impact areas that contain systems required for safe shutdown of the plant areas-include those areas that contain systems required for safe shutdown of the plant, that are not designed to be wetted or submerged [Ref. 5]. Escalation of the emergency classification is based on the damage caused or by access restrictions that prevent necessary plant operations or systems monitoring.

The plant's IPEEE may provide insight into areas to be considered when developing this EAL.

EAL-#7HU1.7 covers other site specific phenomena such as hurricane, flood, or seiche. These EALs can also be precursors of more serious events. In particular, sites subject to severe weather as defined in the NUMARC station blackout initiatives, should include an EAL-based on activation of the severe weather mitigation procedures (e.g., precautionary shutdowns, diesel testing, staff call-outs, etc.). high lake (forebay) water level conditions that could be a precursor of more serious events as well as low lake (forebay) water level conditions which may threaten operability of plant cooling systems. Lake water level greater than or equal to 586 ft. International Great Lakes Datum (IGLD) corresponds to the floor elevation of the Service Water Pump Room and access tunnel. Lake water level less than 569.5 ft IGLD corresponds to one foot below the Alert (design) threshold [Ref. 6, 7, 8].

KNPP does not have instrumentation for taking direct readings of the lake level. However the intake forebay level is monitored for this purpose. When no circulating water pumps are operating, the intake forebay level is equal to lake level. However, when the Circulating Water Pumps are operating forebay level is reduced compared to actual lake level due to the hydraulic resistance of

the plant intake. KNPP has correlated the intake forebay level with actual lake level when either one or both Circulating Water Pumps are operating, adjusting the EAL thresholds accordingly. In most cases the Circulating Water Pumps will trip (42% indicated forebay level) prior to exceeding the forebay level that corresponds to the low lake level threshold.

The classification should be declared if the threshold is exceeded for greater than 15 minutes. This allows for short duration dynamic effects associated with the KNPP forebay and will avoid unnecessary event declaration due to shifting of Circulating Water Pumps and other dynamic effects in the forebay.

The International Great Lakes Datum (IGLD 1955) is a reference used to represent water levels in the Great Lakes region.

- 1. USAR Table 5.2-1 Allowable Stress Criteria Reactor Containment Vessel, Rev. 16
- 2. Alarm Response procedure 47023-K Seismic Trouble Beta Window Box #02-K3, Rev. E
- 3. USAR Section 5.2.2 Shield Building Design Wind Load, Rev. 16
- 4. Drawing A-449 Plan of Plant Area, Fence, Lighting and CCTV Support, Rev. F
- 5. KNPP PRA Section 7.0 Internal Flooding Analysis Workbook, Rev. 0401
- 6. USAR Section 2.6 Hydrology, Rev. 18
- 7. Alarm Response Procedure 47051-N Forebay Level Low Beta Window Box #05-N1, Rev. C
- KNPP Safety Evaluation Review for Kewaunee Proposed EAL Changes (TAC No. MB1860) 8/22/2001

HU2

Initiating Condition - NOTIFICATION OF-UNUSUAL EVENT

FIRE Within PROTECTED AREA Boundary Not Extinguished Within 15 Minutes of Detection.

Operating Mode Applicability:

Example-EmergencyEmergency Action Level:

HU2.1. FIRE in buildings or areas contiguous to any of the following (site-specific) areasthe PROTECTED AREA not extinguished within 15 minutes of control room notification or verification of a control room alarm

(Site-specific) list

Basis:

The purpose of this IC is to address the magnitude and extent of FIREs that may be potentially significant precursors to damage to safety systems. As used here, Detection is visual observation and report by plant personnel or sensor alarm indication. The 15 minute time period begins with a credible notification that a FIRE is occurring, or indication of a VALID fire detection system alarm. Verification of a fire detection system alarm includes actions that can be taken with the control room or other nearby site specific location to ensure that the alarm is not spurious. An verified alarm is assumed to be an indication of a FIRE unless it is disproved within the 15 minute period by personnel dispatched to the scene. In other words, a personnel report from the scene may be used to disprove a sensor alarm if received within 15 minutes of the alarm, but shall not be required to verify the alarm.

The intent of this 15 minute duration is to size the FIRE and to discriminate against small FIREs that are readily extinguished (e.g., smoldering waste paper basket). The <u>site-specific list-should</u> beapplicable areas are limited and <u>applies</u>-apply to buildings and areas contiguous (in actual contact with or immediately adjacent) to plant VITAL AREAs or other significant buildings or areas. The intent of this-IC is not to include buildings (i.e., warehouses) or areas that are not contiguous (in actual contact with or immediately adjacent) to plant VITAL AREAs. This excludes FIREs within administration buildings, waste-basket FIREs, and other small FIREs of no safety consequence.

Escalation to a higher emergency class is by IC HA2, "FIRE or EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown".

KNPP Basis Reference(s):

1. KNPP Fire Protection Program Plan Section 5.19, Rev. 5

2. Drawing A-449 Plan of Plant Area, Fence, Lighting and CCTV Support, Rev. F KNPP 56-H-7

10/22/04

HU3

Initiating Condition -- NOTIFICATION OF- UNUSUAL EVENT

Release of Toxic or Flammable Gases Deemed Detrimental to Normal Operation of the Plant.

Operating Mode Applicability: All

Example Emergency Action Levels: Emergency Action Levels: (HU3.1 or HU3.2)

- HU3.1. Report or detection of toxic or flammable gases that has or could enter the site area boundary in amounts that can affect NORMAL PLANT OPERATIONS.
- HU3.2. Report by Local, County or State Officials for evacuation or sheltering of site personnel based on an offsite event.

Basis:

This IC is based on the existence of uncontrolled releases of toxic or flammable gas that may enter the site boundary and affect normal plant operations. It is intended that releases of toxic or flammable gases are of sufficient quantity, and the release point of such gases is such that normal plant operations would be affected. This would preclude small or incidental releases, or releases that do not impact structures needed for plant operation. The EALs are intended to not require significant assessment or quantification. The IC assumes an uncontrolled process that has the potential to affect plant operations, or personnel safety.

Escalation of this EAL is via HA3, which involves a quantified release of toxic or flammable gas affecting VITAL AREAs.

KNPP Basis Reference(s):

None

Confirmed Security Event Which Indicates a Potential Degradation in the Level of Safety of the Plant.

Operating Mode Applicability: All

Example-Emergency-Action Levels:Emergency Action Levels: (HU4.1 or HU4.2)

1. Security events as determined from (site-specific) Safeguards Contingency Plan and reported by the (site-specific) security shift supervision

- HU4.1. 2.——Security [Supervision title] Shift Supervisor reports ANY of the following: A credible site specific security threat notification.
 - Suspected sabotage device discovered within the plant PROTECTED AREA
 - Suspected sabotage device discovered outside the PROTECTED AREA or in the plant switchyard
 - Confirmed tampering with safety-related equipment
 - A hostage or extortion situation that disrupts NORMAL PLANT OPERATIONS
 - Civil disturbance or strike which disrupts NORMAL PLANT OPERATIONS
 - Internal disturbance that is <u>not</u> a short lived or that is not a harmless outburst involving ANY individuals within the PROTECTED AREA
 - Malevolent use of a vehicle outside the PROTECTED AREA which disrupts normal plant operations

HU4.2 A credible site specific security threat notification

Basis:

Reference is made to (site-specific) security shift-supervision the Security Shift Supervisor because these-this individuals are is the designated personnel on-site qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict secrecy controls placed on the plant Safeguards Contingency Plan.

This-EAL-1-HU4.1 is based on (site-specific)-Site-Security-Plansthe Security And Safeguards Contingency Plan. Security events which do not represent a potential degradation in the level of safety of the plant, are reported under 10- CFR-CFR 73.71 or in some cases under 10 CFR 50.72. Examples of security events that indicate Potential Degradation in the Level of Safety of the Plant are provided below for consideration.

Consideration-should be given to the following-types of events when evaluating an event againstthe criteria of the site specific Security Contingency Plan: SABOTAGE, HOSTAGE./EXTORTION, CIVIL-DISTURBANCE, and STRIKE ACTION.KNPP56-H-910/22/04

INTRUSION into the plant PROTECTED AREA by a HOSTILE FORCE would result in EAL escalation to an ALERT or higher.

The intent of EAL-2-HU4.2 is to ensure that appropriate notifications for the security threat are made in a timely manner. Only the plant to which the specific threat is made need declare the Notification of an Unusual Event.

The determination of "credible" is made through use of information found in the (site-specific) Security And Safeguards Contingency Plan.

A credible site specific security threat is a threat of physical attack to the plant that represents a potential degradation of the level of safety to the plant.

A higher initial classification could be made based upon the nature and timing of the threat and potential consequences. The licensee shall consider upgrading the emergency response status and emergency classification in accordance with the [site security specificSecurity] And Safeguards Contingency Plan and Emergency Plans.

- 1. NRC Safeguards Advisory 10/6/01
- 2. Security And Safeguards Contingency Plan
- 3. Letter from Mr. B. A. Boger (NRC) to Ms. Lynette Hendricks (NEI) dated 2/4/02

HU5

Initiating Condition -- NOTIFICATION-OF-UNUSUAL EVENT

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of a NOUEUE.

Operating Mode Applicability: All

Example-EmergencyEmergency Action Level:

HU5.1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in process or have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

Basis:

This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the NOUEUE emergency class.

From a broad perspective, one area that may warrant Emergency Director judgment is related to likely or actual breakdown of site-specific event mitigating actions. Examples to consider include inadequate emergency response procedures, transient response either unexpected or not understood, failure or unavailability of emergency systems during an accident in excess of that assumed in accident analysis, or insufficient availability of equipment and/or support personnel.

KNPP Basis Reference(s):

None

HA1

Initiating Condition -- ALERT

Natural and Destructive Phenomena Affecting the Plant VITAL AREA.

Operating Mode Applicability: All

Example Emergency Action Levels: Emergency Action Levels: (HA1.1 or HA1.2 or HA1.3 or HA1.4 or HA1.5-or HA1.6)

- HA1.1. Seismic event GREATER THAN Operating Basis Earthquake (OBE) as indicated by activation of seismic monitor with OBE Limit Exceeded light lit in Relay Room on RR159 (SER 331 Seismic Monitor Operational Basis Earthquake) :(Site-Specific) [method(s) of indicatinges-Seismic Event-greater than Operating Basis Earthquake (OBE).]
- HA1.2. Tornado or -high winds GREATER THANgreater than [(site-specific, FSAR design basis]100) mph within PROTECTED AREA boundary and resulting in VISIBLE DAMAGE to any-of-the following plant structures /-or equipment located in Table H-1 areas or Control Room indication of degraded performance of those systems located within Table H-1 areas.

Reactor-Building
 Intake-Building
 Ultimate Heat-Sink
 Refueling Water-Storage-Tank
 Diesel Generator-Building
 Turbine-Building
 Condensate Storage Tank
 Control-Room
 Other (Site-Specific) Structures.

Table H-1 Safe Shutdown/VITAL Areas

- Shield Building (Reactor Building)
- Auxiliary Building
- Safeguards Alley
- Diesel Generator Rooms (includes "A" Diesel Room to Screen House Tunnel)
- Screenhouse/Forebay
- Technical Support Center Basement
- Control Room
- Control Room AC Equipment Room

- Relay Room
- Safeguards Battery Rooms
- HA1.3. Vehicle crash within PROTECTED AREA boundary and resulting in VISIBLE DAMAGE to any-of the following plant structures or equipment located in Table H-1 areas therein or Ceontrol Room indication of degraded performance of those systems located within Table H-1 areas.

□Reactor-Building
 □Intake-Building
 □Ultimate-Heat-Sink
 □Refueling Water-Storage Tank
 □Diesel-Generator Building
 □Turbine-Building
 □Condensate-Storage-Tank
 □Control-Room
 □Other (Site-Specific)-Structures.

HA1.4. Turbine failure-generated missiles result in any VISIBLE DAMAGE to or penetration of any of the following-plant areas listed in Table H-1:

-(site-specific)-list.

- HA1.5. Uncontrolled flooding in the (site-specific) following areas of the plant that results in degraded safety system performance as indicated in the control room or that creates industrial safety hazards (e.g., electric shock) that precludes access necessary to operate or monitor safety equipment.:
 - Diesel Generator A Room
 - Diesel Generator B Room
 - Safeguards Alley
 - Relay Room
 - CRDM Equipment Room
 - RHR Pump Pits
 - Auxiliary Building basement
 - Screen House
- HA1.6. High or low lake level in excess of column "Alert", Lake-Forebay Level Thresholds, Table H-2 for GREATER THAN 15 minutes.
 (Site-Specific) occurrences within PROTECTED AREA boundary and resulting in VISIBLE DAMAGE to plant structures containing equipment necessary for safe shutdown, or has caused damage as evidenced by control room indication of degraded performance of those systems.
 - Table H-2
 Lake-Forebay Level Thresholds (GREATER THAN 15 min.)

	Unusual	Event		Alert				
Level	Num Circulat	ber of Runn ing Water F	ing Pumps	Level	Number of Running Circulating Water Pumps			
	0	1	2		0	1	2	
High GREATER THAN OR EQUAL TO 586.0 ft	Above bottom of bar #2 on south wall	GREATER THAN OR EQUAL TO 98%*	GREATER THAN OR EQUAL TO 88%*	High GREATER THAN OR EQUAL TO 589.9 ft	Above bottom of bar #3 on south wall	Above bottom of bar #1 on south wall	GREATER THAN OR EQUAL TO 94%*	
Low LESS THAN 569.5 ft	LESS THAN 53.1%*	LESS THAN 46.9%*	N/A	Low LESS THAN 568.5 ft	LESS THAN 50.0%*	N/A	N/A	

* Computer point L9075A

Basis:

The EALs in this IC escalate from the NOUEUE EALs in HU1 in that the occurrence of the event has resulted in VISIBLE DAMAGE to plant structures or areas containing equipment necessary for a safe shutdown, or has caused damage to the safety systems in those structures evidenced by control indications of degraded system response or performance. The occurrence of VISIBLE DAMAGE and/or degraded system response is intended to discriminate against lesser events. The initial "report" should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this EAL to assess the actual magnitude of the damage. The significance here is not that a particular system or structure was damaged, but rather, that the event was of sufficient magnitude to cause this degradation. Escalation to higher classifications occurs on the basis of other ICs (e.g., System Malfunction).

EAL-#1HA1.1 is based on the USAR design basis operating earthquake of 0.06 g horizontal or 0.04 g vertical acceleration.the FSAR operating basis earthquake (OBE) of 0. g acceleration. should be based on site-specific FSAR design basis. Seismic events of this magnitude can result in a plant VITAL AREA being subjected to forces beyond design limits, and thus damage may be assumed to have occurred to plant safety systems. [Ref. 1, 2]See EPRI-sponsored "Guidelines for Nuclear Plant Response to an Earthquake", dated October 1989, for information on seismic event categories.

EAL #2HA1.2 is based on the FSAR design basis wind speed of 100 mphshould be based on sitespecific FSAR design basis [Ref. 3, 4, 5]. Wind loads of this magnitude can cause damage to safety functions.

EAL-#s-2, 3, 4, 5 should specify site-specific structures or areas containing systems and functions required for safe shutdown of the plant.

EAL-#3HA1.3 is intended to address crashes of vehicle types large enough to cause significant damage to plant structures containing functions and systems required for safe shutdown of the plant.

EAL-#HA1.4 is intended to address the threat to safety related equipment imposed by missiles generated by main turbine rotating component failures. Table H-1 lists areas that contain systems and components required for the safe shutdown functions of the plant. This site specific list of areas should include all areas containing safety-related equipment, their controls, and their power supplies. This EAL is, therefore, consistent with the definition of an ALERT in that if missiles have damaged or penetrated areas containing safety-related equipment the potential exists for substantial degradation of the level of safety of the plant.

EAL #5HA1.5 addresses the effect of internal flooding that has resulted in degraded performance of systems affected by the flooding, or has created industrial safety hazards (e.g., electrical shock) that preclude necessary access to operate or monitor safety equipment. The inability to operate or monitor safety equipment represents a potential for substantial degradation of the level of safety of the plant. This flooding may have been caused by internal events such as component failures, equipment misalignment, or outage activity mishaps. The listed internal flooding areas are those vulnerable areas indicated in the KNPP PRA that should significant internal flooding occur (such as a Service Water or Circulating Water pipe rupture), could impact areas that contain systems required for safe shutdown of the plant that are not designed to be wetted or submerged. [Ref.- 6, 7]. The site specific areas includes those areas that contain systems required for safe shutdown of the plant to be wetted or submerged. The plant's IPEEE may provide insight into areas to be considered when developing this EAL.

EAL-#6HA1.6 covers other-site-specific-phenomena-such-as-hurricane,-flooding, or seiche. These-This EALs can also-be a precursors of more serious events. Lake water level ≥greater than or equal to 588 ft International Great Lakes Datum (IGLD) corresponds to levels approaching design limits which if exceeded threatens operability of safety related equipment. Lake water level <less than 568.5 ft IGLD corresponds to design levels (with added conservatism) to ensure Service Water Pumps have adequate NPSH and that vortexing does not occur [Ref. 8, 9].

KNPP does not have instrumentation for taking direct readings of the lake level. However the intake forebay level is monitored for this purpose. When no circulating water pumps are operating, the intake forebay level is equivalent to lake level. However, when the Circulating Water Pumps are operating forebay level is reduced compared to actual lake level due to the hydraulic resistance of the plant intake. KNPP has correlated the intake forebay level with actual lake level when either one or both Circulating Water Pumps are operating, adjusting the EAL thresholds accordingly. In most cases the Circulating Water Pumps will trip (42% indicated forebay level) prior to exceeding the forebay level that corresponds to the low lake level threshold.

The classification should be declared if the threshold is exceeded for greater than 15 minutes. This allows for short duration dynamic effects associated with the KNPP forebay and will avoid unnecessary event declaration due to shifting of Circulating Water Pumps and other dynamic effects in the forebay.

The International Great Lakes Datum (IGLD 1955) is a reference used to represent water levels in the Great Lakes region.

- 1. USAR Table 5.2-1 Allowable Stress Criteria Reactor Containment Vessel, Rev. 16
- 2. Alarm Response procedure 47023-K Seismic Trouble Beta Window Box #02-K3, Rev. E
- 3. USAR Section 5.2.2 Shield Building Design Wind Load, Rev. 16
- 4. KNPP Fire Protection Program Plan Section 5.19, Rev. 5
- 5. Drawing A-449 Plan of Plant Area, Fence, Lighting and CCTV Support, Rev. F
- 6. E-CW-04 Loss of Circulating Water, Rev. V
- 7. KNPP PRA Section 7.0 Internal Flooding Analysis Workbook, Rev. 0401
- 8. USAR Section 2.6 Hydrology, Rev. 18
- 9. KNPP Safety Evaluation Review for Kewaunee Proposed EAL Changes (TAC No. MB1860) 8/22/2001

HA2

Initiating Condition -- ALERT

FIRE or EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown.

Operating Mode Applicability: All

Example-EmergencyEmergency Action Level:

HA2.1. FIRE or EXPLOSION in any of the following (site-specific)-areas (Table H-1):

	Table H-1 Safe Shutdown/VITAL Areas
•	Shield Building (Reactor Building)
•	Auxiliary Building
•	Safeguards Alley
•	Diesel Generator Rooms (includes "A" Diesel Room to Screen House Tunnel)
•	Screenhouse/Forebay
•	Technical Support Center Basement
•	Control Room
•	Control Room AC Equipment Room
•	Relay Room
•	Safeguards Battery Rooms

(Site-specific)-list

AND

Affected safety system parameter indications show degraded performance or plant personnel report VISIBLE DAMAGE to permanent structures or equipment within-the specified areaneeded for safe shutdown.

Basis:

These areas contain systems and components required for the safe shutdown functions of the plant. The KNPP safe shutdown analyses were consulted for equipment and plant areas required for the applicable mode. Site-specific areas containing functions and systems required for the safe shutdown of the plant should be specified. Site-Specific Safe Shutdown Analysis should be consulted for equipment and plant areas required to establish or maintain safe shutdown. This will make it easier to determine if the FIRE or EXPLOSION is potentially affecting one or more KNPP 56-H-17 10/22/04

redundant trains of safety systems [Ref. 1, 2]. Escalation to a higher emergency class, if appropriate, will be based on System Malfunction, Fission Product Barrier Degradation, Abnormal Rad Levels / Radiological Effluent, or Emergency Director Judgment ICs.

This EAL addresses a FIRE / EXPLOSION and not the degradation in performance of affected systems. System degradation is addressed in the System Malfunction EALs. The reference to damage of systems is used to identify the magnitude of the FIRE / EXPLOSION and to discriminate against minor FIREs / EXPLOSIONs. The reference to safety systems is included to discriminate against FIREs / EXPLOSIONs in areas having a low probability of affecting safe operation. The significance here is not that a safety system was degraded but the fact that the FIRE / EXPLOSION was large enough to cause damage to these systems. Thus, the designation of a single train was intentional and is appropriate when the FIRE / EXPLOSION is large enough to affect more than one component.

This situation is not the same as removing equipment for maintenance that is covered by a plant's Technical Specifications. Removal of equipment for maintenance is a planned activity controlled in accordance with procedures and, as such, does not constitute a substantial degradation in the level of safety of the plant. A FIRE / EXPLOSION is an UNPLANNED activity and, as such, does constitute a substantial degradation in the level of safety of the plant. In this situation, an Alert classification is warranted.

The inclusion of a "report of VISIBLE DAMAGE" should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this EAL to assess the actual magnitude of the damage. The occurrence of the EXPLOSION with reports of evidence of damage is sufficient for declaration. The declaration of an Alert and the activation of the Technical Support Center will provide the Emergency Director with the resources needed to perform these damage assessments. The Emergency Director also needs to consider any security aspects of the EXPLOSIONs, if applicable.

- 1. KNPP Fire Protection Program Plan Section 5.19, Rev. 5
- 2. Drawing A-449 Plan of Plant Area, Fence, Lighting and CCTV Support, Rev. F

HA3

Initiating Condition -- ALERT

Release of Toxic or Flammable Gases Within or Contiguous to a VITAL AREA Which Jeopardizes Operation of Systems Required to Maintain Safe Operations or Establish or Maintain Safe Shutdown.

Operating Mode Applicability: All

Example-Emergency-Action-Levels:Emergency Action Levels: (HA3.1 or HA3.2)

HA3.1. Report or detection of toxic gases within or contiguous to a Safe Shutdown/VITAL AREA (Table H-1)VITAL AREA in concentrations that may result in an atmosphere IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH).

Table I	H-1 Safe Shutdown/VITAL Areas
Shield	d Building (Reactor Building)
Auxilia	ary Building
 Safeg 	guards Alley
Diese Scree	el Generator Rooms (includes "A" Diesel Room to en House Tunnel)
Scree	enhouse/Forebay
Techr	nical Support Center Basement
Contr	rol Room
Contr	rol Room AC Equipment Room
Relay	Room
Safeg	guards Battery Rooms

HA3.2. Report or detection of gases in concentration greater than the LOWER FLAMMABILITY LIMIT within or contiguous to a Safe Shutdown/VITAL AREA (Table H-1)VITAL AREA.

Basis:

This IC is based on gases that affect the safe operation of the plant. This IC applies to buildings and areas contiguous (in actual contact with or immediately adjacent) to plant Safe Shutdown/VITAL AREAs or other significant buildings or areas-(i.e., service-water-pump-house) [Ref. 1, 2]. The intent of this IC is not to include buildings (e.g., warehouses) or other areas that are not contiguous or immediately adjacent to plant Safe Shutdown/VITAL AREAs. It is KNPP 56-H-19 10/22/04 appropriate that increased monitoring be done to ascertain whether consequential damage has occurred. Escalation to a higher emergency class, if appropriate, will be based on System Malfunction, Fission Product Barrier Degradation, Abnormal Rad Levels / Radioactive Effluent, or Emergency Director Judgment ICs.

EAL #1HA3.1 is met if measurement of toxic gas concentration results in an atmosphere that is IDLH within a Safe Shutdown/VITAL AREA or any area or building contiguous to Safe Shutdown/VITAL AREA. Exposure to an IDLH atmosphere will result in immediate harm to unprotected personnel, and would preclude access to any such affected areas.

EAL #2HA3.2 is met when the flammable gas concentration in a Safe Shutdown/VITAL AREA or any building or area contiguous to a Safe Shutdown/VITAL AREA exceed the LOWER FLAMMABILITY LIMIT. Flammable gasses, such as hydrogen and acetylene, are routinely used to maintain plant systems (hydrogen) or to repair equipment/components (acetylene - used in welding). This EAL addresses concentrations at which gases can ignite/support combustion. An uncontrolled release of flammable gasses within a facility structure has the potential to affect safe operation of the plant by limiting either operator or equipment operations due to the potential for ignition and resulting equipment damage/personnel injury. Once it has been determined that an uncontrolled release is occurring, then sampling must be done to determine if the concentration of the released gas is within this range.

- 1. KNPP Fire Protection Program Plan Section 5.19, Rev. 5
- 2. Drawing A-449 Plan of Plant Area, Fence, Lighting and CCTV Support, Rev. F

HA4

Initiating Condition -- ALERT

Confirmed Security Event in a Plant PROTECTED AREA.

Operating Mode Applicability: All

Example-Emergency Action Levels:Emergency Action Levels: (HA4.1 or HA4.2)

HA4.1. INTRUSION into the plant PROTECTED AREA by a HOSTILE FORCE.

HA4.2. Security [Supervision-title]Shift Supervisor reports any of the following:

- Sabotage device discovered in the plant PROTECTED AREA
- Standoff attack on the protected area by a HOSTILE FORCE (i.e., Sniper)
- ANY Security event of increasing severity that persists for > 30 minutes:
 - Credible bomb threats
 - Hostage / Extortion
 - Suspicious Fire or Explosion
 - Significant Security System Hardware Failure
 - Loss of contact with Security Officers

Other security events as determined from (site-specific)-Safeguards Contingency-Plan and reported by the (site-specific) security shift supervision

Basis:

This class of security events represents an escalated threat to plant safety above that contained in the NOUEUE. A confirmed INTRUSION report is satisfied if physical evidence indicates the presence of a HOSTILE FORCE within the PROTECTED AREA.

The Security And Safeguards Contingency Plan identifies numerous events/conditions that constitute a threat/compromise to station security. Only those events that involve actual or potential substantial degradation to the level of safety of the plant need to be considered. Consideration-should-be-given-to-the-following-types-of-events-when-evaluating-an event-against the criteria of the site specific Security Contingency Plan: SABOTAGE, HOSTAGE/ EXTORTION, and STRIKE-ACTION. The Safeguards-Contingency-Plan identifies-numerous events/conditions-that-constitute-a-threat/compromise-to-a-Station's security. Only those events that involve Actual or Potential Substantial degradation to the level of safety of the plant-need to be considered. The following events-would-not-normally-meet-this requirement; (e.g., Failure-by-a Member-of-the-Security-Force-to-carry-out-an-assigned/required-duty,-internal-disturbances, loss/compromise-of-safeguards-materials-or-strike-actions).

INTRUSION into a VITAL AREA by a HOSTILE FORCE will escalate this event to a Site Area Emergency.

KNPP

Reference is made to (site-specific) sSecurity sShift sSupervisionor because these-this individuals are-is the designated personnel on-site qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict secrecy controls placed on the plant Physical Security Plan.

- 1. NRC Safeguards Advisory 10/6/01
- 2. Security And Safeguards Contingency Plan
- 3. Letter from Mr. B. A. Boger (NRC) to Ms. Lynette Hendricks (NEI) dated 2/4/02
- 4. Physical Security Plan

HA5

Initiating Condition -- ALERT

Control Room Evacuation Has Been Initiated.

Operating Mode Applicability: All

Example-EmergencyEmergency Action Level:

HA5.1. Entry into E-O-06, Fire in Alternate Fire Zone [(site-specific) procedure number(s) and title(s)] for control room evacuation.

Basis:

With the control room evacuated, additional support, monitoring and direction through the Technical Support Center and/or other emergency response facility is necessary. E-O-06, Fire in Alternate Fire Zone, provides specific instructions for evacuating the Control Room/Building and establishing plant control at the Dedicated Shutdown Panel and in alternate locations. Inability to establish plant control from outside the control room will escalate this event to a Site Area Emergency.

KNPP Basis Reference(s):

1. E-O-06, Fire in Alternate Fire Zone, Rev. W

HA6

Initiating Condition -- ALERT

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of an Alert.

Operating Mode Applicability: All

Example-EmergencyEmergency Action Level:

HA6.1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in process or have occurred which involve actual or likely potential substantial degradation of the level of safety of the plant. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Basis:

This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the Alert emergency class. Refer to EPIP-AD-19 for EPA Protective Action Guideline exposure levels.

- 1. EPA 400, Manual of Protective Action Guides And Protective Actions For Nuclear Incidents, October 1991
- 2. EPIP-AD-19 -Determining Protective Action Recommendations, Rev. T

HS1

Initiating Condition – SITE AREA EMERGENCY

Confirmed Security Event in a Plant VITAL AREA.

Operating Mode Applicability: All

Example-Emergency-Action-Levels:Emergency Action Levels: (HS1.1 or HS1.2)

HS1.1. INTRUSION into the plant VITAL AREA by a HOSTILE FORCE.

HS1.2. Security Supervision reports ANY of the following:

- A security event that results in the loss of control of ANY VITAL AREAS (other than Control Room)
- Imminent loss of physical control of the facility (remote shutdown capability) due to a security event
- A confirmed sabotage discovered in a VITAL AREA

Other security events as determined from (site-specific) Safeguards Contingency Plan and reported by the (site-specific) security shift supervision

Basis:

This class of security events represents an escalated threat to plant safety above that contained in the Alert IC in that a HOSTILE FORCE has progressed from the PROTECTED AREA to a VITAL AREA.

Consideration should beis given to the following types of events when evaluating an event against the criteria of the site specific Security Contingency Plan: SABOTAGE and HOSTAGE / EXTORTION. The Safeguards Contingency Plan identifies numerous events/conditions that constitute a threat/compromise to a Station's security. Only those events that involve Actual or Likely Major failures of plant functions needed for protection of the public need to be considered. The following events would not normally meet this requirement; (e.g., Failure by a Member of the Security Force to carry out an assigned/required duty, internal disturbances, loss/compromise of safeguards materials or strike actions).

Loss of Plant Control would escalate this event to a GENERAL EMERGENCY.

Reference is made to <u>(site-specific)</u> s Security sShift sSupervisionor because these-this individuals are-is the designated personnel on-site qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict secrecy controls placed on the plant Physical Security Plan.

KNPP Basis Reference(s):

1. NRC Safeguards Advisory 10/6/01

2. Security And Safeguards Contingency Plan

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- 3. Letter from Mr. B. A. Boger (NRC) to Ms. Lynette Hendricks (NEI) dated 2/4/02
- 4. Physical Security Plan

HS2

Initiating Condition – SITE AREA EMERGENCY

Control Room Evacuation Has Been Initiated and Plant Control Cannot Be Established.

Operating Mode Applicability:

Example-EmergencyEmergency Action Level:

HS2.1. Control room evacuation has been initiated.

AND

Control of the plant cannot be established per E-O-06, Fire in Alternate Fire Zone [(site-specific) procedure number(s) and name(s)] within [(site-specific]15) minutes.

Basis:

Expeditious transfer of safety systems has not occurred but fission product barrier damage may not yet be indicated. The intent of this IC is to capture those events where control of the plant cannot be reestablished in a timely manner. Site-specific time-for-transfer-based on analysis or assessments as to how quickly-control-must be reestablished without-core uncovering and/or-core damage. This time should not exceed 15 minutes without additional justification. The determination of whether or not control is established at the Dedicated Shutdown Panelremote shutdown panel is based on Emergency Director (ED) judgment. The ED is expected to make a reasonable, informed judgment within the site-specific-time for transfer that the licensee-operator has control of the plant from the Dedicated Shutdown Panelremote shutdown panelPanel.

E-O-06, Fire in Alternate Fire Zone, provides specific instructions for evacuating the Control Room/Building and establishing plant control at the Dedicated Shutdown Panel and in alternate locations.

The intent of the EAL is to establish control of important plant equipment and knowledge of important plant parameters in a timely manner. Primary emphasis should be placed on those components and instruments that supply protection for and information about safety functions. Typically, these safety functions are reactivity control (ability to shutdown the reactor and maintain it shutdown), RCS inventoryreactor water level (ability to cool the core), and secondary heat removaldecay heat-removal (ability to maintain a heat sink)-for a BWR. The equivalent functions for a PWR-are reactivity control, RCS inventory, and secondary heat removal.

Escalation of this event, if appropriate, would be by Fission Product Barrier Degradation, Abnormal Rad Levels/Radiological Effluent, or Emergency Director Judgment ICs.

1. E-O-06, Fire in Alternate Fire Zone, Rev. W

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HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

Initiating Condition – SITE AREA EMERGENCY

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of Site Area Emergency.

Operating Mode Applicability: All

Example-Emergency Action Level:

HS3.1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

Basis:

This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency class description for Site Area Emergency. Refer to EPIP-AD-19 for EPA Protective Action Guideline exposure levels.

- 1. EPA 400, Manual of Protective Action Guides And Protective Actions For Nuclear Incidents, October 1991
- 2. EPIP-AD-19- Determining Protective Action Recommendations, Rev. T

HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

HG1

Initiating Condition – GENERAL EMERGENCY

Security Event Resulting in Loss Of Physical Control of the Facility.

Operating Mode Applicability: All

Example-EmergencyEmergency Action Level:

HG1.1. A HOSTILE FORCE has taken control of plant equipment such that plant personnel are unable to operate equipment required to maintain safety functions as indicated by loss of physical control of EITHER:

A VITAL AREA (including the Control Room) such that operation of equipment required for safe shutdown is lost

OR

Spent fuel pool cooling systems if imminent fuel damage is likely

Basis:

This IC encompasses conditions under which a HOSTILE FORCE has taken physical control of VITAL AREAs (containing vital equipment or controls of vital equipment, including the Control Room) required to maintain safety functions and control of that equipment cannot be transferred to and operated from another location. Typically, these safety functions are reactivity control (ability to shut down the reactor and keep it shutdown) reactor water levelRCS inventory (ability to cool the core), and decay-secondary heat removal (ability to maintain a heat sink)-for a BWR. The equivalent functions for a PWR are reactivity control, RCS inventory, and secondary heat removal. If control of the plant equipment necessary to maintain safety functions can be transferred to another location, then the above initiating condition is not met.

This EAL should also address loss of physical control of spent fuel pool cooling systems if imminent fuel damage is likely (e.g., freshly off-loaded reactor core in pool).

Loss of physical control of the control room or remote shutdown capability alone-may not-prevent the ability to maintain safety functions-per-se.-Design-of-the-remote-shutdown-capability-and-the location of the transfer-switches should be taken into account.

- 1. NRC Safeguards Advisory 10/6/01
- 2. Security And Safeguards Contingency Plan
- 3. Letter from Mr. B. A. Boger (NRC) to Ms. Lynette Hendricks (NEI) dated 2/4/02

4. Physical Security Plan

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HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

Initiating Condition – GENERAL EMERGENCY

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of General Emergency.

Operating Mode Applicability: All

Example-EmergencyEmergency Action Level:

HG2.1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

Basis:

This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the General Emergency class. Refer to EPIP-AD-19 for EPA Protective Action Guideline exposure levels.

- 1. EPA 400, Manual of Protective Action Guides And Protective Actions For Nuclear Incidents, October 1991
- 2. EPIP-AD-19 Determining Protective Action Recommendations, Rev. T

Table S-0

Recognition Category S

System Malfunction

INITIATING CONDITION MATRIX

ALERT

SA5

AC power capability to essential

SITE AREA EMERGENCY

- SS1 Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses. Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown, Intermediate Shutdown
- SS2 Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Scram-Trip Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Scram-Reactor Trip Was NOT Successful. Op. Modes: Power Operation, Startup Hot Standby
- SS4 Complete Loss of Heat Removal Capability. Op. Modes: Power Operation, Startup,-Hot Standby, Hot Shutdown, Intermediate Shutdown
- SS6 Inability to Monitor a SIGNIFICANT TRANSIENT in Progress. Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown, Intermediate Shutdown

GENERAL EMERGENCY

- SG1 Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power to Essential Busses. Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown, Intermediate Shutdown
- SG2 Failure of the Reactor Protection System to Complete an Automatic Scram-Reactor Trip and Manual Scram-Reactor Trip was NOT Successful and There is Indication of an Extreme Challenge to the Ability to Cool the Core. Op. Modes: Power Operation, Startup Hot Standby

SU2 Inability to Reach Required Shutdown Within Technical Specification Limits. Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown, Intermediate Shutdown

NOUE

THAN 15 Minutes.

Shutdown

SU1

Loss of All Offsite Power to

Startup-Hot Standby, Hot

Shutdown, Intermediate

Essential Busses for GREATER

Op. Modes: Power Operation.

SU3 UNPLANNED Loss of Most or All Safety System Annunciation or Indication in The Control Room for GREATER THAN 15 Minutes Op. Modes: Power Operation, Startup- Hot Standby, Hot Shutdown, Intermediate Shutdown

- busses reduced to a single power source for GREATER THAN 15 minutes such that any additional single failure would result in station blackout. Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown, Intermediate Shutdown
- SA2 Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Scram-Trip Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Scram-Reactor Trip Was Successful. Op. Modes: Power Operation, Startup-Hot Standby, Hot Shutdown
- SA3 Deleted

SA4 UNPLANNED Loss of Most or All Safety System Annunciation or Indication in Control Room With Either (1) a SIGNIFICANT TRANSIENT in Progress, or (2) Compensatory Non-Alarming Indicators are Unavailable. Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown, Intermediate

Shutdown

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Recognition Category S

System Malfunction

INITIATING CONDITION MATRIX

SU7	Deleted	SA1	Deleted	SS3	Loss of All Vital DC Power. Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown, Intermediate Shutdown
SU4	Fuel Clad Degradation. Op. Modes: Power Operation, Startup, Hot Standby, Hot Shutdown, Intermediate Shutdown				
SU5	RCS Leakage. Op. Modes: Power Operation, Startup, H ot Standby, Hot Shutdown, Intermediate Shutdown	·		SS5	Deleted
SU6	UNPLANNED Loss of All Onsite or Offsite Communications Capabilities. Op. Modes: Power Operation, Startup-Hot Standby, Hot Shutdown, Intermediate Shutdown				
SU8	Inadvertent Criticality. Op Modes: Hot-Standby, Hot Shutdown, Intermediate Shutdown				

SU1

Initiating Condition - NOTIFICATION OF UNUSUAL EVENT

Loss of All Offsite Power to Essential Busses for GREATER THANreater Than 15 Minutes.

Operating Mode Applicability:

Power Operation Startup Hot Standby Hot Shutdown Intermediate Shutdown

Example-EmergencyEmergency Action Level:

SU1.1. Loss of all offsite power to Bus 5 AND Bus 6 (site-specific)-transformers for GREATER THANgreater than 15 minutes.

AND

At least (site-specific) eEmergency diesel generators are supplying power to emergency bussesBus 5 AND Bus 6.

Basis:

Prolonged loss of AC power reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete Loss of AC Power (e.g., Station Blackout). Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

The 4160 VAC system is divided into six busses, two of which are Engineered Safety Features (ESF) busses 5 and 6. The ESF busses supply power to Safety Injection (SI) pumps, Residual Heat Removal (RHR) pumps, containment heat removal equipment, etc.

Offsite power is available from the 345 kVAC and 138 kVAC systems. The 345 kVAC system is connected to the North Appleton line, the Point Beach line, the main transformers, and transformer T-10. The 345 kVAC is the normal supply to the 13.8 kVAC system through transformer T-10, which feeds the Tertiary Auxiliary Transformer (TAT). The TAT normally provides power to ESF bus 5. The TAT is not considered available to power both ESF busses in an emergency situation due to its size. As a contingency, however, it is acceptable to use the TAT to power both ESF busses when guidance for sequencing and monitoring TAT loads is available in the Control Room. The Reserve Auxiliary Transformer (RAT) and Main Auxiliary Transformer (MAT) provide backup sources to bus 5, in that order.

The 138 kVAC system is connected to the Shoto/Mishicot line, the East Krok line and transformer T-10. The 138 kVAC system is the normal supply to the Reserve Auxiliary Transformer (RAT) via the East and West substation busses. (When the 345 kVAC system is unavailable, the 138 kVAC system can supply power to transformer T-10 and the TAT.) The RAT normally provides power to ESF bus 6. The TAT and MAT provide backup sources to bus 6 in that order.

When the main turbine generator is on line, generator output supplies power to the Main Auxiliary Transformer (MAT) and the 4160 VAC busses. When the main turbine generator is off line, the 345 kVAC system can be aligned to backfeed the MAT. Note that the time required to effect the backfeed is likely longer than the fifteen-minute interval associated with this EAL. If off-normal plant conditions have already established the backfeed, however, its power to the ESF busses may be considered an offsite power source.

Following a loss of power, ECA 0.0 provides guidance to restore power to ESF busses. For the purpose of classification under this EAL, offsite power sources include any of the following:

- 345 kVAC system supplying power to transformer T-10 and the TAT
- 138 kVAC system supplying power to transformer T-10 and the TAT
- 138 kVAC system supplying power to the RAT
- 345 kVAC system supplying power to the MAT on backfeed through the main transformers when the main turbine generator is off line

KNPP Basis Reference(s):

- 1. ECA-0.0 Loss of All AC Power, Rev. AB
- 2. USAR Figure 8.2-2, Rev. 16
- 3. USAR Section 8.2.3, Rev. 18
- 4. GNP-08.04.01 Shutdown Safety Assessment, Rev. K

Plants that have the capability to cross-tie AC-power from a companion unit-may-take credit for the redundant-power-source in the associated EAL-for this IC. Inability to effect the cross-tie within 15 minutes warrants declaring a NOUE.

SU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Inability to Reach Required Shutdown Within Technical Specification Limits.

Operating Mode Applicability:

Power Operation Startup -Hot Standby Hot Shutdown Intermediate Shutdown

Example-EmergencyEmergency Action Level:

SU2.1. Plant is not brought to required operating mode within (site-specific)-Technical Specifications LCO Action Statement Time.

Basis:

Limiting Conditions of Operation (LCOs) require the plant to be brought to a required shutdown mode when the Technical Specification required configuration cannot be restored. Depending on the circumstances, this may or may not be an emergency or precursor to a more severe condition. In any case, the initiation of plant shutdown required by the site-KNPP Technical Specifications | requires a one hour report under 10 CFR 50.72 (b) Non-emergency events. The plant is within its safety envelope when being shut down within the allowable action statement time in the Technical Specifications. An immediate NOUE is required when the plant is not brought to the required | operating mode within the allowable action statement time in the Technical Specifications. Declaration of a NOUE is based on the time at which the LCO-specified action statement time | period elapses under the site Technical Specifications and is not related to how long a condition may have existed. Other required Technical Specification shutdowns that involve precursors to more serious events are addressed by other System Malfunction, Hazards, or Fission Product Barrier Degradation ICs.

KNPP Basis Reference(s):

1. KNPP Technical Specifications

SU3

Initiating Condition -- NOTIFICATION-OF-UNUSUAL EVENT

UNPLANNED Loss of Most or All Safety System Annunciation or Indication in The Control Room for Greater ThanGREATER THAN 15 Minutes

Operating Mode Applicability:

Power Operation Startup Hot Standby Hot Shutdown Intermediate Shutdown

Example-EmergencyEmergencyAction Level:

SU3.1. UNPLANNED loss of most or all (site-specific) annunciators or indicators associated with safety systems for greater thanGREATER THAN 15 minutes on Mechanical Vertical Panels A, B and C, Mechanical Control Consoles A, B and C, Electrical Vertical Panel and Electrical Control Console

Basis:

This IC and its associated EAL are intended to recognize the difficulty associated with monitoring changing plant conditions without the use of a major portion of the annunciation or indication equipment.

Recognition of the availability of computer based indication equipment is considered (e.g., PPCS, SER or SPDS, plant-computer, etc.).

Quantification of "Most" is arbitrary, however, it is estimated that if approximately 75% of the safety system annunciators or indicators are lost, there is an increased risk that a degraded plant condition could go undetected. It is not intended that plant personnel perform a detailed count of the instrumentation lost but use the value as a judgment threshold for determining the severity of the plant conditions.

It is further recognized that most-plant designs provides redundant safety system indication | powered from separate uninterruptable power supplies. While failure of a large portion of annunciators is more likely than a failure of a large portion of indications, the concern is included in this EAL due to difficulty associated with assessment of plant conditions. The loss of specific, or several, safety system indicators should remain a function of that specific system or component operability status. This will-be addressed by the specific Technical Specification. The initiation of a Technical Specification imposed plant shutdown related to the instrument loss will be reported via 10 CFR 50.72. If the shutdown is not in compliance with the Technical Specification action, the NOUE is based on SU2 "Inability to Reach Required Shutdown Within Technical Specification | Limits."

(Site-specific)The specified panels for this EAL include annunciators or-and indicators-panels for this EAL-must-include-those identified in the Abnormal Operating Procedures, in the Emergency Operating Procedures, and in other EALs (e.g., area, process, and/or effluent rad monitors, etc.).

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses. Due to the limited number of safety systems in operation during cold shutdown, refueling, and defueled modes, no IC is indicated during these modes of operation.

This NOUE will be escalated to an Alert if a transient is in progress during the loss of annunciation or indication.

- 1. USAR Figure 7.7-1, Rev. 18
- 2. A-SER-52B Abnormal Sequential Event Recorder, Annunciator, and Status Panel System, Rev. C
- 3. N-CP-46 Honeywell Plant Process Computer, Rev. S
- 4. A-CP-46 Abnormal Honeywell Plant Process Computer, Rev. AR
- 5. N-SER-52 Control Room Sequential Event Recorder, Rev. D

SU4

Initiating Condition -- NOTIFICATION OF-UNUSUAL EVENT

Fuel Clad Degradation.

Operating Mode Applicability:

Power Operation Startup -Hot Standby Hot Shutdown Intermediate Shutdown

Example-Emergency-Action Levels:Emergency Action Levels: (SU4.1 or SU4.2)

- SU4.1. RCS Letdown Line (R-9) radiation monitor GREATER THAN 2000 mR/hr indicating fuel clad degradation(Site-specific) radiation monitor readings-indicating-fuel-clad-degradation greater than Technical-Specification allowable-limits.
- SU4.2. (Site-specific) cCoolant sample activity GREATER THAN ANY of the following indicating fuel clad degradation:
 - 1.0 µCi/gram dose equivalent lodine-131 for more than 48 hours in one continuous time interval
 - 60 µCi/gram dose equivalent lodine-131
 - 91/Ē µʉCi/cc gross radioactivity

value indicating fuel clad degradation greater than Technical Specification allowable limits.

Basis:

This IC is included as a NOUE because it is considered to be a potential degradation in the level of safety of the plant and a potential precursor of more serious problems. SU5.1 addresses RCS Letdown Line (R-9) radiation monitor readings that provide indication of fuel clad integrity. [Ref. 4 & 5] EAL #1-addresses site-specific radiation-monitor-readings such as BWR-air-ejector-monitors, PWR-failed_fuel_monitors, etc., that_provide_indication_of_fuel_clad_integrity. EAL #2SU4.2 addresses coolant samples exceeding coolant technical specifications for iodine spike[Ref. 1].

2000 mR/hr was calculated using the following:

0.01% fuel cladding defect equals 7.2E+1 mR/hr increase on R-9 [Ref. 4] 0.2745% fuel cladding defect equals 1.0 μCi/gram dose equivalent lodine-131 [Ref. 5].

Therefore 1976.4 mR/hr increase on R-9 is equal to 1.0 µCi/gram dose equivalent lodine-131

R-9 background is equivalent to 56 mR/hr [Ref. 4], which is added to the calculated dose rate above.

With the addition of background R-9 will read 2032.4 mR/hr (rounded to 2000 mR/hr) equal to 1.0 µCi/gram dose equivalent lodine-131.

Escalation of this IC to the Alert level is via the Fission Product Barrier Degradation Monitoring ICs. Though the referenced Technical Specification limits are applicable when average reactor coolant temperature is GREATER THAN 500°Fmode_dependent, it is appropriate that the EAL's be applicable in all modes, as they indicate a potential degradation in the level of safety of the plant. The companion IC to SU4 for the Cold Shutdown/Refueling modes is CU5.

- 1. Technical Specifications LCO 3.1.c.1.A, Amendment No. 167
- 2. E-2021 Integrated Logic Diagram Radiation Monitoring, Rev. X
- 3. A-RC-36A High Reactor Coolant Activity, Rev. J
- 4. USAR Section 9, Rev. 16
- 5. CN-CRA-99-28 Rev. 1

SU5

Initiating Condition -- NOTIFICATION-OF-UNUSUAL EVENT

RCS Leakage.

Operating Mode Applicability:

Power Operation Startup –Hot Standby Hot Shutdown Intermediate Shutdown

Example-Emergency-Action Levels:Emergency Action Levels: (SU5.1 or SU5.2)

SU5.1. Unidentified or pressure boundary leakage GREATER THAN 10 gpm.

SU5.2. Identified leakage GREATER THAN 25 gpm.

Basis:

This IC is included as a NOUE because it may be a precursor of more serious conditions and, as result, is considered to be a potential degradation of the level of safety of the plant. Positive indications in the Control Room of Reactor Coolant System (RCS) leakage to the containment are provided by equipment that monitors:

- Charging/Letdown flow mismatch
- Containment air activity
- Containment atmosphere humidity
- Containment Sump A in leakage

[Ref. 1, 2]

The 10 gpm value for the unidentified and pressure boundary leakage was selected as it is observable with normal control room indications. Lesser values must generally be determined through time-consuming surveillance tests (e.g., mass balances). SP-36-82 provides instructions for calculating primary system leak rate by water inventory balances for off-normal events and for operations troubleshooting [Ref, 2]. The EAL for identified leakage is set at a higher value due to the lesser significance of identified leakage in comparison to unidentified or pressure boundary leakage. In either case, escalation of this IC to the Alert level is via Fission Product Barrier Degradation ICs.

- 1. Technical Specifications LCO 3.1.d, Amendment No. 165
- 2. SP-36-82 Reactor Coolant System Leak Rate Check, Rev. AE

SU6

Initiating Condition -- NOTIFICATION-OF-UNUSUAL EVENT

UNPLANNED Loss of All Onsite or Offsite Communications Capabilities.

Operating Mode Applicability:

Power Operation Startup -Hot Standby Hot Shutdown Intermediate Shutdown

Example-Emergency Action Levels:Emergency Action Levels: (SU6.1 or SU6.2)

SU6.1. Loss of all Table C-1(site-specific list) onsite communications capability affecting the ability to perform routine operations.

- Intraplant Paging (Gai-tronics)
- Sound powered phones
- PBX telephone system
- Personal communications system (PCS phones)
- Portable radio communications system

SU6.2. Loss of all Table C-2(site-specific-list) offsite communications capability.

Table C-2 Offsite Communications Systems

- PBX telephone system
- NRC FTS System (including ENS and HPN)
- Dial select phones

Basis:

The purpose of this IC and its associated EALs is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks necessary for plant operations or the ability to communicate problems with offsite authorities. The loss of offsite communications ability is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72.

The availability of one method of ordinary offsite communications is sufficient to inform state and local authorities of plant problems. This EAL is intended to be used only when extraordinary

means (e.g., relaying of information from radio transmissions, individuals being sent to offsite locations, etc.) are being utilized to make communications possible.

Site-specific-list-forTable C-1 onsite communications loss <u>-must-</u>encompasses the loss of all means of routine communications (e.g., commercial telephones, sound powered phone systems, page party system (Gaitronics) and radios / walkie talkies). Due to its limited capability, the emergency gai-tronics is not listed in Table C-1.

Site-specific list for Table C-2 offsite communications loss must-encompasses the loss of all means of communications with offsite authorities. This should-includes the NRC FTS System (including Emergency Notification System - ENS and Health Physics Network – HPN)ENS, commercial telephone lines, telecopy transmissions, and dedicated phone systems.

KNPP Basis Reference(s):

1. N-COM-44-CL Communications Systems CL, Rev. K

SU8

Initiating Condition – **NOTIFICATION OF UNUSUAL EVENT**

Inadvertent Criticality.

Operating Mode Applicability: OPERATING MODE APPLICABILITY Hot Standby

> ——Hot Shutdown Intermediate Shutdown

Example-EmergencyEmergency Action Level: (1-or-2)

1. An UNPLANNED extended positive period observed on nuclear instrumentation.

SU8.21. An UNPLANNED sustained positive startup rate observed on nuclear instrumentation.

Basis:

This IC addresses inadvertent criticality events. While the primary concern of this IC is criticality events that occur in Cold Shutdown or Refueling modes (NUREG 1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States), the IC is applicable in other modes in which inadvertent criticalities are possible. This IC indicates a potential degradation of the level of safety of the plant, warranting an NOUE-Unusual Event classification. This IC excludes and vertent criticalities that occur during planned reactivity changes associated with reactor startups (e.g., criticality earlier than estimated). The Cold Shutdown/Refueling IC is CU8.

This condition can be identified using the <u>period</u>-monitors/startup rate monitor. The term "extendedsustained" is used in order to allow exclusion of expected short term positive <u>periods</u>/startup rates from planned control rod movements for <u>PWRs</u>-and <u>BWRs</u>-(such as shutdown bank withdrawal-for <u>PWRs</u>). These short term positive <u>periods</u>/startup rates are the result of the <u>increase</u>-rise in neutron population due to subcritical multiplication.

This condition can be identified using startup rate monitors (NI-31D/32D - Source Range Startup Rate).

Escalation would be by the Fission Product Barrier Matrix, as appropriate to the operating mode at the time of the event, or by Emergency Director Judgment.

Note: This EAL is SU8 following SU6. SU7 is not used in NEI 99-01 Revision 4 and that convention is carried forward here.

KNPP Basis Reference(s):

1. N-0-02 Plant Startup from Hot Shutdown to 35% Power, Rev. AN

SA2

Initiating Condition -- ALERT

Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Scram-Trip Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Scram-Reactor Trip Was Successful.

Operating Mode Applicability:	Power Operation	
	Startup	
	——Hot Standby	
	Hot Shutdown	

Example-EmergencyEmergency Action Level:

SA2.1. Indication(s) exist that a Reactor Protection System setpoint was exceeded AND

RPS automatic trip did not reduce power to LESS THAN 5%

AND

Any of the following operator actions are successful in reducing power to LESS THAN 5%:

- Use of Manual Reactor Trip push buttons
- De-energizing Busses 33 AND 43

Indication(s) exist that indicate that reactor-protection system setpoint was exceeded and automatic scram did-not-occur. and a successful manual scram occurred.

Basis:

This condition indicates failure of the automatic protection system to scram-trip the reactor. This condition is more than a potential degradation of a safety system in that a front line automatic protection system did not function in response to a plant transient and thus the plant safety has been compromised, and design limits of the fuel may have been exceeded. An Alert is indicated because conditions exist that lead to potential loss of fuel clad or RCS. Reactor protection system setpoint being exceeded, rather than limiting safety system setpoint being exceeded, is specified here because failure of the automatic protection system is the issue. A manual scram-trip is any set of actions by the reactor operator(s) at the reactor-control room consoles which causes control rods to be rapidly inserted into the core and brings the reactor subcritical (e.g., reactor trip button, Alternate-Rod-Insertion). Failure of manual scram-trip would escalate the event to a Site Area Emergency.

Following a successful reactor trip, nuclear power promptly drops to only a few percent of nominal, and then decays away to a level some 8 decades less. Reactor power levels resulting from radioactive fission product decay are never more than a few percent of nominal power and also lower in time. Heat removal safety systems are sized to remove only decay heat and not significant core power. Reactor power levels at or above 5% (in a core that is supposed to be shutdown) are considered an extreme challenge to the Fuel Cladding barrier and warrant a Critical Safety Function Status Tree (CSFST) Subcriticality-Red path priority. The setpoint has been chosen because it is clearly readable on the power range meters. Reactor power levels in the power range are indicated on Mechanical Control Console "B" nuclear instruments NI-41, 42, 43 and 44. KNPP

Following any automatic reactor trip signal, plant procedures prescribe operator insertion of redundant manual trip signals to ensure reactor shutdown is achieved. A successful manual trip is any set of actions by the reactor operator(s) in the Control Room that causes control rods to be rapidly inserted into the core and brings the reactor subcritical. Manual trip includes the procedural direction to deenergize Busses 33 and 43 to ensure rod insertion. Control rod insertion completed from the Rod Drive Equipment Room is not considered a successful manual trip as action is required outside the Control Room. Manual insertion of control rods from the Control Room is not considered rapid insertion that brings the reactor sub-critical.

Note: This EAL is SA2 following SU8. SA1 is not used in NEI 99-01 Revision 4 and that convention is carried forward here.

- 1. E-0 Reactor Trip or Safety Injection, Rev. V
- 2. ES-0.1 Reactor Trip Response, Rev. P
- 3. F-0.1 Subcriticality, Rev. C
- 4. Technical Specifications 2.3.a, Amendment No. 162

Initiating Condition - ALERT

UNPLANNED Loss of Most or All Safety System Annunciation or Indication in Control Room With Either (1) a SIGNIFICANT TRANSIENT in Progress, or (2) Compensatory Non-Alarming Indicators are Unavailable.

Operating Mode Applicability:	Power Operation	
	Startup	
	Hot Standby Hot Shutdown Intermediate Shutdown	

Example-EmergencyEmergency Action Level:

SA4.1. UNPLANNED loss of most or all (site-specific) annunciators or indicators associated with safety systems for greater-thanGREATER THAN 15 minutes on Mechanical Vertical Panels A, B and C, Mechanical Control Consoles A, B and C, Electrical Vertical Panel and Electrical Control Console

AND

Either of the following: (a or b)

a. A SIGNIFICANT TRANSIENT is in progress.

OR

b. COMPENSATORY NON-ALARMING INDICATIONS are unavailable.

Basis:

This IC and its associated EAL are intended to recognize the difficulty associated with monitoring changing plant conditions without the use of a major portion of the annunciation or indication equipment during a transient. Recognition of the availability of computer based indication equipment is considered (e.g., SPDS, plant computer, etc.).

SIGNIFICANT TRANSIENT includes response to automatic or manually initiated functions such as scramsreactor trips, runbacks involving greater than 25% thermal power change, ECCS injections, or thermal power oscillations of 10% or greater.

COMPENSATORY NON-ALARMING INDICATIONS include the plant process computer (PPCS), SPDS, plant recorders, or plant instrument displays in the control room. If both a major portion of the annunciation system and all computer monitoring are unavailable, the Alert is required.

"Planned" loss of annunciators or indicators includes scheduled maintenance and testing activities.

KNPP

SA4

Quantification of "Most" is arbitrary, however, it is estimated that if approximately 75% of the safety system annunciators or indicators are lost, there is an increased risk that a degraded plant condition could go undetected. It is not intended that plant personnel perform a detailed count of the instrumentation lost but use the value as a judgment threshold for determining the severity of the plant conditions. It is also not intended that the Shift Supervisor-Manager be tasked with a making a judgment decision as to whether additional personnel are required to provide increased monitoring of system operation.

It is further recognized that most-plant designs provides redundant safety system indication powered from separate uninterruptable power supplies. While failure of a large portion of annunciators is more likely than a failure of a large portion of indications, the concern is included in this EAL due to difficulty associated with assessment of plant conditions. The loss of specific, or several, safety system indicators should remain a function of that specific system or component operability status. This will be addressed by the specific Technical Specification. The initiation of a Technical Specification imposed plant shutdown related to the instrument loss will be reported via 10- CFR-CFR 50.72. If the shutdown is not in compliance with the Technical Specification action, the NOUE is based on SU2 "Inability to Reach Required Shutdown Within Technical Specification Limits."

Site-specificThe specified panels for this EAL include annunciators or-and indicators for-this EAL must include those-identified in the Abnormal Operating Procedures, in the Emergency Operating Procedures, and in other EALs (e.g., area, process, and/or effluent rad monitors, etc.).

"Compensatory-non-alarming-indications"-in-this-context-includes-computer-based-information such-as-SPDS. This should include-all-computer-systems-available-for-this-use-depending-on specific-plant-design-and-subsequent-retrofits. If both-a-major-portion-of-the-annunciation-system and all-computer-monitoring are-unavailable, the Alert is required.

Due to the limited number of safety systems in operation during cold shutdown, refueling and defueled modes, no IC is indicated during these modes of operation.

This Alert will be escalated to a Site Area Emergency if the operating crew cannot monitor the transient in progress.

Note: This EAL is SA4 following SA2. SA3 is not used in NEI 99-01 Revision 4 and that convention is carried forward here.

- 1. USAR Figure 7.7-1, Rev. 18
- 2. A-SER-52B Abnormal Sequential Event Recorder, Annunciator, and Status Panel System, Rev. C
- 3. NEI 99-01, Rev. 4, Section 5.4 Definitions
- 4. N-CP-46 Honeywell Plant Process Computer, Rev. S
- 5. A-CP-46 Abnormal Honeywell Plant Process Computer, Rev. AR
- 6. N-SER-52 Control Room Sequential Event Recorder, Rev. D

SA5

Initiating Condition - ALERT

AC power capability to essential busses reduced to a single power source for greater thanGREATER THAN 15 minutes such that any additional single failure would result in station blackout.

Operating Mode Applicability:	Power Operation	
	Startup	
·	——Hot Standby	
	Hot Shutdown	
	Intermediate Shutdown	

Example-EmergencyEmergency Action Level:

SA5.1. AC power capability to Bus 5 AND Bus 6 reduced to only one of the following sourcesa single power source for greater than GREATER THAN 15 minutes:

- One emergency diesel generator (A or B)
- TAT
- RAT
- MAT on backfeed

AND

Any additional single failure will result in station blackout.

Basis:

This IC and the associated EALs are intended to provide an escalation from IC SU1, "Loss of All Offsite Power To Essential Busses for Greater Than 15 Minutes." The condition indicated by this IC is the degradation of the offsite and onsite power systems such that any additional single failure would result in a station blackout. This condition could occur due to a loss of offsite power with a concurrent failure of one emergency diesel generator to supply power to its emergency busses. Another related condition could be the-loss-of-all-offsite-power-and-loss-of onsite-emergency diesels with only one train of emergency busses being backfed from the unit main generator, or the loss of onsite emergency diesels with only one train of emergency busses being backfed from offsite power. Offsite power sources include the 345 kVAC system or 138 kVAC system to the Tertiary Auxiliary Transformer (TAT), the 345 kVAC system or 138 kVAC system to the Reserve Auxiliary Transformer (RAT), and the 345 kVAC system to the Main Auxiliary Transformer (MAT) on backfeed through the main transformers. Note that the time required to effect a backfeed to the MAT is likely longer than the fifteen-minute interval. If off--normal plant conditions have already established the backfeed, however, its power to the ESF busses may be considered an offsite power source. Onsite power sources consist of 1A Diesel Generator to Bus 5 and 1B Diesel Generator to Bus 6. Several combinations of power failures could therefore satisfy this EAL. The subsequent loss of this-the single remaining power source would escalate the event to a Site Area

Emergency in accordance with IC SS1, "Loss of All Offsite and Loss of All Onsite AC Power to Essential Busses."

KNPP Basis Reference(s):

- 1. ECA-0.0 Loss of All AC Power, Rev. AB
- 2. USAR Figure 8.2-2, Rev. 16
- 3. USAR Section 8.2.3, Rev. 18
- 4. USAR Section 8.2.4, Rev. 18
- 5. GNP-08.04.01 Shutdown Safety Assessment, Rev. K

At-multi-unit-stations, the EALs should allow credit for operation of installed design features, such as cross-ties or swing diesels, provided that abnormal or emergency operating procedures address their use. However, these stations must also consider the impact of this condition on other shared safety functions in developing the site specific EAL.

SS1

Initiating Condition -- SITE AREA EMERGENCY

Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses.

Operating Mode Applicability:

Power Operation Startup –Hot Standby Hot Shutdown Intermediate Shutdown

Example-EmergencyEmergency Action Level:

SS1.1. Loss of ALL offsite-power to Bus 5 AND Bus 6 for GREATER THAN 15 minutes. power-to-(site-specific) transformers.

AND

------Failure of all (site-specific) emergency diesel generators to supply power to Bus 5 AND Bus 6emergency busses.

AND

Failure to restore power to at least one Bus 5 OR Bus 6 emergency bus within 15 (sitespecific) minutes from the time of loss of both offsite and onsite AC power.

Basis:

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal and the Ultimate-Heat-SinkService Water System. Prolonged loss of all AC power will cause core uncovering and loss of containment integrity, thus this event can escalate to a General Emergency. The (site-specific)-time-duration-should-be-selected-to exclude transient or momentary power-losses, but should not exceed 15 minutes.

Offsite power sources include the 345 kVAC system or 138 kVAC system to the Tertiary Auxiliary Transformer (TAT), the 345 kVAC or 138 kVAC system to the Reserve Auxiliary Transformer (RAT), and the 345 kVAC system to the Main Auxiliary Transformer (MAT) on backfeed through the main transformers. Note that the time required to effect a backfeed to the MAT is likely longer than the fifteen-minute interval. If off-normal plant conditions have already established the backfeed, however, its power to the ESF busses may be considered an offsite power source. Onsite power sources consist of 1A Diesel Generator to Bus 5 and 1B Diesel Generator to Bus 6.

Escalation to General Emergency is via Fission Product Barrier Degradation or IC SG1, "Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power."

Consideration should be given to operable loads necessary to remove decay heat or provide Reactor Vessel makeup capability when evaluating loss of AC power to safety-related 4160 VAC essential-busses. Even though an safety-related 4160 VAC essential-bus may be energized, if necessary loads (i.e., loads that if lost would inhibit decay heat removal capability or Reactor KNPP 6-S-21 10/22/04

Vessel makeup capability) are not operable on the energized bus then the bus should not be considered operable. If this bus was the only energized bus then a Site Area Emergency per SS1 should be declared.

KNPP Basis Reference(s):

- 1. ECA-0.0 Loss of All AC Power, Rev. AB
- 2. USAR Figure 8.2-2, Rev. 16
- 3. USAR Section 8.2.3, Rev. 18
- 4. USAR Section 8.2.4, Rev. 18
- 5. GNP-08.04.01 Shutdown Safety Assessment, Rev. K

5.GNP-08.04.01-Shutdown Safety-Assessment, Rev.-K

SS2

Initiating Condition -- SITE AREA EMERGENCY

Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Scram-Trip Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Scram-Reactor Trip Was NOT Successful.

Operating Mode Applicability:	Power Operation
	StartupHot Standby

Example-EmergencyEmergency Action Level:

SS2.1. Indication(s) exist that automatic and manual scram were not successful.Indication(s) exist that automatic and manual trip were NOT successful in reducing power to LESS THAN 5%. Manual Reactor Trips include use of Manual Reactor Trip push buttons or De-energizing Busses 33 AND 43.

Basis:

Automatic and manual scram-trip are not considered successful if action away from the reactor Ceontrol Roomconsole was required to scram-trip the reactor.

Under these conditions, the reactor is producing more heat than the maximum decay heat load for which the safety systems are designed. A Site Area Emergency is indicated because conditions exist that lead to imminent loss or potential loss of both fuel clad and RCS. Although this IC may be viewed as redundant to the Fission Product Barrier Degradation IC, its inclusion is necessary to better assure timely recognition and emergency response. Escalation of this event to a General Emergency would be via Fission Product Barrier Degradation or Emergency Director Judgment ICs.

Automatic or manual reactor trip is considered successful if actions taken (use of Manual Reactor Trip push buttons or De-energizing Busses 33 AND 43) result in reducing reactor power less than 5%. Reactor power levels in the power range are indicated on N-41, 42, 43 and 44. Automatic and manual trips are not considered successful if action away from the Control Room (e.g., Rod Drive Equipment Room) is required to trip the reactor. Manual insertion of control rods from the Control Room is not considered rapid insertion that brings the reactor sub-critical.

KNPP Basis Reference(s):

- 1. E-0 Reactor Trip or Safety Injection, Rev. V
- 2. ES-0.1 Reactor Trip Response, Rev. P
- 3. F-0.1 Subcriticality, Rev. C
- 4. FR-S.1 Response to Nuclear Power Generation/ATWS, Rev. Q

SS3

Initiating Condition -- SITE AREA EMERGENCY

Loss of All Vital DC Power.

Operating Mode Applicability:

Power Operation Startup Hot Standby Hot Shutdown Intermediate Shutdown

Example-EmergencyEmergency Action Level:

SS3.1. Loss of aAll vVital DC pPower based on LESS THAN 105 VDC on Train A AND Train B Safeguards DC Distribution Systems for greater-thanGREATER THAN 15 minutes.

Basis:

Loss of all DC power compromises ability to monitor and control plant safety functions. Prolonged loss of all DC power will cause core uncovering and loss of containment integrity when there is significant decay heat and sensible heat in the reactor system. Escalation to a General Emergency would occur by Abnormal Rad Levels/Radiological Effluent, Fission Product Barrier Degradation, or Emergency Director Judgment ICs. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

The loss of a safeguards DC train consists of a combination of loss of power to specified DC distribution panels. These panels include: BRA (BRB)-102, and BRA (BRB)-104. In all cases, BRA (BRB)-102 panel indicating less than 105 VDC constitutes a loss of the associated DC distribution train. However, a loss of power to the BRA (BRB) -104 panel, which does not have voltage indication, also constitutes a loss of the associated DC distribution train.

125 VDC safeguard main distribution cabinets (BRA-102 and BRB-102) supply two safeguard subdistribution cabinets (BRA-104 and BRB-104) and provide for connection of safeguard batteries (BRA-101 and BRB-101) to their associated battery chargers (BRA-108 and BRB-108). The combination of low voltages on the specified distribution cabinets results in a total loss of vital 125 VDC power. The 125 VDC safeguards distribution system supplies circuit breaker control power, Control Room alarms, Control Room controls, diesel generator controls, and the Reactor Protection System. The 125 VDC safeguard system is also the standby power source to the AC inverters. BRA-102 and BRB-102 voltage is displayed on Control Room indicators 4494001 and 4494002, respectively. Undervoltage is alarmed on Control Room Sequence of Event Recorder (SER) points 490011196 and 490011200 and annunciators 447101A and 47101B, respectively.

Each of the 125 VDC batteries has been sized to carry the expected shutdown loads following a reactor trip and a loss of all AC power for a period of eight hours without battery terminal voltage falling below 105 VDC. This voltage value therefore incorporates a margin of at least 15 minutes of operation before the onset of inability to operate loads. The nominal battery cell voltage is 2.20 VDC. Low battery terminal voltage activates Control Room SER point 49001832 and annunciator 47105A. The batteries are located in Battery Rooms A and B on the Turbine Building Mezzanine Floor (606 ft el.).

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KNPP Basis Reference(s):

- 1. USAR 8.2.2, Rev. 18
- 2. USAR 8.2.3, Rev. 18
- 3. Technical Specifications B3.7, 4/23/2001
- 4. Plant Drawing 237127A-E233, Rev. AQ

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SS4

Initiating Condition -- SITE AREA EMERGENCY

Complete Loss of Heat Removal Capability.

Operating Mode Applicability:

Power Operation Startup —Hot Standby Hot Shutdown Intermediate Shutdown

Example-EmergencyEmergency Action Level:

SS4.1. Loss of core cooling and heat sink-(PWR).

SS4.1. -- Heat-Capacity-Temperature Limit-Curve exceeded (BWR).

Basis:

This EAL addresses complete loss of functions, including ultimate heat-sinkService Water System, required for hot shutdown with the reactor at pressure and temperature. Reactivity control is addressed in other EALs. For BWRs the loss of heat removal function is indicated by the Heat Removal Capability Temperature Limit Curve being exceeded.

Under these conditions, there is an actual major failure of a system intended for protection of the public. Thus, declaration of a Site Area Emergency is warranted. Escalation to General Emergency would be via Abnormal Rad Levels / Radiological Effluent, Emergency Director Judgment, or Fission Product Barrier Degradation ICs.

KNPP Basis Reference(s):

None

SS6

Initiating Condition -- SITE AREA EMERGENCY

Inability to Monitor a SIGNIFICANT TRANSIENT in Progress.

Operating Mode Applicability:

Power Operation Startup -Hot Standby Hot Shutdown Intermediate Shutdown

Example-EmergencyEmergency Action Level:

SS6.1. a.-Loss of most or all -(site-specific)-annunciators associated with safety systems on Mechanical Vertical Panels A, B and C, Mechanical Control Consoles A, B and C, Electrical Vertical Panel and Electrical Control Console.

AND

SIGNIFICANT TRANSIENT in progress.

AND

b.-COMPENSATORY NON-ALARMING INDICATIONSCompensatory-non-alarming indications are unavailable.

AND

e.-Indications needed to monitor the ability to shut down the reactor, maintain the core cooled, maintain the reactor coolant system intact, and maintain containment intactmonitor-(site-specific) safety functions are unavailable.

AND

d. SIGNIFICANT TRANSIENT in progress.

Basis:

This IC and its associated EAL are intended to recognize the inability of the control room staff to monitor the plant response to a transient. A Site Area Emergency is considered to exist if the control room staff cannot monitor safety functions needed for protection of the public.

SIGNIFICANT TRANSIENT includes response to automatic or manually initiated functions such as reactor trips, runbacks involving greater than 25% thermal power change, ECCS injections, or thermal power oscillations of 10% or greater.

COMPENSATORY NON-ALARMING INDICATIONS include the plant process computer (PPCS), SPDS, plant recorders, or plant instrument displays in the control room.

(Site-specific) annunciators for this EAL should be limited to include those identified in the Abnormal Operating Procedures, in the Emergency Operating Procedures, and in other EALs (e.g., rad monitors, etc.)

"Compensatory non-alarming-indications"-in-this-context-includes-computer-based-information such-as-SPDS. This-should-include-all-computer-systems-available-for-this-use-depending-on specific plant design and subsequent retrofits.

-(Site-specific)-iIndications needed to monitor safety functions necessary for protection of the public must-include control room indications, computer generated indications and dedicated annunciation capability. The specific indications should-beare those used to determine-such functions asmonitor the ability to shut down the reactor, maintain the core cooled, to maintain the reactor coolant system intact, and to maintain containment intact.

"Planned" and "UNPLANNED" actions are not differentiated since the loss of instrumentation of this magnitude is of such significance during a transient that the cause of the loss is not an ameliorating factor.

Quantification of "Most" is arbitrary, however, it is estimated that if approximately 75% of the safety system annunciators or indicators are lost, there is an increased risk that a degraded plant condition could go undetected. It is not intended that plant personnel perform a detailed count of the instrumentation lost but use the value as a judgment threshold for determining the severity of the plant conditions. It is also not intended that the Shift Supervisor be tasked with making a judgment decision as to whether additional personnel are required to provide increased monitoring of system operation.

Note: This EAL is SS6 following SS4. SS5 is not used in NEI 99-01 Revision 4 and that convention is carried forward here.

- 1. USAR Figure 7.7-1, Rev. 18
- 2. A-SER-52B Abnormal Sequential Event Recorder, Annunciator, and Status Panel System, Rev. C
- 3. NEI 99-01, Rev. 4, Section 5.4 Definitions
- 7. N-CP-46 Honeywell Plant Process Computer, Rev. S
- 8. A-CP-46 Abnormal Honeywell Plant Process Computer, Rev. AR
- 9. N-SER-52 Control Room Sequential Event Recorder, Rev. D
- 10. UG-0 User's Guide for Emergency and Abnormal Procedures, Rev. D
- 11. F-0.1 Subcriticality, Rev. C
- 12. F-0.2 Core Cooling, Rev. F
- 13. F-0.3 Heat Sink, Rev. E
- 14. F-0.4 Integrity, Rev. E
- 15. F-0.5 Containment, Rev. F
- 16. F-0.6 Inventory, Rev. F

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SYSTEM MALFUNCTION

SG1

Initiating Condition -- GENERAL EMERGENCY

Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power to Essential Busses.

Operating	Mode A	pplical	bility:
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Power Operation Startup Hot Standby Hot Shutdown Intermediate Shutdown

Example-EmergencyEmergency Action Level:

SG1.1. Loss of all offsite power to Bus 5 AND Bus 6(site-specific)-transformers

AND

Failure of (site-specific) all emergency diesel generators to supply power to Bus 5 AND Bus 6-emergency busses.

AND

Either of the following: (a or b)

a. Restoration of at least either Bus 5 OR Bus 6 one-within (site-specific) 4 hours is not likely

OR

 b. (Site-Specific) Indication of cContinuing degradation of core cooling based on Fission Product Barrier monitoring- as indicated by a Core Cooling-RED or Core Cooling-ORANGE

Basis:

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal and the Ultimate-Heat-SinkService Water System. Prolonged loss of all AC power will lead to loss of fuel clad, RCS, and containment. The (site-specific)4 hours to restore AC power can-beis based on a-the site blackout coping analysis performed in conformance with 10 CFR 50.63 and Regulatory Guide-Guide 1.155, "Station Blackout,"-as available. Four hours includes aAppropriate allowance for offsite emergency response including evacuation of surrounding areas-should-be-considered. Although this IC may be viewed as redundant to the Fission Product Barrier Degradation IC, its inclusion is necessary to better assure timely recognition and emergency response.

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This IC is specified to assure that in the unlikely event of a prolonged station blackout, timely recognition of the seriousness of the event occurs and that declaration of a General Emergency occurs as early as is appropriate, based on a reasonable assessment of the event trajectory.

Offsite power sources include the 345 kVAC system or 138 kVAC system to the Tertiary Auxiliary Transformer (TAT), the 345 kVAC system or 138 kVAC system to the Reserve Auxiliary Transformer (RAT), and the 345 kVAC system to the Main Auxiliary Transformer (MAT) on backfeed through the main transformers. Time required to effect a backfeed to the MAT is likely longer than the four hours. If shutddown plant conditions have already established the backfeed, however, its power to the ESF busses may be considered an offsite power source. Onsite power sources consist of Diesel Generator A to Bus 5 and Diesel Generator B to Bus 6.

The likelihood of restoring at least one emergency bus should be based on a realistic appraisal of the situation since a delay in an upgrade decision based on only a chance of mitigating the event could result in a loss of valuable time in preparing and implementing public protective actions. In addition, under these conditions, fission product barrier monitoring capability may be degraded. Although it may be difficult to predict when power can be restored, it is necessary to give the Emergency Director a reasonable idea of how quickly (s)he may need to declare a General Emergency based on two major considerations:

- Are there any present indications that core cooling is already degraded to the point that Loss or Potential Loss of Fission Product Barriers is imminent? (Refer to Table s-3-and-4F-1 for | more information.)
- 2. If there are no present indications of such core cooling degradation, how likely is it that power can be restored in time to assure that a loss of two barriers with a potential loss of the third barrier can be prevented?

Thus, indication of continuing core cooling degradation must be based on Fission Product Barrier monitoring with particular emphasis on Emergency Director judgment as it relates to imminent Loss or Potential Loss of fission product barriers and degraded ability to monitor fission product barriers.

KNPP Basis Reference(s):

- 1. ECA-0.0 Loss of All AC Power, Rev. AB
- 2. USAR Figure 8.2-2, Rev. 16
- 3. USAR Section 8.2.3, Rev. 18
- 4. USAR Section 8.2.4, Rev. 18
- 5. GNP-08.04.01 Shutdown Safety Assessment, Rev. K
- 6. F-0.2 Core Cooling, Rev. F
- 7. FR-C.2 Response to Degraded Core Cooling, Rev. M
- 8. E-0 QRF Quick Reference Foldout, Section E-0, Rev. H

SYSTEM MALFUNCTION

SG2

Initiating Condition -- GENERAL EMERGENCY

Failure of the Reactor Protection System to Complete an Automatic Scram-Reactor Trip and Manual Scram-Reactor Trip was NOT Successful and There is Indication of an Extreme Challenge to the Ability to Cool the Core.

Operating Mode Applicability:

Power Operation StartupHot Standby

Example-EmergencyEmergency Action Level:

SG2.1. Indication(s) exist that automatic and manual scram-reactor trip were NOT successful in reducing power to LESS THAN 5%.

Indications exist that automatic and manual scram were not successful.

AND

Either of the following: (a or b)

—a. Indication(s) exists that the core cooling is extremely challenged as indicated by conditions exist for entry into-Core Cooling - RED.

OR

----b. Indication(s) exists that heat removal is extremely challenged as indicated by Heat Sink - RED.

Basis:

Automatic and manual scram-reactor trips are not considered successful if action away from the reactor control console is required to scram-trip the reactor.

Under the conditions of this IC and its associated EALs, the efforts to bring the reactor subcritical have been unsuccessful and, as a result, the reactor is producing more heat than the maximum decay heat load for which the safety systems were designed. Although there are capabilities away from the reactor control-consoleto reduce reactor power, such as emergency boration-in-PWRs, or standby-liquid-control-in-BWRs, the continuing temperature rise indicates that these capabilities are not effective. This situation could be a precursor for a core melt sequence.

For PWRs, the extreme challenge to the ability to cool the core is intended to mean that the core exit temperatures are at or approaching 1200 degrees F or that the reactor vessel water level is below the top of active fuel. For plants using CSFSTs, this EAL equates to a Core Cooling RED condition and an entry into function restoration procedure FR-SC.1. For BWRs, the extreme challenge to the ability to cool the core is intended to mean that the reactor vessel water level cannot be restored and maintained above Minimum Steam Cooling RPV Water Level as described in the EOP bases.

Another consideration is the inability to initially remove heat during the early stages of this sequence. For PWRs, ilf emergency feedwater flow is insufficient to remove the amount of heat required by design from at least one steam generator, an extreme challenge should be considered to exist. For plants using CSFSTs, tThis EAL equates to a Heat Sink RED condition. For BWRs, considerations include inability to remove heat via the main condenser, or via the suppression pool or torus (e.g., due to high pool water temperature).

In the event either of these challenges exist at a time that the reactor has not been brought below the power associated with the safety system design (typically_3_to_5% power) a core melt sequence exists. In this situation, core degradation can occur rapidly. For this reason, the General Emergency declaration is intended to be anticipatory of the fission product barrier matrix declaration to permit maximum offsite intervention time.

Automatic or manual reactor trip is considered successful if actions taken (use of Manual Reactor Trip push buttons or De-energizing Busses 33 AND 43) result in reducing reactor power less than 5%. Reactor power levels in the power range are indicated on N-41, 42, 43 and 44. Automatic and manual trips are not considered successful if action away from the Control Room (e.g., Rod Drive Equipment Room) is required to trip the reactor. Manual insertion of control rods from the Control Room is not considered rapid insertion that brings the reactor sub-critical.

KNPP Basis Reference(s):

- 1. E-0 Reactor Trip or Safety Injection, Rev. V
- 2. ES-0.1 Reactor Trip Response, Rev. P
- 3. F-0.1 Subcriticality, Rev. C
- 4. FR-S.1 Response to Nuclear Power Generation/ATWS, Rev. Q
- 5. F-0.2 Core Cooling, Rev. F
- 6. FR-C.1 Response to Inadequate Core Cooling, Rev. N
- 7. F-0.3 Heat Sink, Rev. E
- 8. FR-H.1 Response to Loss of Secondary Heat Sink, Rev. T

ATTACHMENT 2

CLEAN TECHNICAL BASIS DOCUMENT

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Emergency Action Level Technical Bases Document

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ACRONYMS

	AC	Alternating Current
	ATWS	Anticipated Transient Without Scram
	CCW	Component Cooling Water
	CDE	Committed Dose Equivalent
	CFR	Code of Federal Regulations
	CMT	Containment
	CSF	Critical Safety Function
	CSFST	Critical Safety Function Status Tree
	DC	Direct Current
	DOT	Department of Transportation
	EAL	Emergency Action Level
	ECCS	Emergency Core Cooling System
	ECL	Emergency Classification Level
	EOF	Emergency Operations Facility
	EOP	Emergency Operating Procedure
	EPA	Environmental Protection Agency
	EPIP	Emergency Plan Implementing Procedure
	EPRI	Electric Power Research Institute
•	ERG	Emergency Response Guideline
	ESF	Engineered Safeguards Feature
	GE	General Emergency
	HPSI	High Pressure Safety Injection
	IC	Initiating Condition
	IDLH	Immediately Dangerous to Life and Health
	IGLD	International Great Lakes Datum
	IPEEE	Individual Plant Examination of External Events (Generic Letter 88-20)
	LCO	Limiting Condition of Operation
	LER	Licensee Event Report
	LFL	Lower Flammability Limit
	LOCA	Loss of Coolant Accident
	LPSI	Low Pressure Safety Injection
	MAT	Main Auxiliary Transformer

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MSIV	Main Steam Isolation Valve
mR	milliRem
Mw	Megawatt
NEI	Nuclear Energy Institute
NESP	National Environmental Studies Project
NRC	Nuclear Regulatory Commission
NSSS	Nuclear Steam Supply System
NUMARC	Nuclear Management and Resources Council
OBE	Operating Basis Earthquake
ODCM	Offsite Dose Calculation Manual
PRA/PSA	Probabilistic Risk Assessment / Probabilistic Safety Assessment
PWR	Pressurized Water Reactor
PSIG	Pounds per Square Inch Gauge
R	Rem
RAT	Reserve Auxiliary Transformer
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RPS	Reactor Protection System
RVLIS	Reactor Vessel Level Indicating System
SAE	Site Area Emergency
SG	Steam Generator
SI	Safety Injection
SPDS	Safety Parameter Display System
SRO	Senior Reactor Operator
SSE	Safe Shutdown Earthquake
SW	Service Water
TAT	Tertiary Auxiliary Transformer
TEDE	Total Effective Dose Equivalent
TOAF	Top of Active Fuel
TSC	Technical Support Center
UE	Unusual Event
USAR	Updated Final Safety Analysis Report
WOG	Westinghouse Owners Group

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1. PURPOSE

This document provides the detailed set of Emergency Action Levels (EALs) applicable to the Kewaunee Nuclear Plant (KNP) and the associated Technical Bases using the EAL development methodology found in NEI 99-01 Revision 4 [Ref. 2.1]. Personnel responsible for implementation of EPIP-AD-02 "Emergency Class Determination" [Ref. 2.2], and the Emergency Action Level Matrix [Ref. 2.3] may use this document as a technical reference and an aid in EAL interpretation.

The primary tool for determining the emergency classification level is the Emergency Action Level Matrix. The user of the Emergency Action Level Matrix may (but is not required to) consult the EAL Technical Basis Document in order to obtain additional information concerning the EALs under classification consideration.

2. **REFERENCES**

- 2.1 NEI 99-01 Revision 4, Methodology for Development of Emergency Action Levels, January 2003
- 2.2 KNPP Technical Specifications, Section 1.0 Definitions, Amendments 162, 172 and 176.

3. **DISCUSSION**

3.1 Background

EALs are the plant-specific indications, conditions or instrument readings that are utilized to classify emergency conditions defined in the KNPP Emergency Plan.

In 1992, the NRC endorsed NUMARC/NESP-007 "Methodology for Development of Emergency Action Levels" as an alternative to NUREG 0654 EAL guidance.

NEI 99-01 (NUMARC/NESP-007) Revision 4 represents the most recent NRC endorsed methodology per RG 1.101 Rev 4, "Emergency Planning and Preparedness for Nuclear Power Reactors." Enhancements over earlier revisions included:

- Consolidating the system malfunction initiating conditions and example emergency action levels which address conditions that may be postulated to occur during plant shutdown conditions.
- Addressing initiating conditions and example emergency action levels that fully address conditions that may be postulated to occur at permanently Defueled Stations and Independent Spent Fuel Storage Installations.
- Simplifying the fission product barrier EAL threshold for a Site Area Emergency.

Using NEI 99-01 Rev. 4, KNPP conducted an EAL implementation upgrade project that produced the EALs discussed herein. While the upgraded EALs are site-specific, an objective of the project was to ensure to the extent possible EAL conformity and consistency between the NMC plant sites.

3.2 Key Definitions in EAL Methodology

The following definitions apply to the generic EAL methodology:

EMERGENCY CLASS: One of a minimum set of names or titles, established by the Nuclear Regulatory Commission (NRC), for grouping of normal nuclear power plant conditions according to (1) their relative radiological seriousness, and (2) the time sensitive onsite and off site radiological emergency preparedness actions necessary to respond to such conditions. The existing radiological emergency classes, in ascending order of seriousness, are called:

- Unusual Event (UE)
- Alert
- Site Area Emergency (SAE)
- General Emergency (GE)

Section 3.3 provides further discussion of the emergency classes.

INITIATING CONDITION (IC): One of a predetermined subset of nuclear power plant conditions when either the potential exists for a radiological emergency, or such an emergency has occurred.

- An IC is an emergency condition which sets it apart from the broad class of conditions that may or may not have the potential to escalate into a radiological emergency.
- It can be a continuous, measurable function that is outside technical specifications, such as elevated RCS temperature or falling reactor coolant level (a symptom).
- It also encompasses occurrences such as FIRE (an event) or reactor coolant pipe failure (an event or a barrier breach).

EMERGENCY ACTION LEVEL (EAL): A pre determined, site-specific, observable threshold for a plant Initiating Condition that places the plant in a given emergency class. An EAL can be: an instrument reading; an equipment status indicator; a measurable parameter (onsite or offsite); a discrete, observable event; results of analyses; entry into specific emergency operating procedures; or another phenomenon which, if it occurs, indicates entry into a particular emergency class.

- There are times when an EAL will be a threshold point on a measurable continuous function, such as a primary system coolant leak that has exceeded technical specifications.
- At other times, the EAL and the IC will coincide, both identified by a discrete event that places the plant in a particular emergency class.
- 3.3 Recognition Categories

ICs and EALs are grouped in one of several categories. This classification scheme incorporates symptom-based, event-based, and barrier-based ICs and EALs.

- R Abnormal Rad Levels/Radiological Effluent
- C Cold Shutdown./ Refueling System Malfunction
- F Fission Product Barrier Degradation
- H Hazards
- S System Malfunction

Some recognition categories are further divided into one or more subcategories depending on the types and number of plant conditions that dictate emergency classifications. An EAL may or may not exist for each subcategory at all four classification levels. Similarly, more than one EAL may exist for a subcategory in a given emergency classification when appropriate (i.e., no EAL at the General Emergency level but three EALs at the Unusual Event level).

3.4 Emergency Class Descriptions

There are three considerations related to the emergency classes. These are:

- The potential impact on radiological safety, either as now known or as can be reasonably projected.
- How far the plant is beyond its predefined design, safety and operating envelopes.
- Whether or not conditions that threaten health are expected to be confined to within the site boundary.

The ICs deal explicitly with radiological safety affect by escalating from levels corresponding to releases within regulatory limits to releases beyond EPA Protective Action Guideline (PAG) plume exposure levels.

UNUSUAL EVENT: Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

- Potential degradation of the level of safety of the plant is indicated primarily by exceeding plant technical specification Limiting Condition of Operation (LCO) allowable action statement time for achieving required mode change.
- Precursors of more serious events may be included because precursors represent a potential degradation in the level of safety of the plant.
- Minor releases of radioactive materials are included. In this emergency class, however, releases do not require monitoring or offsite response (e.g., dose consequences of less than 10 millirem).

ALERT: Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

SITE AREA EMERGENCY: Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline (PAG) exposure levels beyond the site boundary.

- The discriminator (threshold) between Site Area Emergency and General Emergency is whether or not the EPA PAG plume exposure levels are expected to be exceeded outside the site boundary.
- This threshold, in addition to dynamic dose assessment considerations discussed in the EAL guidelines, clearly addresses NRC and offsite emergency response agency concerns as to timely declaration of a General Emergency.

GENERAL EMERGENCY: Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

- The bottom line for the General Emergency is whether evacuation or sheltering of the general public is indicated based on EPA PAGs and, therefore, should be interpreted to include radionuclide release regardless of cause.
- To better assure timely notification, EALs in this category are primarily expressed in terms of plant function status, with secondary reliance on dose projection. In terms of fission product barriers, loss of two barriers with loss or potential loss of the third barrier constitutes a General Emergency.
- 3.5 Operating Mode Applicability

Technical Specifications [Ref. 2.4] provides definitions for the following operating modes:

1 Operating (OP)

Reactivity $\Delta k/k$ is LESS THAN Technical Specification minimum required (0.25%) and EQUAL TO OR GREATER than 2% fission power.

2 Hot Standby (HSB)

Reactivity $\Delta k/k$ is LESS THAN Technical Specification minimum required (0.25%) and LESS THAN 2% fission power.

3 Hot Shutdown (HSD)

Reactivity $\Delta k/k$ as specified in the Core Operating Limits Report with coolant temperature (Tavg) GREATER THAN OR EQUAL TO 540°F.

4 Intermediate Shutdown (ISD)

Reactivity $\Delta k/k$ as specified in the Core Operating Limits Report with coolant temperature (Tavg) LESS THAN 540°F and GREATER THAN 200°F.

5 Cold Shutdown (CSD)

Reactivity $\Delta k/k$ GREATER THAN OR EQUAL TO Technical Specification minimum required (-1%) with coolant temperature (Tavg) LESS THAN OR EQUAL TO 200°F.

6 <u>Refueling (REF)</u>

Reactivity $\Delta k/k$ GREATER THAN OR EQUAL TO Technical Specification minimum required for refueling operations (-5%) and coolant temperature (Tavg) LESS THAN OR EQUAL TO 140°F.

In addition to the Technical Specification operating modes, NEI 99-01 [Ref. 1] defines the following additional mode:

D <u>Defueled</u>

All reactor fuel removed from Reactor Vessel (full core off load during refueling or extended outage)

The plant operating mode that exists at the time that the event occurs (prior to any protective system or operator action is initiated in response to the condition) should be compared to the mode applicability of the EALs. If a lower or higher plant operating mode is reached before the emergency classification is made, the declaration shall be based on the mode that existed at the time the event occurred.

Recognition categories are associated with the operating modes listed in the following matrix:

	Recognition Category				
Mode	R	С	F	н	S
Operations	Х		X	X	Х
Hot Standby	Х		X	X	Х
Hot Shutdown	x		X	X	Х
Intermediate Shutdown	Х		X	X	х
Cold Shutdown	Х	X		x	
Refueling	х	x		X	
Defueled	Х	x		X	

3.6 Fission Product Barriers

Many of the EALs derived from the NEI methodology are fission product barrier based. That is, the conditions that define the EALs are based upon loss of or potential loss of one or more of the three fission product barriers. "Loss" and "potential loss" signify the relative damage and threat of damage to the barrier. "Loss" means the barrier no longer assures containment of radioactive materials and "potential loss" means imminent loss of the barrier.

The primary fission product barriers are:

- <u>Fuel Cladding (FC)</u>: Zirconium tubes which house the ceramic uranium oxide pellets along with the end plugs which are welded into each end of the fuel rods comprise the FC barrier.
- <u>Reactor Coolant System (RCS)</u>: The reactor vessel shell, vessel head, vessel nozzles and penetrations and all primary systems directly connected to the reactor vessel up to the first containment isolation valve comprise the RCS barrier.
- <u>Containment (CMT)</u>: The vapor containment structure and all isolation valves required to maintain containment integrity under accident conditions comprise the Containment barrier.
- 3.7 Emergency Classification Based on Fission Product Barrier Degradation

The following criteria are the bases for event classification related to fission product barrier loss or challenge:

• Unusual Event:

Any loss or any potential loss of Containment

• <u>Alert</u>:

Any loss or any potential loss of either Fuel Cladding or RCS

• <u>Site Area Emergency</u>:

Loss or potential loss of any two barriers

• <u>General Emergency</u>:

Loss of any two barriers and loss or potential loss of third barrier

3.8 EAL Relationship to EOPs and Critical Safety Function Status

Where possible, the EALs have been made consistent with and utilize the conditions defined in the Critical Safety Function Status Trees (CSFSTs). While the symptoms that drive operator actions specified in the CSFSTs are not indicative of <u>all</u> possible conditions which warrant emergency classification, they define the symptoms, independent of initiating events, for which reactor plant safety and/or fission product barrier integrity are threatened. Where these symptoms are clearly representative of one of the NEI Initiating Conditions, they have been utilized as an EAL. This permits rapid classification of emergency situations based on plant conditions without the need for additional evaluation or event diagnosis. Although some of the EALs presented here are based on conditions defined in the CSFSTs, classification of emergencies using these EALs is not dependent upon Emergency Operating Procedures (EOP) entry or execution. The EALs can be utilized independently or in conjunction with the EOPs.

3.9 Symptom Based vs. Event Based Approach

To the extent possible, the EALs are symptom based. That is, the action level is defined by values of key plant operating parameters that identify emergency or potential emergency conditions. This approach is appropriate because it allows the full scope of variations in the types of events to be classified as emergencies. But, a purely symptom based approach is not sufficient to address all events for which emergency classification is appropriate. Particular events to which no predetermined symptoms can be ascribed have also been utilized as EALs since they may be indicative of potentially more serious conditions not yet fully realized.

Category R - Abnormal Rad Levels/Radiological Effluent and Category F - Fission Product Barrier Degradation are primarily symptom-based. The symptoms are indicative of actual or potential degradation of either fission product barriers or personnel safety.

Other categories tend to be event-based. For example, System Malfunctions are abnormal and emergency events associated with vital plant system failures, while Hazards are those non-plant system related events that have affected or may affect plant safety.

3.10 Treatment of Emergency Class Upgrading

The emergency class is based on the highest EAL reached. For example, two Alerts remain in the Alert category. Or, an Alert and a Site Area Emergency is a Site Area Emergency.

3.11 Classifying Transient Events

For some events, the condition may be corrected before a declaration has been made. For example, an emergency classification is warranted when automatic and manual actions taken within the control room do not result in a required reactor trip. However, it is likely that actions taken outside of the control room will be successful, probably before the Emergency Director classifies the event. The key consideration in this situation is to determine whether or not further plant damage occurred while the corrective actions were being taken. In some situations, this can be readily determined. In other situations, further analyses (e.g., coolant sampling) may be necessary. In general, observe the following guidance: Classify the event as indicated and terminate the emergency once assessment shows that there were no consequences from the event and other termination criteria are met. For example, a momentary event, such as an ATWS or an earthquake, requires declaration even though the condition may have been resolved by the time the declaration is made.

- An ATWS represents a failure of a front line Reactor Protection System (RPS) designed to protect the health and safety of the public.
- The affect of an earthquake on plant equipment and structures may not be readily apparent until investigations are conducted.

There may be cases in which a plant condition that exceeded an EAL threshold was not recognized at the time of occurrence, but is identified well after the condition has occurred (e.g., as a result of routine log or record review) and the condition no longer exists. In these cases, an emergency should not be declared. Reporting requirements of 10 CFR 50.72 are applicable and the guidance of NUREG-1022, Rev. 1, Section 3 should be applied.

3.12 Imminent EAL Thresholds

Although the majority of the EALs provide very specific thresholds, the Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent. If, in the judgment of the Emergency Director, an imminent situation is at hand, the classification should be made as if the thresholds has been exceeded. While this is particularly prudent at the higher emergency classes (as the early classification may provide for more effective implementation of protective measures), it is nonetheless applicable to all emergency classes. Explicit EALs, specifying use of Emergency Director judgment, are given in the Hazards and Fission Product Barrier Degradation categories.

4. TECHNICAL BASES INFORMATION

4.1 Recognition Category Organization

The technical bases of the EALs are provided under Recognition Categories R, C, F, H and S of this document. A table summarizing the Initiating Conditions introduces each category. The tables provide an overview of how the ICs are related under each emergency class. ICs within each category are listed according to classification (as applicable) in the following order: Unusual Event, Alert, Site Area Emergency, and General Emergency.

For Recognition Category F, Table F-0 defines the emergency classifications associated with barrier loss and potential loss. Table F-1 lists the thresholds associated with the loss and potential loss of each fission product barrier. The presentation method shown for Table F-1 was chosen to clearly show the synergism among the EALs and to support more accurate dynamic assessments. Basis discussion of the thresholds immediately follows Table F-1.

4.2 Initiating Condition Structure

ICs in Recognition Categories R, C, H and S are structured in the following manner:

- Recognition Category Title
- IC Identifier:
 - o First character identifies the category by letter (R, C, H and S)
 - Second character identifies the emergency classification level (U for Unusual Event, A for Alert, S for Site Area Emergency, and G for General Emergency)
 - Third character is the numerical sequence as given in Revision 4 of NEI 99-01 [Ref. 1] (e.g., SA2). Due to document revisions, certain NEI ICs have been deleted, leaving gaps in the numerical sequence.
- Emergency Class: Unusual Event, Alert, Site Area Emergency, or General Emergency
- IC Description
- Operating Mode Applicability: Refers to the operating mode during which the IC/EAL is applicable

- Emergency Action Level(s): EALs are the conditions applicable to the criteria of the IC and are used to determine the need to classify an event/condition. If more than one EAL is applicable to an IC, emergency classification is required when any EAL within the IC reaches the EAL threshold. To clarify this intent, ICs with multiple EALs include a parenthetical phrase in the EAL title line, indicating that each constitutes an emergency classification. For example, the phrase "(RA1.1 or RA1.2)" indicates that either EAL is a Notification of Unusual Event.
- Basis: Provides information that explains the IC and EAL(s). Plant source document references are provided as needed to substantiate site-specific information included in the EALs and bases.

4.3 EAL Identification

The EAL identifier is the IC identifier followed by a period and sequence number (e.g., RU1.1, RU1.2, etc.). If only one EAL is assigned to an IC, the EAL is given the number one.

The primary purpose of the EAL identifier is to uniquely distinguish each classifiable condition. Secondary purposes are to assist location of an EAL within the EAL classification scheme and to announce the emergency classification level.

5. **DEFINITIONS**

In the ICs and EALs, selected words are in uppercase print. These words are defined terms. Definitions are provided below.

AFFECTING SAFE SHUTDOWN: event in progress has adversely affected functions that are necessary to bring the plant to and maintain it in the applicable HOT or COLD SHUTDOWN condition. Plant condition applicability is determined by Technical Specification LCOs in effect.

Example 1: Event causes damage that results in entry into an LCO that requires the plant to be placed in HOT SHUTDOWN. HOT SHUTDOWN is achievable, but COLD SHUTDOWN is not. This event is not "AFFECTING SAFE SHUTDOWN."

Example 2: Event causes damage that results in entry into an LCO that requires the plant to be placed in COLD SHUTDOWN. HOT SHUTDOWN is achievable, but COLD SHUTDOWN is not. This event is "AFFECTING SAFE SHUTDOWN."

BOMB: an explosive device suspected of having sufficient force to damage plant systems or structures.

CIVIL DISTURBANCE: a group of unexpected or unauthorized individuals violently protesting station operations or activities at the site.

CONFINEMENT BOUNDARY: the barrier(s) between areas containing radioactive substances and the environment.

CONTAINMENT CLOSURE: defined by N-CCI-56A, "Open Containment Boundary Tracking".

EXPLOSION: a rapid, violent, unconfined combustion, or catastrophic failure of pressurized equipment that imparts energy of sufficient force to potentially damage permanent structures, systems, or components.

EXTORTION: an attempt to cause an action at the station by threat of force.

FAULTED: a steam generator, the existence of secondary side leakage that results in an uncontrolled decrease in steam generator pressure or the steam generator being completely depressurized.

FIRE: combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute FIREs. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.

HOSTAGE: a person(s) held as leverage against the station to ensure that demands will be met by the station.

HOSTILE FORCE: one or more individuals who are engaged in a determined assault, overtly or by stealth and deception, equipped with suitable weapons capable of killing, maiming, or causing destruction.

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IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH): A condition that either poses an immediate threat to life and health or an immediate threat of severe exposure to contaminants which are likely to have adverse delayed effects on health.

INTRUSION / INTRUDER: person(s) present in a specified area without authorization. Discovery of a BOMB in a specified area is indication of INTRUSION into that area by a HOSTILE FORCE.

LOWER FLAMMABILITY LIMIT (LFL): The minimum concentration of a combustible substance that is capable of propagating a flame through a homogenous mixture of the combustible and a gaseous oxidizer.

NORMAL PLANT OPERATIONS: activities at the plant site associated with routine testing, maintenance, or equipment operations, in accordance with normal operating or administrative procedures. Entry into abnormal or emergency operating procedures, or deviation from normal security or radiological controls posture, is a departure from NORMAL PLANT OPERATIONS.

PROTECTED AREA: boundary within the security isolation zone.

RUPTURED: In a steam generator, existence of primary-to-secondary leakage of a magnitude sufficient to require or cause a reactor trip and safety injection.

SABOTAGE: deliberate damage, misalignment, or mis-operation of plant equipment with the intent to render the equipment inoperable. Equipment found tampered with or damaged due to malicious mischief may NOT meet the definition of SABOTAGE until this determination is made by security supervision.

SIGNIFICANT TRANSIENT: an UNPLANNED event involving one or more of the following: (1) automatic turbine runback >25% thermal reactor power, (2) electrical load rejection >25% full electrical load, (3) Reactor Trip, (4) Safety Injection Activation, or (5) thermal power oscillations >10%.

STRIKE ACTION: a work stoppage within the PROTECTED AREA by a body of workers to enforce compliance with demands. The STRIKE ACTION must threaten to interrupt NORMAL PLANT OPERATIONS.

UNPLANNED: A parameter change or an event that is not the result of an intended evolution and requires corrective or mitigative actions.

VALID: An indication, report, or condition is considered to be VALID when it is verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel, such that doubt related to the indicator operability, the condition existence, or the report accuracy is removed. Implicit in this definition is the need for timely assessment.

VISIBLE DAMAGE: damage to equipment or structure that is readily observable without measurements, testing, or analysis. Damage is sufficient to cause concern regarding the continued operability or reliability of affected safety structure, system, or component. Example damage includes: deformation due to heat or impact, denting, penetration, rupture, cracking, paint blistering. Surface blemishes (e.g., paint chipping, scratches) should not be included.

VITAL AREA: Area within the PROTECTED AREA, which contains equipment, systems, components, or material; the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation.

6. EMERGENCY ACTION LEVEL CATEGORIES

R - Abnormal Rad Levels/Radiological Effluent

C - Cold Shutdown / Refueling System Malfunction

F - Fission Product Barrier Degradation

H - Hazards

S - System Malfunction

Table R-0

Recognition Category R

Abnormal Rad Levels / Radiological Effluent

INITIATING CONDITION MATRIX

ALERT

SITE AREA EMERGENCY

RU1 Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two Times the Offsite Dose Calculation Manual for 60 Minutes or Longer. Op. Modes: All

UE

- RU2 Unexpected Increase in Plant Radiation. Op. Modes: All
- RA1 Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds 200 Times the Offsite Dose Calculation Manual for 15 Minutes or Longer. Op. Modes: All
- RA3 Release of Radioactive Material or Increases in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown Op. Modes: All
- RA2 Damage to Irradiated Fuel or Loss of Water Level that Has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel. *Op. Modes: All*

RS1 Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mRem TEDE or 500 mRem Thyroid CDE for the Actual or Projected Duration of the Release. Op. Modes: All

GENERAL EMERGENCY

RG1 Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 1000 mRem TEDE or 5000 mRem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology. Op. Modes: All

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ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

RU1

Initiating Condition -- UNUSUAL EVENT

Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two Times the Offsite Dose Calculation Manual for 60 Minutes or Longer.

Operating Mode Applicability: All

Emergency Action Levels: (RU1.1 or RU1.2 or RU1.3)

RU1.1. VALID reading on any effluent monitor that is GREATER THAN two times the alarm setpoint established by a current radioactivity discharge permit for 60 minutes or longer.

Auxiliary Building	Action Value
R-13 Aux. Bldg. Vent Exhaust	2.61E+05 cpm
R-14 Aux. Bidg. Vent Exhaust	2.62E+05 cpm
Reactor Building	
R-12 Containment Gas	4.41E+05 cpm
R-21 Containment Vent	4.40E+05 cpm
Liquid Radwaste	
R-18 Waste Disposal System Liquid	2 X Calculated ODCM Setpoint

RU1.2. VALID reading on one or more of the following radiation monitors that is GREATER THAN the reading shown for 60 minutes or longer.

Liquid Radwaste	Action Value
R-16 Containment FCU SW Return	3.38E+05 cpm
R-19 S/Ġ Blowdown Liquid	2.58E+06 cpm
R-20 Aux Bldg SW Return	1.03E+05 cpm

RU1.3. Confirmed sample analyses for gaseous or liquid release indicates concentrations or release rates, with a release duration of 60 minutes or longer, in excess of two times the ODCM limit.

Basis:

This IC addresses a potential or actual decrease in the level of safety of the plant as indicated by a radiological release that exceeds regulatory commitments for an extended period of time. KNPP incorporates features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, or control and monitor intentional releases. These controls are located in the Offsite Dose Calculation

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Manual (ODCM) [Ref. 2, 3]. The occurrence of extended, uncontrolled radioactive releases to the environment is indicative of a degradation in these features and/or controls.

The ODCM multiples are specified in ICs RU1 and RA1 only to distinguish between non-emergency conditions, and from each other. While these multiples obviously correspond to an offsite dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, NOT the magnitude of the associated dose or dose rate. Releases should not be prorated or averaged. For example, a release exceeding 4x ODCM for 30 minutes does not meet the threshold for this IC.

UNPLANNED, as used in this context, includes any release for which a radioactivity discharge permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable permit. The Emergency Director should not wait until 60 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 60 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the Emergency Director should, in the absence of data to the contrary, assume that the release has exceeded 60 minutes.

RU1.1 addresses radioactivity releases, that for whatever reason, cause effluent radiation monitor readings to exceed two times the ODCM limit and releases are not terminated within 60 minutes. The "UE" values are two times the monitor high alarm setpoints or ODCM release limits. The setpoints are established to ensure the ODCM release limits are not exceeded [Ref. 2, 3]. These alarm setpoints may be associated with a planned batch release, or a continuous release path. In either case, the setpoint is established by the ODCM to warn of a release that is not in compliance with the ODCM. Indexing the EAL threshold to the ODCM setpoints in this manner insures that the EAL threshold will never be less than the setpoint established by a specific discharge permit. Each liquid discharge permit includes a value for R-18, calculated in accordance with the ODCM that will vary based on the discharge flow rate. Therefore 2 X Calculated ODCM Setpoint was used as the threshold. Escalation will be based on radiation readings increasing per the following:

Normal Effluent Release Monitor Classification Thresholds					
Monitor	GE	SAE	Alert	UE	
Auxiliary Building			•		
01-05 Aux. Bldg. SPING Lo Range					
01-07 Aux. Bldg. SPING Mid Range	1.00E+05 cpm	1.00E+04 cpm			
01-09 Aux. Bldg. SPING Hi Range	1.00E+02 cpm	1.00E+01 cpm			
R-13 Aux. Bldg. Vent Exhaust			2.61E+07 cpm	2.61E+05 cpm	
R-14 Aux. Bldg. Vent Exhaust			2.62E+07 cpm	2.62E+05 cpm	
Reactor Building		•			
02-05 Rx Bldg. Vent SPING Lo Range					
02-07 Rx Bldg. Vent SPING Mid Range	2.00E+04 cpm	2.00E+03 cpm			
02-09 Rx Bldg. Vent SPING Hi Range	2.00E+01 cpm		· - ·		
R-12 Containment Gas		 ·	4.41E+07 cpm	4.41E+05 cpm	
R-21 Containment Vent			4.40E+07 cpm	4.40E+05 cpm	
Liguid Radwaste					
R-18 Waste Disposal System Liquid	N/A	N/A	200 X Calculated ODCM Setpoint	2 X Calculated ODCM Setpoint	

RU1.2 is intended for effluent monitoring on non-routine release pathways for which a discharge permit would not normally be prepared. The ODCM establishes a methodology for determining effluent radiation monitor setpoints. The ODCM specifies default source terms and, for gaseous releases, prescribes the use of pre-determined annual average meteorology in the most limiting downwind sector for showing compliance with the regulatory commitments. These monitor reading EALs have been determined using this methodology. The "UE" values are two times the monitor high alarm setpoints or ODCM release limits. The setpoints are established to ensure the ODCM release limits are not exceeded [Ref. 2, 3]. Escalation will be based on radiation readings increasing per the following:

Abnormal Effluent Release Monitor Classification Thresholds				
Monitor	GE	SAE	Alert	UE
Main Steam Line (PORV)				
R-31 'A' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr		
R-32 'A' Steamline High Range	1.77E+00 R/hr			
R-33 'B' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr		
R-34 'B' Steamline High Range	1.77E+00 R/hr	—		
Main Steam Line (SG Safety)				
R-31 'A' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr		
R-32 'A' Steamline High Range				
R-33 'B' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr		
R-34 'B' Steamline High Range		—		
Liquid Radwaste		<u>.</u>		
R-16 Containment Fcu SW Return	N/A	N/A	3.38E+07 cpm	3.38E+05 cpm
R-19 S/G Blowdown Liquid	N/A	N/A	2.58E+08 cpm	2.58E+06 cpm
R-20 Aux Bldg SW Return	N/A	N/A	1.03E+07 cpm	1.03E+05 cpm

RU1.3 addresses uncontrolled releases that are detected by sample analyses, particularly on unmonitored pathways, e.g., spills of radioactive liquids into storm drains, heat exchanger leakage in lake water systems, etc.

RU1.1 and RU1.2 directly correlate with the IC since annual average meteorology is required to be used in showing compliance with the ODCM and is used in calculating the alarm setpoints. The fundamental basis of this IC is NOT a dose or dose rate, but rather the degradation in the level of safety of the plant implied by the uncontrolled release.

KNPP Basis Reference(s):

- 1. USAR Section 11.2.3 Radiation Monitoring System, Rev. 18
- 2. KNPP ODCM Section 2.0 Gaseous Effluents, Rev. 8
- 3. KNPP ODCM Section 1.2 Liquid Effluent Monitor Setpoint Determination, Rev. 8
- 4. C11620, Evaluation of Radiological Effluent Monitor Response Action Levels, Rev. 0

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

RU2

Initiating Condition -- UNUSUAL EVENT

Unexpected Rise in Plant Radiation.

Operating Mode Applicability: All

Emergency Action Levels: (RU2.1 or RU2.2)

RU2.1. VALID indication of uncontrolled water level lowering in the reactor refueling cavity, spent fuel pool, or fuel transfer canal with all irradiated fuel assemblies remaining covered by water as indicated by Spent Fuel Pool low water level alarm setpoint (3 ft 4 in. below floor, SER 159/160) **OR** visual observation

AND

Any UNPLANNED VALID Direct Area Radiation Monitor reading rises as indicated by:

- R-2 Containment Area ALERT Alarm
- R-5 Fuel Handling Area ALERT Alarm
- R-10 New Fuel Pit Area ALERT Alarm
- RU2.2. Any UNPLANNED VALID Area Radiation Monitor reading rises by a factor of 1000 over normal* levels. *Normal levels can be considered as the highest reading in the past twenty-four hours

"Normal levels can be considered as the highest reading in the past twenty-four hours excluding the current peak value.

Basis:

This IC addresses increased radiation levels as a result of water level decreases above the Reactor Vessel flange or events that have resulted, or may result, in unexpected increases in radiation dose rates within plant buildings. These radiation increases represent a loss of control over radioactive material and may represent a potential degradation in the level of safety of the plant.

In light of Reactor Cavity Seal failure incidents at two different PWRs and loss of water in the Spent Fuel Pit/Fuel Transfer Canal at a BWR, explicit coverage of these types of events via RU2.1 is appropriate given their potential for increased doses to plant staff. Classification as an UE is warranted as a precursor to a more serious event. Indications include instrumentation such as water level and local area radiation monitors, and personnel (e.g., refueling crew) reports. If available, security video cameras may allow remote observation. Depending on available level instrumentation, the declaration threshold may need to be based on indications of water makeup rate or decrease in refueling water storage tank level.

While a radiation monitor could detect an increase in dose rate due to a drop in the water level, it might not be a reliable indication of whether or not the fuel is covered. For example, the reading on an area radiation monitor located on the refueling bridge may increase due to planned evolutions such as head lift, or even a fuel assembly being raised in the manipulator mast. Generally, increased radiation monitor indications will need to combined with another indicator (or personnel report) of water loss. For refueling events where the water level drops below the Reactor Vessel flange classification would be via CU2. This event escalates to an Alert per IC RA2

if irradiated fuel outside the reactor vessel is uncovered. For events involving irradiated fuel in the reactor vessel, escalation would be via the Fission Product Barrier Matrix for events in Operating through Intermediate Shutdown operating modes.

The Spent Fuel Pool (SFP) low level alarm is actuated by LA-16640-02 (SER 159) and LA-16641-02 (SER 160) at 3 ft 4 in. below floor level. The North (A) and South (B) Spent Fuel Pools are located in the Auxiliary Building refueling area. The pools can be isolated from each other by a removable gate, which is normally removed. The top of each pool is at 649 ft 6 in. el. and the bottom is at 608 ft el. Fuel occupies the bottom 14 ft. [Ref. 3].

RU2.2 addresses UNPLANNED increases in in-plant radiation levels that represent a degradation in the control of radioactive material, and represent a potential degradation in the level of safety of the plant. This event escalates to an Alert per IC RA3 if the increase in dose rates impedes personnel access necessary for safe operation.

*Normal levels can be considered as the highest reading in the past twenty-four hours excluding the current peak value.

KNPP Basis Reference(s):

- 1. Control Room Alarm Response Procedure 47055-N Spent Fuel Pool Abnormal Beta Window Box 05-N5, Rev. C
- 2. Operating Procedure A-SFP-21 Abnormal Spent Fuel Pool Cooling and Cleanup System Operation, Rev. T
- 3. KNPP System Description 21 Spent Fuel Pool Cooling and Cleanup System (SFP), Rev. 1
- 4. USAR Section 11.2.3 Radiation Monitoring System, Rev. 18
- 5. Control Room Alarm Response Procedure 47011-B Radiation Indication High Beta Window Box 01-B1, Rev. D
- 6. E-2021 Integrated Logic Diagram Radiation Monitoring, Rev. X

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

Initiating Condition -- ALERT

Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds 200 Times the Offsite Dose Calculation Manual for 15 Minutes or Longer.

Operating	Mode	Applicability:	All
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- **Emergency Action Levels:** (RA1.1 or RA1.2 or RA1.3)
- RA1.1. VALID reading on any effluent monitor GREATER THAN 200 times the alarm setpoint established by a current radioactivity discharge permit for 15 minutes or longer.

Auxiliary Building	Action Value
R-13 Aux. Bldg. Vent Exhaust	2.61E+07 cpm
R-14 Aux. Bldg. Vent Exhaust	2.62E+07 cpm
Reactor Building	
R-12 Containment Gas	4.41E+07 cpm
R-21 Containment Vent	4.40E+07 cpm
Liquid Radwaste	
R-18 Waste Disposal System Liquid	200 X Calculated ODCM Setpoint

RA1.2. VALID reading on one or more of the following radiation monitors GREATER THAN the reading shown for 15 minutes or longer:

Liquid Radwaste	Action Value
R-16 Containment FCU SW Return	3.38E+07 cpm
R-19 S/G Blowdown Liquid	2.58E+08 cpm
R-20 Aux Bldg SW Return	1.03E+07 cpm

RA1.3. Confirmed sample analyses for gaseous or liquid release indicate concentrations or release rates, with a release duration of 15 minutes or longer, in excess of 200 times ODCM limit.

Basis:

This IC addresses a potential or actual decrease in the level of safety of the plant as indicated by a radiological release that exceeds regulatory commitments for an extended period of time. KNPP incorporates features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, or control and monitor intentional releases. These controls are located in the Offsite Dose Calculation

KNPP

RA1

Manual (ODCM). The occurrence of extended, uncontrolled radioactive releases to the environment is indicative of a degradation in these features and/or controls.

The ODCM multiples are specified in ICs RU1 and RA1 only to distinguish between non-emergency conditions, and from each other. While these multiples obviously correspond to an offsite dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, NOT the magnitude of the associated dose or dose rate. Releases should not be prorated or averaged.

UNPLANNED, as used in this context, includes any release for which a radioactivity discharge permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable permit. The Emergency Director should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 15 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the Emergency Director should, in the absence of data to the contrary, assume that the release has exceeded 15 minutes. RA1.1 addresses radioactivity releases that for whatever reason cause effluent radiation monitor readings that exceed two hundred times the alarm setpoint established by the radioactivity discharge permit. The "Alert" values shown for each monitor are two hundred times the alarm setpoints or calculated ODCM release limits as specified in Reference 4. The setpoints are established to ensure the ODCM release limits are not exceeded [Ref. 2, 3]. The alarm setpoints may be associated with a planned batch release, or a continuous release path. In either case, the setpoint is established by the ODCM to warn of a release that is not in compliance with the ODCM. Indexing the EAL threshold to the ODCM setpoints in this manner insures that the EAL threshold will never be less than the setpoint established by a specific discharge permit. Each liquid discharge permit includes a value for R-18, calculated in accordance with the ODCM, that will vary based on the discharge flow rate, therefore "200 X Calculated ODCM Setpoint" was used as the threshold. Escalation will be based on radiation readings increasing per the following:

Normal Effluent Release Monitor Classification Thresholds					
Monitor	GE	SAE	Alert	UE	
Auxiliary Building					
01-05 Aux. Bldg. SPING Lo Range					
01-07 Aux. Bldg. SPING Mid Range	1.00E+05 cpm	1.00E+04 cpm			
01-09 Aux. Bldg. SPING Hi Range	1.00E+02 cpm	1.00E+01 cpm	*	·	
R-13 Aux. Bldg. Vent Exhaust			2.61E+07 cpm	2.61E+05 cpm	
R-14 Aux. Bldg. Vent Exhaust		. 	2.62E+07 cpm	2.62E+05 cpm	
Reactor Building					
02-05 Rx Bldg. Vent SPING Lo Range					
02-07 Rx Bldg. Vent SPING Mid Range	2.00E+04 cpm	2.00E+03 cpm		'	
02-09 Rx Bldg. Vent SPING Hi Range	2.00E+01 cpm	•		· ·	
R-12 Containment Gas		• 	4.41E+07 cpm	4.41E+05 cpm	
R-21 Containment Vent			4.40E+07 cpm	4.40E+05 cpm -	
Liquid Radwaste		· · · ·			
R-18 Waste Disposal System Liquid	N/A	N/A	200 X Calculated ODCM Setpoint	2 X Calculated ODCM Setpoint	

RA1.2 addresses effluent or accident radiation monitors on non-routine release pathways (i.e., for which a discharge permit would not normally be prepared) [Ref. 1]. The ODCM establishes a methodology for determining effluent radiation monitor setpoints. The ODCM specifies default

source terms and, for gaseous releases, prescribes the use of pre-determined annual average meteorology in the most limiting downwind sector for showing compliance with the regulatory commitments. These monitor reading EALs have been determined using this methodology. The "Alert" values for each monitor are two hundred times the alarm setpoints or calculated ODCM release limits as specified in Reference 4. The setpoints are established to ensure the ODCM release limits are not exceeded [Ref. 2, 3]. Escalation will be on based radiation readings increasing per the following:

Abnormal Effluent Release Monitor Classification Thresholds						
Monitor	GE	SAE	Alert	UE		
Main Steam Line (PORV)						
R-31 'A' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr				
R-32 'A' Steamline High Range	1.77E+00 R/hr			 .		
R-33 'B' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr				
R-34 'B' Steamline High Range	1.77E+00 R/hr					
Main Steam Line (SG Safety)						
R-31 'A' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr		[:]		
R-32 'A' Steamline High Range						
R-33 'B' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr	-	·		
R-34 'B' Steamline High Range				· ·		
Liquid Radwaste						
R-16 Containment Fcu SW Return	N/A	N/A	3.38E+07 cpm	3.38E+05 cpm		
R-19 S/G Blowdown Liquid	N/A	N/A	2.58E+08 cpm	2.58E+06 cpm		
R-20 Aux Bldg SW Return	N/A	N/A	1.03E+07 cpm	1.03E+05 cpm		

RA1.3 addresses uncontrolled releases that are detected by sample analyses, particularly on unmonitored pathways, e.g., spills of radioactive liquids into storm drains, heat exchanger leakage in lake water systems, etc.

RA1.1 and RA1.2 directly correlate with the IC since annual average meteorology is required to be used in showing compliance with the ODCM and is used in calculating the alarm setpoints. The fundamental basis of this IC is NOT a dose or dose rate, but rather the degradation in the level of safety of the plant implied by the uncontrolled release.

Due to the uncertainty associated with meteorology, emergency implementing procedures call for the timely performance of dose assessments using actual (real-time) meteorology in the event of a gaseous radioactivity release of this magnitude. The results of these assessments should be compared to the ICs RS1 and RG1 to determine if the event classification should be escalated.

KNPP Basis Reference(s):

- 1. USAR Section 11.2.3 Radiation Monitoring System, Rev. 18
- 2. KNPP ODCM Section 2.0 Gaseous Effluents, Rev. 8
- 3. KNPP ODCM Section 1.2 Liquid Effluent Monitor Setpoint Determination, Rev. 8
- 4. C11620, Evaluation of Radiological Effluent Monitor Response Action Levels, Rev. 0
ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

Initiating Condition-- ALERT

Damage to Irradiated Fuel or Loss of Water Level that Has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel.

Operating Mode Applicability: All

Emergency Action Levels: (RA2.1 or RA2.2)

- RA2.1. A VALID radiation indication high alarm or reading on one or more of the following radiation monitors resulting from damage to irradiated fuel or loss of water level:
 - R-2 Containment Area
 - R-5 Fuel Handling Area
 - R-13 or R-14 Aux Bldg Vent Exhaust
 - R-11 or R-12 Containment Particulate / Gas Ventilation
 - R-21 Containment Vent
- RA2.2. Water level LESS THAN 50% Wide Range Refueling Water Level OR GREATER THAN 14 feet below top of Spent Fuel Pool that will result in irradiated fuel uncovering.

Basis:

This IC addresses specific events that have resulted, or may result, in unexpected increases in radiation dose rates within plant buildings, and may be a precursor to a radioactivity release to the environment. These events represent a loss of control over radioactive material and represent a degradation in the level of safety of the plant. These events escalate from IC RU2 in that fuel activity has been released, or is anticipated due to fuel heatup. This IC applies to spent fuel requiring water coverage and is not intended to address spent fuel which is licensed for dry storage, which is discussed in IC EU1.

RA2.1 addresses radiation monitor indications [Ref. 1, 2, 3] of fuel uncovery and/or fuel damage. Increased readings on ventilation monitors may be indication of a radioactivity release from the fuel, confirming that damage has occurred. Increased background at the monitor due to water level decrease may mask increased ventilation exhaust airborne activity and needs to be considered. While a radiation monitor could detect an increase in dose rate due to a drop in the water level, it might not be a reliable indication of whether or not the fuel is covered. For example, the monitor could in fact be properly responding to a known event involving transfer or relocation of a source, stored in or near the fuel pool or responding to a planned evolution such as removal of the reactor head. Application of these Initiating Conditions requires understanding of the actual radiological conditions present in the vicinity of the monitor. Information Notice No. 90-08, *"KR-85 Hazards from Decayed Fuel"* was considered in establishing radiation monitor EAL thresholds and there is no impact on this EAL.

In RA2.2, indications include instrumentation such as water level and local area radiation monitors, and personnel (e.g., refueling crew) reports. Wide Range Refueling Water Level is measured by L9053A for channel A and L9054A for channel B. If available, security video cameras may allow remote observation. The top of each pool is at 649 ft 6 in. el. and the bottom is at 608 ft el. Fuel occupies the bottom 14 ft. [Ref. 4]. Declaration may need to be based on indications of water makeup rate or decrease in refueling water storage tank level.

RA2

Escalation, if appropriate, would occur via IC RS1 or RG1 or Emergency Director judgment.

- 1. E-2021 Integrated Logic Diagram Radiation Monitoring, Rev. X
- 2. Control Room Alarm Response Procedure 47055-N Spent Fuel Pool Abnormal Beta Window Box 05-N5, Rev. C
- 3. Operating Procedure A-SFP-21 Abnormal Spent Fuel Pool Cooling and Cleanup System Operation, Rev. T
- 4. KNPP System Description 21, Spent Fuel Pool Cooling and Cleanup System (SFP), Rev. 1
- 5. Manipulator Crane drawing XK-113557-5, Rev. D
- 6. N-RHR-34C RHR Operation at a Reduced Inventory Condition, Rev. N
- 7. C11619 Determination of Cavity Level EAL RA2.2, Rev. 0

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

RA3

Initiating Condition -- ALERT

Release of Radioactive Material or Rise in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown

Operating Mode Applicability: All

Emergency Action Levels: (RA3.1 or RA3.2)

RA3.1. VALID radiation monitor readings GREATER THAN 15 mR/hr in areas requiring continuous occupancy to maintain plant safety functions:

Control Room (Rad monitor R-1) OR Central Alarm Station (Rad monitor R-1) OR Secondary Alarm Station (by survey)

- RA3.2. Any VALID radiation monitor reading GREATER THAN 6 R/hr in areas requiring infrequent access to maintain plant safety functions.
 - Auxiliary Building
 - Safeguards Alley
 - Diesel Generator Rooms (includes "A" Diesel Room to Screen House Tunnel)
 - Screenhouse/Forebay
 - Relay Room
 - Safeguard Battery Room

Basis:

This IC addresses increased radiation levels that impede necessary access to operating stations, or other areas containing equipment that must be operated manually or that requires local monitoring, in order to maintain safe operation or perform a safe shutdown. It is this impaired ability to operate the plant that results in the actual or potential substantial degradation of the level of safety of the plant. The cause and/or magnitude of the increase in radiation levels is not a concern of this IC. The Emergency Director must consider the source or cause of the increased radiation levels and determine if any other IC may be involved. For example, a dose rate of 15 mR/hr in the control room may be a problem in itself. However, the increase may also be indicative of high dose rates in the containment due to a LOCA. In this latter case, an SE or GE may be indicated by the fission product barrier matrix ICs.

This IC is not meant to apply to increases in the containment radiation monitors, as these are events which are addressed in the fission product barrier matrix ICs. Nor is it intended to apply to anticipated temporary increases due to planned events (e.g., radwaste container movement, depleted resin transfers, etc.)

For RA3.1 areas requiring continuous occupancy include the Control Room and the central alarm station (CAS). The CAS has no installed radiation monitoring capability [Ref. 3]. The value of 15mR/hr is derived from the GDC 19 value of 5 rem in 30 days with adjustment for expected occupancy times. Although Section III.D.3 of NUREG-0737, *"Clarification of TMI Action Plan Requirements"* [Ref. 1, 2], provides that the 15 mR/hr value can be averaged over the 30 days, the value is used here without averaging, as a 30 day duration implies an event potentially more significant than an Alert.

For RA3.2 areas requiring infrequent access, the basis of the 6 R/hr value is as follows:

The KNPP annual administrative personnel exposure limit is 2 Rem/Year. Assuming an emergency worker is at his administrative limit, any emergency worker needing access to a plant area for the safe shutdown of the plant could receive up to an additional 3 Rem without exceeding the legal 10CFR20 annual exposure limit of 5 Rem [Ref. 4] and thus the need for emergency exposure authorization. Assuming that an activity required to be performed in the plant would, on average, require a 30 minute stay time in that area, an area exposure rate of 6 R/hr would not unduly impede access to areas necessary for safe plant shutdown.

As used here, *impede*, includes hindering or interfering provided that the interference or delay is sufficient to significantly threaten the safe operation of the plant. RA3.2 provides the list of safe shutdown areas requiring infrequent access. The listed areas contain functions and systems required for the safe shutdown of the plant. KNPP safe shutdown analyses were consulted for equipment and plant areas required for the applicable mode [Ref 5].

In-plant radiation surveys and Area Radiation Monitor (ARM) readings are methods available to assess this EAL. Radiation monitors are not specified in the EAL wording because portable monitoring devices may be used to determine area accessibility. It would then be possible to erroneously exclude information gained from portable monitor surveys when interpreting the EAL.

- 1. GDC 19, January 1, 2004
- 2. NUREG-0737, "Clarification of TMI Action Plan Requirements", Section III.D.3
- 3. E-2021 Integrated Logic Diagram Radiation Monitoring, Rev. X
- 4. EPIP-AD-11, Emergency Radiation Controls, Rev. T
- 5. KNPP Fire Protection Program Plan Section 5.19, Rev. 5

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

RS1

Initiating Condition -- SITE AREA EMERGENCY

Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mRem TEDE or 500 mRem Thyroid CDE for the Actual or Projected Duration of the Release.

Operating Mode Applicability: All

Emergency Action Levels: (RS1.1 or RS1.2 or RS1.3)

- **Note:** If dose assessment results are available at the time of declaration, the classification should be based on RS1.2 instead of RS1.1. While necessary declarations should not be delayed awaiting results, the dose assessment should be initiated / completed in order to determine if the classification should be subsequently escalated.
- RS1.1. VALID reading on any monitors listed that exceeds or is expected to exceed the reading shown for 15 minutes or longer:

Auxiliary Building	Action Value
01-07 Aux. Bldg. SPING Mid Range	1.00E+04 cpm
01-09 Aux. Bldg. SPING Hi Range	1.00E+01 cpm
Reactor Building	
02-07 Rx Bldg. Vent SPING Mid Range	2.00E+03 cpm
Main Steam Line (PORV)	
R-31 'A' Steamline Lo Range	1.77E+02 mR/hr
R-33 'B' Steamline Lo Range	1.77E+02 mR/hr
Main Steam Line (SG Safety)	
R-31 'A' Steamline Lo Range	8.30E+01 mR/hr
R-33 'B' Steamline Lo Range	8.30E+01 mR/hr

- RS1.2. Dose assessment using actual meteorology indicates doses GREATER THAN 100 mRem TEDE or 500 mRem thyroid CDE at or beyond the site boundary.
- RS1.3. Field survey results indicate closed window dose rates exceeding 100 mRem/hr expected to continue for more than one hour, at or beyond the site boundary; OR Analyses of field survey samples indicate thyroid CDE of 500 mRem for one hour of

inhalation, at or beyond the site boundary.

Basis:

This IC addresses radioactivity releases that result in doses at or beyond the site boundary that exceed a small fraction of the EPA Protective Action Guides (PAGs). Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public. While these

failures are addressed by other ICs, this IC provides appropriate diversity and addresses events which may not be able to be classified on the basis of plant status alone, e.g., fuel handling accident in spent fuel building.

The TEDE dose is set at 10% of the EPA PAG, while the 500 mRem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.

The Emergency Director should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 15 minutes. The monitor list in RS1.1 includes monitors on all potential release pathways [Ref. 1, 3, 4].

The "SAE" effluent monitor readings are derived from Reference 2.

Since dose assessment is based on actual meteorology, whereas the monitor reading EALs are not, the results from these assessments may indicate that the classification is not warranted, or may indicate that a higher classification is warranted. For this reason, emergency implementing procedures call for the timely performance of dose assessments using actual meteorology and release information. If the results of these dose assessments are available when the classification is made (e.g., initiated at a lower classification level), the dose assessment results override the monitor reading EALs.

Normal Effluent Release Monitor Classification Thresholds				
Monitor	GE	SAE	Alert	UE
Auxiliary Building				
01-05 Aux. Bldg. SPING Lo Range			·	· · ·
01-07 Aux. Bldg. SPING Mid Range	1.00E+05 cpm	1.00E+04 cpm		
01-09 Aux. Bldg. SPING Hi Range	1.00E+02 cpm	1.00E+01 cpm		·
R-13 Aux. Bldg. Vent Exhaust			2.61E+07 cpm	2.61E+05 cpm
R-14 Aux. Bldg. Vent Exhaust			2.62E+07 cpm	2.62E+05 cpm
Reactor Building				
02-05 Rx Bldg. Vent SPING Lo Range			·	
02-07 Rx Bldg. Vent SPING Mid Range	2.00E+04 cpm	2.00E+03 cpm		
02-09 Rx Bldg. Vent SPING Hi Range	2.00E+01 cpm			
R-12 Containment Gas			4.41E+07 cpm	4.41E+05 cpm
R-21 Containment Vent			4.40E+07 cpm	4.40E+05 cpm
Liquid Radwaste			· · · ·	
R-18 Waste Disposal System Liquid	N/A	N/A	200 X Calculated ODCM Setpoint	2 X Calculated ODCM Setpoint

Escalation will be on based radiation readings increasing per the following:

Abnormal Effluent Release Monitor Classification Thresholds				
Monitor	GE	SAE	Alert	UE
Main Steam Line (PORV)				
R-31 'A' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr		
R-32 'A' Steamline High Range	1.77E+00 R/hr			<u> </u>
R-33 'B' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr		
R-34 'B' Steamline High Range	1.77E+00 R/hr			
Main Steam Line (SG Safety)			· ·	
R-31 'A' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr		
R-32 'A' Steamline High Range				· <u></u>
R-33 'B' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr		
R-34 'B' Steamline High Range	—		·	
Liquid Radwaste				
R-16 Containment Fcu SW Return	N/A	N/A	3.38E+07 cpm	3.38E+05 cpm
R-19 S/G Blowdown Liquid	N/A	N/A	2.58E+08 cpm	2.58E+06 cpm
R-20 Aux Bldg SW Return	N/A	N/A	1.03E+07 cpm	1.03E+05 cpm

- 1. USAR Section 11.2.3 Radiation Monitoring System, Rev. 18
- 2. C11620, Evaluation of Radiological Effluent Monitor Response Action Levels, Rev. 0
- 3. EPIP-RET-02B Gaseous Effluent Release Path, Radioactivity, and Release Rate Determination, Rev. T
- 4. ODCM Section 2.0 Gaseous Effluents, Rev. 8

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

RG1

Initiating Condition -- GENERAL EMERGENCY

Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 1000 mRem TEDE or 5000 mRem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology.

Operating Mode Applicability: All

Emergency Action Levels: (RG1.1 or RG1.2 or RG1.3)

- **Note:** If dose assessment results are available at the time of declaration, the classification should be based on RG1.2 instead of RG1.1.While necessary declarations should not be delayed awaiting results, the dose assessment should be initiated / completed in order to determine if the classification should be subsequently escalated.
- RG1.1. VALID reading on any monitors listed that exceeds or expected to exceed the reading shown for 15 minutes or longer:

Auxiliary Building	Action Value
01-07 Aux. Bldg. SPING Mid Range	1.00E+05 cpm
01-09 Aux. Bldg. SPING Hi Range	1.00E+02 cpm
Reactor Building	
02-07 Rx Bldg. Vent SPING Mid Range	2.00E+04 cpm
02-09 Rx Bldg. Vent SPING Hi Range	2.00E+01 cpm
Main Steam Line (PORV)	
R-31 'A' Steamline Lo Range	1.77E+03 mR/hr
R-32 'A' Steamline High Range	1.77E+00 R/hr
R-33 'B' Steamline Lo Range	1.77E+03 mR/hr
R-34 'B' Steamline High Range	1.77E+00 R/hr
<u> Main Steam Line (SG Safety)</u>	
R-31 'A' Steamline Lo Range	8.30E+02 mR/hr
R-33 'B' Steamline Lo Range	8.30E+02 mR/hr

- RG1.2. Dose assessment using actual meteorology indicates doses GREATER THAN 1000 mRem TEDE or 5000 mRem thyroid CDE at or beyond the site boundary.
- RG1.3. Field survey results indicate closed window dose rates exceeding 1000 mRem/hr expected to continue for more than one hour, at or beyond site boundary. OR

Analyses of field survey samples indicate thyroid CDE of 5000 mRem for one hour of inhalation, at or beyond site boundary.

Basis:

This IC addresses radioactivity releases that result in doses at or beyond the site boundary that exceed the EPA Protective Action Guides (PAGs). Public protective actions will be necessary. Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public and likely involve fuel damage. While these failures are addressed by other ICs, this IC provides appropriate diversity and addresses events which may not be able to be classified on the basis of plant status alone. It is important to note that, for the more severe accidents, the release may be unmonitored or there may be large uncertainties associated with the source term and/or meteorology.

The Emergency Director should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 15 minutes. The monitor list in RG1.1 includes monitors on all potential release pathways [Ref. 1, 3, 4].

The "GE" effluent monitor readings are derived from Reference 2.

Since dose assessment is based on actual meteorology, whereas the monitor reading EALs are not, the results from these assessments may indicate that the classification is not warranted, or may indicate that a higher classification is warranted. For this reason, emergency implementing procedures call for the timely performance of dose assessments using actual meteorology and release information. If the results of these dose assessments are available when the classification is made (e.g., initiated at a lower classification level), the dose assessment results override the monitor reading EALs.

Normal Efflu	ent Release Mon	itor Classification	Thresholds	
Monitor	GE	SAE	Alert	UE
Auxiliary Building				
01-05 Aux. Bldg. SPING Lo Range				
01-07 Aux. Bldg. SPING Mid Range	1.00E+05 cpm	1.00E+04 cpm		
01-09 Aux. Bldg. SPING Hi Range	1.00E+02 cpm	1.00E+01 cpm	·	
R-13 Aux. Bldg. Vent Exhaust			2.61E+07 cpm	2.61E+05 cpm
R-14 Aux. Bldg. Vent Exhaust		· ·	2.62E+07 cpm	2.62E+05 cpm
Reactor Building				·.
02-05 Rx Bldg. Vent SPING Lo Range		· · ·	[*]	
02-07 Rx Bldg. Vent SPING Mid Range	2.00E+04 cpm	2.00E+03 cpm		
02-09 Rx Bldg. Vent SPING Hi Range	2.00E+01 cpm			
R-12 Containment Gas			4.41E+07 cpm	4.41E+05 cpm
R-21 Containment Vent			4.40E+07 cpm	4.40E+05 cpm
Liquid Radwaste			•	
R-18 Waste Disposal System Liquid	N/A	N/A	200 X Calculated ODCM Setpoint	2 X Calculated ODCM Setpoint

Radiation Monitor readings for all classification levels:

Abnormal Effluent Release Monitor Classification Thresholds				
Monitor	GE	SAE	Alert	UE
Main Steam Line (PORV)				• • • •
R-31 'A' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr		
R-32 'A' Steamline High Range	1.77E+00 R/hr			
R-33 'B' Steamline Lo Range	1.77E+03 mR/hr	1.77E+02 mR/hr		
R-34 'B' Steamline High Range	1.77E+00 R/hr			<u> </u>
Main Steam Line (SG Safety)				
R-31 'A' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr		
R-32 'A' Steamline High Range		—		· ·
R-33 'B' Steamline Lo Range	8.30E+02 mR/hr	8.30E+01 mR/hr		····
R-34 'B' Steamline High Range			· · · · · · · · · · · · · · · · · · ·	<u> </u>
Liquid Radwaste			· · · ,	
R-16 Containment Fcu SW Return	N/A	N/A	3.38E+07 cpm	3.38E+05 cpm
R-19 S/G Blowdown Liquid	N/A	N/A	2.58E+08 cpm	2.58E+06 cpm
R-20 Aux Bldg SW Return	N/A	N/A	1.03E+07 cpm	1.03E+05 cpm

- 1. USAR Section 11.2.3 Radiation Monitoring System, Rev. 18
- 2. C11620, Evaluation of Radiological Effluent Monitor Response Action Levels, Rev. 0
- 3. EPIP-RET-02B Gaseous Effluent Release Path, Radioactivity, and Release Rate Determination, Rev. T
- 4. ODCM Section 2.0 Gaseous Effluents, Rev. 8

Table C-0Recognition Category CCold Shutdown/Refueling System Malfunction

INITIATING CONDITION MATRIX

SITE AREA EMERGENCY

CU1 RCS Leakage. Op. Mode: Cold Shutdown

UE

ALERT CA1 Loss of RCS Inventory. Op. Modes; Cold Shutdown

CS1 Loss of Reactor Vessel Inventory Affecting Core Decay Heat Removal Capability. Op. Modes: Cold Shutdown

GENERAL EMERGENCY

CG1 Loss of Reactor Vessel Inventory Affecting Fuel Clad Integrity with Containment Challenged with Irradiated Fuel in the Reactor Vessel. Op. Modes: Cold Shutdown, Refueling

- CU2 UNPLANNED Loss of RCS Inventory with Irradiated Fuel in the Reactor Vessel Op. Mode: Refueling
- CU3 Loss of All Offsite Power to Essential Busses for Greater Than 15 Minutes. Op. Modes: Cold Shutdown, Refueling
- CU4 UNPLANNED Loss of Decay Heat Removal Capability with Irradiated Fuel in the Reactor Vessel. OP. Modes: Cold Shutdown, Refueling
- CU5 Fuel Clad Degradation. Op. Modes: Cold Shutdown, Refueling
- CU6 UNPLANNED Loss of All Onsite or Offsite Communications Capabilities. *Op. Modes: Cold Shutdown, Refueling*
- CU7 UNPLANNED Loss of Required DC Power for Greater than 15 Minutes. Op. Modes: Cold Shutdown, Refueling

- CA2 Loss of Reactor Vessel Inventory with Irradiated Fuel in the Reactor Vessel. Op. Modes: Refueling
- CA3 Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses. Op. Modes: Cold Shutdown, Refueling, Defueled
- CA4 Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the Reactor Vessel. Op. Modes: Cold Shutdown, Refueling
- CS2 Loss of Reactor Vessel Inventory Affecting Core Decay Heat Removal Capability with Irradiated Fuel in the Reactor Vessel. Op. Modes: Refueling

CU8 Inadvertent Criticality. Op Modes:, Cold Shutdown, Refueling

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CU1

Initiating Condition -- UNUSUAL EVENT

RCS Leakage.

Operating Mode Applicability: Cold Shutdown

Emergency Action Levels: (CU1.1 or CU1.2)

CU1.1. Unidentified or pressure boundary leakage GREATER THAN 10 gpm.

CU1.2. Identified leakage GREATER THAN 25 gpm.

Basis:

This IC is included as a UE because it is considered to be a potential degradation of the level of safety of the plant. Positive indications in the Control Room of Reactor Coolant System (RCS) leakage to the containment are provided by equipment that monitors:

- Charging/Letdown flow mismatch
- Containment air activity
- Containment humidity
- Containment Sump A In-leakage

[Ref. 1, 2]

The 10 gpm value for the unidentified and pressure boundary leakage was selected as it is sufficiently large to be observable via normally installed instrumentation (e.g., Pressurizer level, RCS loop level instrumentation, etc.) or reduced inventory instrumentation such as tygon level indication. Lesser values must generally be determined through time-consuming surveillance tests (e.g., mass balances). The EAL for identified leakage is set at a higher value due to the lesser significance of identified leakage in comparison to unidentified or pressure boundary leakage. Prolonged loss of RCS Inventory may result in escalation to the Alert level via either IC CA1 (Loss of RCS Inventory with Irradiated Fuel in the Reactor Vessel) or CA4 (Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the Reactor Vessel).

The difference between CU1 and CU2 deals with the RCS conditions that exist between cold shutdown and refueling mode applicability. In cold shutdown the RCS will normally be intact and RCS inventory and level monitoring means such as Pressurizer level indication and makeup volume control tank levels are normally available. In the refueling mode the RCS is not intact and Reactor Vessel level and inventory are monitored by different means.

- 1. Technical Specifications LCO 3.1.d, Amendment No. 165
- 2. SP-36-82 Reactor Coolant System Leak Rate Check, Rev. AE

CU2

Initiating Condition -- UNUSUAL EVENT

UNPLANNED Loss of RCS Inventory with Irradiated Fuel in the Reactor Vessel.

Operating Mode Applicability: Refueling

Emergency Action Levels: (CU2.1 or CU2.2)

- CU2.1. UNPLANNED RCS level lowering below the Reactor Vessel flange (21.5%) for GREATER THAN OR EQUAL TO 15 minutes
- CU2.2. Loss of Reactor Vessel inventory as indicated by unexplained Containment Sump A, Containment Sump C or Liquid Waste Disposal System level rise

AND

Reactor Vessel level cannot be monitored

Basis:

This IC is included as an UE because it may be a precursor of more serious conditions and, as result, is considered to be a potential degradation of the level of safety of the plant. Refueling evolutions that decrease RCS water level below the Reactor Vessel flange are carefully planned and procedurally controlled. An UNPLANNED event that results in water level decreasing below the Reactor Vessel flange warrants declaration of an Unusual Event due to the reduced RCS inventory that is available to keep the core covered. The allowance of 15 minutes was chosen because it is reasonable to assume that level can be restored within this time frame using one or more of the redundant means of refill that should be available. If level cannot be restored in this time frame then it may indicate a more serious condition exists. Continued loss of RCS Inventory will result in escalation to the Alert level via either IC CA2 (Loss of Reactor Vessel Inventory with Irradiated Fuel in the Reactor Vessel) or CA4 (Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the Reactor Vessel).

The difference between CU1 and CU2 deals with the RCS conditions that exist between cold shutdown and refueling modes. In cold shutdown the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the refueling mode the RCS is not intact and Reactor Vessel level and inventory are monitored by different means.

In the refueling shutdown mode, normal means of core temperature indication and RCS level indication may not be available. Redundant means of Reactor Vessel level indication will normally be installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that Reactor Vessel inventory loss was occurring by observing Containment Sump A, Containment Sump C and Liquid Waste Disposal System level changes [Ref. 1, 2]. Sump and tank level rises must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage. When CONTAINMENT SUMP A LEVEL HIGH is received, the corresponding

leakrate within containment is calculated from sump pump run history. Escalation to Alert would be via either CA2 or RCS heatup via CA4.

CU2.1 involves a decrease in RCS level below the top of the Reactor Vessel flange that continues for 15 minutes due to an UNPLANNED event. The level at the Reactor Vessel flange is monitored by:

- Wide Range Refueling Water Level (L9053A for channel A and L9054A for channel B) indication: 21.5%
- RVLIS: 52.8%
- Sightglass/Tygon: 340 in. WC

[Ref. 3]

This EAL is not applicable to decreases in flooded reactor cavity level (covered by RU2.1) until such time as the level decreases to the level of the vessel flange. If Reactor Vessel level continues to decrease and reaches the Bottom ID of the RCS Loop (Refueling Level, 0% RVLIS, 252 in. sightglass), then escalation to CA2 would be appropriate. Note that the Bottom ID of the RCS Loop Setpoint corresponds to the bottom of the Reactor Vessel loop penetration (not the low point of the loop).

- 1. N-RC-36E Draining the Reactor Coolant System, Rev. AE
- 2. N-RHR-34C RHR Operation at a Reduced Inventory Condition, Rev. N
- 3. SP 36-196A Refueling Water Level Indication System Transmitter Calibration, Rev. G
- 4. SP 36-082 Reactor Coolant System Leak Rate Check, Rev. AE
- 5. ES-1.3 Transfer to Containment Sump Recirculation, Rev. W
- 6. A-MDS-30 Miscellaneous Drains and Sumps (MDS) Abnormal Operation, Rev. N

CU3

Initiating Condition -- UNUSUAL EVENT

Loss of All Offsite Power to Essential Busses for GREATER THAN 15 Minutes.

Operating Mode Applicability:

Cold Shutdown Refueling

Emergency Action Level:

CU3.1. Loss of all offsite power to Bus 5 AND Bus 6 for GREATER THAN 15 minutes.

AND

At least one emergency diesel generator is supplying power to Bus 5 or Bus 6.

Basis:

Prolonged loss of AC power reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete Loss of AC Power (e.g., Station Blackout). Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

The 4160 VAC system is divided into six busses, two of which are Engineered Safety Function (ESF) Busses 5 and 6. The ESF busses supply power to Safety Injection (SI) pumps, Residual Heat Removal (RHR) pumps, containment heat removal equipment, etc.

Offsite power is available from the 345 kVAC and 138 kVAC systems. The 345 kVAC system is connected to the North Appleton line, the Point Beach line, the main transformers, and transformer T-10. The 345 kVAC is the normal supply to the 13.8 kVAC system through transformer T-10, which feeds the Tertiary Auxiliary Transformer (TAT). The TAT normally provides power to ESF bus 5. The TAT is not considered available to power both ESF busses in an emergency situation due to its size. As a contingency, however, it is acceptable to use the TAT to power both ESF busses when guidance for sequencing and monitoring TAT loads is available in the Control Room. The Reserve Auxiliary Transformer (RAT) and Main Auxiliary Transformer (MAT) provide backup sources to bus 5, in that order.

The 138 kVAC system is connected to the Shoto/Mishicot line, the East Krok line and transformer T-10. The 138 kVAC system is the normal supply to the Reserve Auxiliary Transformer (RAT) via the East and West substation busses. (When the 345 kVAC system is unavailable, the 138 kVAC system can supply power to transformer T-10 and the TAT.) The RAT normally provides power to ESF bus 6. The TAT and MAT provide backup sources to bus 6 in that order.

When the main turbine generator is on line, generator output supplies power to the Main Auxiliary Transformer (MAT) and the 4160 VAC busses. When the main turbine generator is off line, the 345 kVAC system can be aligned to backfeed the MAT. Note that the time required to effect the backfeed is likely longer than the fifteen-minute interval associated with this EAL. If shutdown plant conditions have already established the backfeed, however, its power to the ESF busses may be considered an offsite power source.

Following a loss of power, ECA 0.0 provides guidance to restore power to ESF busses. For the purpose of classification under this EAL, offsite power sources include any of the following:

- 345 kVAC system supplying power to transformer T-10 and the TAT
- 138 kVAC system supplying power to transformer T-10 and the TAT
- 138 kVAC system supplying power to the RAT
- 345 kVAC system supplying power to the MAT on backfeed through the main transformers when the main turbine generator is off line

- 1. ECA-0.0 Loss of All AC Power, Rev. AB
- 2. USAR Figure 8.2-2, Rev. 16
- 3. USAR Section 8.2.3, Rev. 18
- 4. GNP-08.04.01 Shutdown Safety Assessment, Rev. K

CU4

Initiating Condition -- UNUSUAL EVENT

UNPLANNED Loss of Decay Heat Removal Capability with Irradiated Fuel in the Reactor Vessel.

Operating Mode Applicability:

Cold Shutdown Refueling

(CU4.1 or CU4.2)

Emergency Action Levels:

- CU4.1. An UNPLANNED event results in RCS temperature GREATER THAN 200°F
- CU4.2. Loss of all RCS temperature and Reactor Vessel level indication for GREATER THAN 15 minutes.

Basis:

This IC is included as an UE because it may be a precursor of more serious conditions and, as a result, is considered to be a potential degradation of the level of safety of the plant. In cold shutdown the ability to remove decay heat relies primarily on forced cooling flow. Operation of the systems that provide this forced cooling may be jeopardized due to the unlikely loss of electrical power or RCS inventory. Since the RCS usually remains intact in the cold shutdown mode a large inventory of water is available to keep the core covered. In cold shutdown the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the refueling mode. Entry into cold shutdown conditions may be attained within hours of operating at power. Entry into the refueling mode procedurally may not occur for typically 100 hours or longer after the reactor has been shutdown. Thus the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the refueling mode with irradiated fuel in the Reactor Vessel (note that the heatup threat could be lower for cold shutdown conditions if the entry into cold shutdown was following a refueling). In addition, the operators should be able to monitor RCS temperature and Reactor Vessel level so that escalation to the alert level via CA4 or CA1 will occur if required.

During refueling the level in the Reactor Vessel will normally be maintained above the Reactor Vessel flange. Refueling evolutions that decrease water level below the Reactor Vessel flange are carefully planned and procedurally controlled. Loss of forced decay heat removal at reduced inventory may result in more rapid rises in RCS/Reactor Vessel temperatures depending on the time since shutdown. Escalation to the Alert level via CA4.

Unlike the cold shutdown mode, normal means of core temperature indication and RCS level indication may not be available in the refueling mode. Redundant means of Reactor Vessel level indication are therefore procedurally installed to assure that the ability to monitor level will not be interrupted. However, if all level and temperature indication were to be lost in either the cold shutdown of refueling modes, CU4.2 would result in declaration of an Unusual Event if either temperature or level indication cannot be restored within 15 minutes from the loss of both means of indication. Escalation to Alert would be via CA2 based on an inventory loss or CA4 based on exceeding its temperature criteria (200°F) [Ref. 1].

Reactor Vessel water level is normally monitored using the following instruments:

- 21158 Refueling Water Level Narrow Range (L9055A)
- 21159 Refueling Water Level B Wide Range (L9054A)
- 24068 Refueling Water Level A Wide Range (L9053A)
- LI-41337 Reactor Cavity Lvl
- Local Rx Vessel Level Sightglass/Tygon (252 in. to 645 in.)
- RVLIS 41622 Train A
- RVLIS 41623 Train B

Refueling Water Level B Wide Range instrument is calibrated to provide indication from the top of active fuel (0% or 200 in. WC) to the refueling floor (68.5% or 645 in. WC). The Reactor Vessel Level Indicating System (RVLIS) is part of the Post Accident Monitoring Instrumentation. RVLIS is provided for verification and long term surveillance of core cooling and indicates from the bottom of the RCS hot leg penetration (0% or 252 in. WC) to above the high point of the Reactor Vessel head (100% or 419 in.). Procedures N-RC-36E, Draining the Reactor Coolant System, and N-RHR-34C, RHR Operation at a Reduced Inventory Condition, provide a cross-reference table of indicated water levels and sightglass readings.

[Ref. 2, 3, 4]

Several instruments are capable of providing indication of RCS temperature with respect to the Technical Specification cold shutdown temperature limit (200°F). N-0-01, Plant Startup from Cold Shutdown Condition to Hot Shutdown Condition, specifies the use of the highest of the wide range, RHR inlet, or Core Exit Thermocouples to monitor RCS temperature in the Cold Shutdown or Refueling Mode.

The Emergency Director must remain attentive to events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent. If, in the judgment of the Emergency Director, an imminent situation is at hand, the classification should be made as if the threshold has been exceeded.

- 1. Technical Specifications, Modes Definition for Cold Shutdown, Amendment No. 172
- 2. N-RC-36E Draining the Reactor Coolant System, Rev. AE
- 3. N-RHR-34C RHR Operation at a Reduced Inventory Condition, Rev. N
- 4. SP-36-196A Refueling Water Level Indication System Transmitter Calibration, Rev. G
- 5. A-RHR-34 Abnormal Residual Heat Removal System Operation, Rev. Y
- 6. N-0-01 Plant Startup from Cold Shutdown Condition to Hot Shutdown Condition, Rev. Z
- 7. USAR Figure 7.7-1, Plan-Vertical Panels and Consoles, Rev. 18

CU5

Initiating Condition -- UNUSUAL EVENT

Fuel Clad Degradation.

Operating Mode Applicability:

Cold Shutdown Refueling

Emergency Action Levels: (CU5.1or CU5.2)

- CU5.1. RCS Letdown Line (R-9) radiation monitor GREATER THAN 2000 mR/hr indicating fuel clad degradation.
- CU5.2. Coolant sample activity GREATER THAN ANY of the following indicating fuel clad degradation:
 - 1.0 µCi/gram dose equivalent lodine-131 for more than 48 hours in one continuous time interval
 - 60 µCi/gram dose equivalent lodine-131.
 - 91/Ē µCi/cc gross radioactivity

Basis:

This IC is included as a UE because it is considered to be a potential degradation in the level of safety of the plant and a potential precursor of more serious problems. CU5.1 addresses RCS Letdown Line (R-9) radiation monitor readings that provide indication of fuel clad integrity [Ref. 4 & 5]. CU5.2 addresses coolant samples exceeding coolant technical specifications for iodine spike [Ref. 1].

2000 mR/hr was calculated using the following:

0.01% fuel cladding defect equals 7.2E+1 mR/hr increase on R-9 [Ref. 4] 0.2745% fuel cladding defect equals 1.0 μCi/gram dose equivalent lodine-131 [Ref. 5].

Therefore 1976.4 mR/hr increase on R-9 is equal to 1.0 μ Ci/gram dose equivalent lodine-131

R-9 background is equivalent to 56 mR/hr [Ref. 4], which is added to the calculated dose rate above.

With the addition of background R-9 will read 2032.4 mR/hr (rounded to 2000 mR/hr) equal to 1.0 μ Ci/gram dose equivalent lodine-131.

Although the Technical Specification is applicable when average reactor coolant temperature is GREATER THAN 500°F, it is appropriate that this EAL be applicable in cold shutdown and refueling modes, as it indicates a potential degradation in the level of safety of the plant.

- 1. Technical Specifications LCO 3.1.c.1.A, Amendment No. 167
- 2. E-2021 Integrated Logic Diagram Radiation Monitoring, Rev. X
- 3. A-RC-36A High Reactor Coolant Activity, Rev. J
- 4. USAR Section 9, Rev. 16
- 5. CN-CRA-99-28 Rev. 1

CU6

Initiating Condition -- UNUSUAL EVENT

UNPLANNED Loss of All Onsite or Offsite Communications Capabilities.

Operating Mode Applicability:	Cold Shutdown Refueling

Emergency Action Levels:

CU6.1. Loss of all Table C-1 onsite communications capability affecting the ability to perform routine operations.

(CU6.1 or CU6.2)

Table C-1 Onsite Communications Systems	
Intraplant Paging (Gai-tronics)	
Sound powered phones	
PBX telephone system	
 Personal communications system (PCS phones) 	
 Portable radio communications system 	

CU6.2. Loss of all Table C-2 offsite communications capability.

Table C-2 Offsite Communications Systems

- PBX telephone system
- NRC FTS System (including ENS and HPN)
- Dial select phones

Basis:

The purpose of this IC and its associated EALs is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks necessary for plant operations or the ability to communicate problems with offsite authorities. The loss of offsite communications ability is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72.

The availability of one method of ordinary offsite communications is sufficient to inform state and local authorities of plant problems. This EAL is intended to be used only when extraordinary means (e.g., relaying of information from radio transmissions, individuals being sent to offsite locations, etc.) are being utilized to make communications possible.

Table C-1 onsite communications loss encompasses the loss of all means of routine communications (e.g., commercial telephones, sound powered phone systems, page party system and radios / walkie talkies). Due to its limited capability, the emergency gai-tronics is not listed in Table C-1.

Table C-2 offsite communications loss encompasses the loss of all means of communications with offsite authorities. This includes the NRC FTS System (including Emergency Notification System - ENS and Health Physics Network – HPN), commercial telephone lines, telecopy transmissions, and dedicated phone systems.

KNPP Basis Reference(s):

1. N-COM-44-CL Communications Systems CL, Rev. K

CU7

Initiating Condition - UNUSUAL EVENT

UNPLANNED Loss of Required DC Power for GREATER THAN 15 Minutes.

Operating Mode Applicability:

Cold Shutdown Refueling

Emergency Action Level:

CU7.1 UNPLANNED Loss of Vital DC power based on LESS THAN 105 VDC on Train A AND Train B Safeguards DC Distribution System.

AND

Failure to restore power to at least one required Train of the Safeguards DC Distribution System within 15 minutes from the time of loss.

Basis:

The purpose of this IC and its associated EALs is to recognize a loss of DC power compromising the ability to monitor and control the removal of decay heat during Cold Shutdown or Refueling operations. This EAL is intended to be anticipatory in as much as the operating crew may not have necessary indication and control of equipment needed to respond to the loss.

UNPLANNED is included in this IC and EAL to preclude the declaration of an emergency as a result of planned maintenance activities. Routinely plants will perform maintenance on a Train related basis during shutdown periods. It is intended that the loss of the operating (operable) train is to be considered. If this loss results in the inability to maintain cold shutdown, the escalation to an Alert will be per EAL CA4 "Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the Reactor Vessel."

LESS THAN 105 VDC bus voltage is based on the minimum bus voltage necessary for the operation of safety related equipment [Ref. 1, 2]. The loss of a safeguards DC train consists of a combination of loss of power to specified DC distribution panels. These panels include: BRA (BRB)-102, and BRA (BRB)-104. In all cases, BRA (BRB)-102 panel indicating less than 105 VDC constitutes a loss of the associated DC distribution train. However, a loss of power to the BRA (BRB) -104 panel, which does not have voltage indication, also constitutes a loss of the associated DC distribution train.

125 VDC safeguard main distribution cabinets (BRA-102 and BRB-102) supply two safeguard sub-distribution cabinets (BRA-104 and BRB-104) and provide for connection of safeguard batteries (BRA-101 and BRB-101) to their associated battery chargers (BRA-108 and BRB-108). The combination of low voltages on the specified distribution cabinets results in a total loss of vital 125 VDC power. The 125 VDC safeguards system powers circuit breaker control, Control Room alarms, Control Room controls, diesel generator controls, and the Reactor Protection System. It is also the standby power source to the AC inverters. BRA-102 and BRB-102 voltage is displayed on Control Room indicators 4494001 and 4494002, respectively. Undervoltage is alarmed on Control

Room Sequence of Event Recorder (SER) points 490011196 and 490011200 and annunciators 447101A and 47101B, respectively.

Each of the 125 VDC batteries has been sized to carry the expected shutdown loads following a reactor trip and a loss of all AC power for a period of eight hours without battery terminal voltage falling below 105 VDC. This voltage value therefore incorporates a margin of at least 15 minutes of operation before the onset of inability to operate loads. The nominal battery cell voltage is 2.20 VDC. Low battery terminal voltage activates Control Room SER point 49001832 and annunciator 47105A. The batteries are located in Battery Rooms A and B on the Turbine Building Mezzanine Floor (606 ft el.).

- 1. USAR 8.2.2, Rev. 18
- 2. USAR 8.2.3, Rev. 18
- 3. Technical Specifications 3.7, Amendment No. 122
- 4. A-EDC-38, Abnormal DC Supply and Distribution System, Rev. Z
- 5. Plant Drawing 237127A-E233, Rev. AQ

CU8

Initiating Condition – UNUSUAL EVENT

Inadvertent Criticality.

Operating Mode Applicability:

Cold Shutdown Refueling

Emergency Action Level:

CU8.1. An UNPLANNED sustained positive startup rate observed on nuclear instrumentation.

Basis:

This IC addresses criticality events that occur in Cold Shutdown or Refueling modes (NUREG 1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States) such as fuel mis-loading events and inadvertent dilution events. This IC indicates a potential degradation of the level of safety of the plant, warranting an Unusual Event classification. This IC excludes inadvertent criticalities that occur during planned reactivity changes associated with reactor startups (e.g., criticality earlier than estimated) which are addressed in the companion IC SU8.

This condition can be identified using startup rate meters. The term "sustained" is used in order to allow exclusion of expected short term positive startup rates from planned fuel bundle or control rod movements during core alteration. These short term positive startup rates are the result of the rise in neutron population due to subcritical multiplication.

This condition can be identified using startup rate meters (NI-31D/32D - Source Range Startup Rate).

Escalation would be by Emergency Director Judgment.

KNPP Basis Reference(s):

1. N-0-02 Plant Startup from Hot Shutdown to 35% Power, Rev. AN

CA1

Initiating Condition – ALERT

Loss of RCS Inventory.

Operating Mode Applicability: Cold Shutdown

Emergency Action Levels: (CA1.1 or CA1.2)

CA1.1. Loss of RCS inventory as indicated by one or more of the following:

- Wide Range Refueling Water Level LESS THAN 8%
 - RVLIS at 0%
 - Sightglass water level LESS THAN 252 in
- CA1.2. Loss of RCS inventory as indicated by unexplained level rise in any of the following:
 - Containment Sump A
 - Containment Sump C
 - Liquid Waste Disposal System

AND

RCS level cannot be monitored for GREATER THAN 15 minutes

Basis:

These EALs serve as precursors to a loss of ability to adequately cool the fuel. The magnitude of this loss of water indicates that makeup systems have not been effective and may not be capable of preventing further Reactor Vessel level decrease and potential core uncovery. The 8% Refueling Level (0% RVLIS, 252 in. sightglass) threshold corresponds to the bottom inside diameter of the RCS hot leg [Ref. 2]. This condition will result in a minimum classification of Alert. The Bottom ID of the RCS hot leg Setpoint was chosen because at this level remote RCS level indication may be lost and loss of suction to decay heat removal systems has occurred. The Bottom ID of the RCS hot leg Setpoint is the level equal to the bottom of the Reactor Vessel loop penetration (not the low point of the loop). The inability to restore and maintain level after reaching this setpoint would therefore be indicative of a failure of the RCS barrier.

The elevation of the bottom of the RCS hot leg can be monitored by:

- Wide Range Refueling Water Level (L9053A for channel A and L9054A for channel B) indication: 7.95% rounded to 8% for readability
- RVLIS: 0%
- Sightglass/Tygon: 252 in. WC

Reactor Vessel water level is normally monitored using the following instruments:

- 21158 Refueling Water Level Narrow Range (L9055A)
- 21159 Refueling Water Level B Wide Range (L9054A)
- 24068 Refueling Water Level A Wide Range (L9053A)
- LI-41337 Reactor Cavity LvI
- Local Rx Vessel Level Sightglass/Tygon (252 in. to 645 in.)
- RVLIS 41622 Train A
- RVLIS 41623

[Ref 2]

In cold shutdown the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the refueling mode. Entry into cold shutdown conditions may be attained within hours of operating at power or hours after refueling is completed. Entry into the refueling mode procedurally may not occur for typically 100 hours or longer after the reactor has been shutdown. Thus the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the refueling mode with irradiated fuel in the Reactor Vessel (note that the heatup threat could be lower for cold shutdown conditions if the entry into cold shutdown was following a refueling). The above forms the basis for needing both a cold shutdown specific IC (CA1) and a refueling specific IC (CA2).

In the cold shutdown mode, if the RCS is pressurized, then the refueling water level indication (including sightglass / tygon) will not be in service. In this case, RVLIS will serve as the means for declaration of this EAL. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that Reactor Vessel inventory loss was occurring by observing Containment Sump A, Containment Sump C and Liquid Waste Disposal System level changes [Ref. 1, 5]. Each time annunciator CONTAINMENT SUMP A LEVEL HIGH is received, the corresponding leakrate within containment is calculated from sump pump run history. Sump and tank level rises must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage [Ref. 1, 2,]. The 15-minute duration for the loss of level indication was chosen because it is half of the CS1 Site Area Emergency EAL duration. The 15-minute duration allows CA1 to be an effective precursor to CS1. Significant fuel damage is not expected to occur until the core has been uncovered for greater than 1 hour per the analysis referenced in the CS1 basis. Therefore this EAL meets the definition for an Alert emergency.

The difference between CA1 and CA2 deals with the RCS conditions that exist between cold shutdown and refueling mode applicability. In cold shutdown the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the refueling mode the RCS is not intact and Reactor Vessel level and inventory are monitored by different means.

If Reactor Vessel level continues to decrease then escalation to Site Area Emergency will be via CS1 (Loss of Inventory Affecting Core Decay Heat Removal Capability with Irradiated Fuel in the Reactor Vessel).

- 1. N-RC-36E Draining the Reactor Coolant System, Rev. AE
- 2. SP-36-196A Refueling Water Level Indication System Transmitter Calibration, Rev. G
- 3. SP-36-082 Reactor Coolant System Leak Rate Check, Rev. AE
- 4. ES-1.3 Transfer to Containment Sump Recirculation, Rev. W
- 5. N-RHR-34C RHR Operation at a Reduced Inventory Condition, Rev. N

Initiating Condition -- ALERT

Loss of Reactor Vessel Inventory with Irradiated Fuel in the Reactor Vessel.

Operating Mode Applicability: Refueling

Emergency Action Levels: (CA2.1 or CA2.2)

- CA2.1. Loss of RCS inventory as indicated by Wide Range Refueling Water Level LESS THAN 8% (0% RVLIS, 252 in. sightglass)
- CA2.2. Loss of Reactor Vessel inventory as indicated by unexplained level rise in any of the following:
 - Containment Sump A
 - Containment Sump C
 - Liquid Waste Disposal System

AND

Reactor Vessel level cannot be monitored for GREATER THAN 15 minutes

Basis:

These example EALs serve as precursors to a loss of heat removal. The magnitude of this loss of water indicates that makeup systems have not been effective and may not be capable of preventing further Reactor Vessel level decrease and potential core uncovery. The 8% Refueling Level (0% RVLIS, 252 in. sightglass) threshold corresponds to the bottom inside diameter of the RCS loop [Ref. 2]. This condition will result in a minimum classification of Alert. The Bottom ID of the RCS hot leg Setpoint was chosen because at this level remote RCS level indication may be lost and loss of suction to decay heat removal systems may occur. The Bottom ID of the RCS hot leg Setpoint is the level equal to the bottom of the Reactor Vessel loop penetration (not the low point of the loop). The inability to restore and maintain level after reaching this setpoint would therefore be indicative of a failure of the RCS barrier.

The elevation of the bottom of the RCS hot leg can be monitored by:

- Wide Range Refueling Water Level (L9053A for channel A and L9054A for channel B) indication: 7.95% rounded to 8% for readability
- RVLIS: 0%
- Sightglass/Tygon: 252 in. WC

Reactor Vessel water level is normally monitored using the following instruments:

- 21158 Refueling Water Level Narrow Range (L9055A)
- 21159 Refueling Water Level B Wide Range (L9054A)
- 24068 Refueling Water Level A Wide Range (L9053A)
- LI-41337 Reactor Cavity Lvl
- Local Rx Vessel Level Sightglass/Tygon (252 in. to 645 in.)
- RVLIS 41622 Train A
- RVLIS 41623 Train B

[Ref. 2]

In cold shutdown the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the refueling mode. Entry into cold shutdown conditions may be attained within hours of operating at power or hours after refueling is completed. Entry into the refueling mode procedurally may not occur for typically 100 hours or longer after the reactor has been shutdown. Thus the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the refueling mode with irradiated fuel in the Reactor Vessel (note that the heatup threat could be lower for cold shutdown conditions if the entry into cold shutdown was following a refueling). The above forms the basis for needing both a cold shutdown specific IC (CA1) and a refueling specific IC (CA2).

In the refueling mode, normal means of Reactor Vessel level indication may not be available. Redundant means of Reactor Vessel level indication will be normally installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that Reactor Vessel inventory loss was occurring by observing Containment Sump A, Containment Sump C and Liquid Waste Disposal System level changes [Ref. 1, 5]. Each time annunciator CONTAINMENT SUMP A LEVEL HIGH is received, the corresponding leakrate within containment is calculated from sump pump run history. [Ref. 1, 2, 3] Sump and tank level rises must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage. The 15-minute duration for the loss of level indication was chosen because it is half of the CS2 Site Area Emergency EAL duration. The 15-minute duration allows CA2 to be an effective precursor to CS2. Significant fuel damage is not expected to occur until the core has been uncovered for greater than 1 hour per the analysis referenced in the CS2 basis. Therefore this EAL meets the definition for an Alert.

The difference between CA1 and CA2 deals with the RCS conditions that exist between cold shutdown and refueling mode applicability. In cold shutdown the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the refueling mode the RCS is not intact and Reactor Vessel level and inventory are monitored by different means.

If Reactor Vessel level continues to decrease then escalation to Site Area Emergency will be via CS1 (Loss of Inventory Affecting Core Decay Heat Removal Capability with Irradiated Fuel in the Reactor Vessel).

- 1. N-RC-36E Draining the Reactor Coolant System, Rev. AE
- 2. SP-36-196A Refueling Water Level Indication System Transmitter Calibration, Rev. G
- 3. SP-36-082 Reactor Coolant System Leak Rate Check, Rev. AE
- 4. ES-1.3 Transfer to Containment Sump Recirculation, Rev. W
- 5. N- RHR-34C RHR Operation at a Reduced Inventory Condition, Rev. N

CA3

Initiating Condition -- ALERT

Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses.

Operating Mode Applicability:

Cold Shutdown Refueling Defueled

Emergency Action Level:

CA3.1. Loss of ALL power to Bus 5 AND Bus 6 for GREATER THAN 15 minutes.

Basis:

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal, Spent Fuel Heat Removal and the Service Water System. When in cold shutdown, refueling, or defueled mode the event can be classified as an Alert, because of the significantly reduced decay heat, lower temperature and pressure, increasing the time to restore one of the emergency busses, relative to that specified for the Site Area Emergency EAL. Escalating to Site Area Emergency, if appropriate, is by Abnormal Rad Levels / Radiological Effluent, or Emergency Director Judgment ICs. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

This EAL is indicated by the loss of all offsite and onsite AC power to the 4160 VAC ESF busses. Offsite power sources include the 345 kVAC system or 138 kVAC system to the Tertiary Auxiliary Transformer (TAT), the 345 kVAC system or 138 kVAC system to the Reserve Auxiliary Transformer (RAT), and the 345 kVAC system to the Main Auxiliary Transformer (MAT) on backfeed through the main transformers. Note that the time required to effect a backfeed to the MAT is likely longer than the fifteen-minute interval. If shutdown plant conditions have already established the backfeed, however, its power to the ESF busses may be considered an offsite power source. Onsite power sources consist of Diesel Generator A to Bus 5 and Diesel Generator B to Bus 6. [Ref. 1, 2, 3, 4, 5].

Consideration should be given to operable loads necessary to remove decay heat or provide Reactor Vessel makeup capability when evaluating loss of AC power to essential busses. Even though an essential bus may be energized, if necessary loads (i.e., loads that if lost would inhibit decay heat removal capability or Reactor Vessel makeup capability) are not operable on the energized bus then the bus should not be considered operable.

- 1. ECA-0.0 Loss of All AC Power, Rev. AB
- 2. USAR Figure 8.2-2, Rev. 16
- 3. USAR Section 8.2.3, Rev. 18
- 4. USAR Section 8.2.4, Rev. 18
- 5. GNP-08.04.01 Shutdown Safety Assessment, Rev. K

CA4

Initiating Condition -- ALERT

Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the Reactor Vessel.

Cold Shutdown Refueling

Emergency Action Levels:

(EAL CA4.1 or CA4.2 or CA4.3)

- CA4.1. With CONTAINMENT CLOSURE NOT established AND RCS integrity NOT established, An UNPLANNED event results in RCS temperature GREATER THAN 200°F.
- CA4.2. With CONTAINMENT CLOSURE established AND RCS integrity NOT established OR Wide Range Refueling Water Level LESS THAN 17.0%,

An UNPLANNED event results in RCS temperature GREATER THAN 200°F for GREATER THAN 20 minutes*.

***NOTE:** If RHR system is in operation within this time frame and RCS temperature is being reduced then this EAL is not applicable.

CA4.3. An UNPLANNED event results in RCS temperature GREATER THAN 200°F for GREATER THAN 60 minutes*.

Results in an RCS pressure increase of GREATER THAN 10 psig.

***NOTE :** If RHR system is in operation within this time frame and RCS temperature is being reduced then this EAL is not applicable.

Basis:

CA4.1 addresses complete loss of functions required for core cooling during refueling and cold shutdown modes when neither CONTAINMENT CLOSURE nor RCS integrity are established. RCS integrity is in place when the RCS pressure boundary is in its normal condition for the cold shutdown mode of operation (e.g., reactor head on with studs tensioned, S/G and PRZR manways installed, PRZR safety valves installed, no freeze seals or nozzle dams). No delay time is allowed for CA4.1 because the evaporated reactor coolant that may be released into the Containment during this heatup condition could also be directly released to the environment.

CA4.2 addresses the complete loss of functions required for core cooling for GREATER THAN 20 minutes during refueling and cold shutdown modes when CONTAINMENT CLOSURE is

established but RCS integrity is not established or RCS inventory is reduced (e.g., mid loop operation). As in CA4.1, RCS integrity should be assumed to be in place when the RCS pressure boundary is in its normal condition for the cold shutdown mode of operation (e.g., reactor head on with studs tensioned, S/G and PRZR man-ways installed, PRZR safety valves installed, no freeze seals or nozzle dams). The allowed 20 minute time frame was included to allow operator action to restore the heat removal function, if possible. The allowed time frame is consistent with the guidance provided by Generic Letter 88-17, "Loss of Decay Heat Removal" (discussed later in this basis) and is believed to be conservative given that a low pressure Containment barrier to fission product release is established. The Note for CA4.2 indicates that CA4.2 is not applicable if actions are successful in restoring an RCS heat removal system to operation and RCS temperature is being reduced within the 20 minute time frame. Wide Range Refueling Water Level is measured by L9053A for channel A and L9054A for channel B.

CA4.3 addresses complete loss of functions required for core cooling for GREATER THAN 60 minutes during refueling and cold shutdown modes when RCS integrity is established. As in CA4.1 and CA4.2, RCS integrity should be considered to be in place when the RCS pressure boundary is in its normal condition for the cold shutdown mode of operation (e.g., reactor head on with studs tensioned, S/G and PRZR man-ways installed, PRZR safety valves installed, no freeze seals or nozzle dams). The status of CONTAINMENT CLOSURE in this EAL is immaterial given that the RCS is providing a high pressure barrier to fission product release to the environment. The 60 minute time frame should allow sufficient time to restore cooling without there being a substantial degradation in plant safety. The 10 psig pressure rise covers situations where, due to high decay heat loads, the time provided to restore temperature control, should be less than 60 minutes. RCS Pressure Narrow Range instrument PI-420 and PPCS/SPDS point P0420A are capable of measuring pressure to less than 10 psig. [Ref. 3, 7]. The Note for CA4.3 indicates that CA4.3 is not applicable if actions are successful in restoring the RHR system to operation and RCS temperature is being reduced within the 60 minute time frame assuming that the RCS pressure rise has remained less than the site specific pressure value.

Several instruments are capable of providing indication of RCS temperature with respect to the Technical Specification cold shutdown temperature limit (200°F). N-0-01, Plant Startup from Cold Shutdown Condition to Hot Shutdown Condition, specifies the use of the highest of the wide range, RHR inlet, or Core Exit Thermocouples to monitor RCS temperature in the Cold Shutdown or Refueling Mode.

[Ref. 2, 3,]

Escalation to Site Area Emergency would be via CS1 or CS2 should boiling result in significant Reactor Vessel level loss leading to core uncovery.

A loss of Technical Specification components alone is not intended to constitute an Alert. The same is true of a momentary UNPLANNED excursion above 200 degrees F when the heat removal function is available.

The Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent. If, in the judgment of the Emergency Director, an imminent situation is at hand, the classification should be made as if the threshold has been exceeded.
KNPP Basis Reference(s):

- 1. Technical Specifications, Modes Definition for Cold Shutdown, Amendment No. 172
- 2. A-RHR-34 Abnormal Residual Heat Removal System Operation, Rev. Y
- 3. N-0-01 Plant Startup from Cold Shutdown Condition to Hot Shutdown Condition, Rev. Z
- 4. N-CCI-56A Open Containment Boundary Tracking, Rev. F
- 5. GNP-08.04.01 Shutdown Safety Assessment, Rev. K
- 6. N-O-05 Plant Cooldown from Hot Shutdown to Cold Shutdown Condition 1, Rev. AY
- 7. N-RC-36E Draining the Reactor Coolant System, Rev. AE

SYSTEM MALFUNCTION

CS1

Initiating Condition -- SITE AREA EMERGENCY

Loss of Reactor Vessel Inventory Affecting Core Decay Heat Removal Capability.

Operating Mode Applicability:	Cold Shutdown
Emergency Action Levels:	(CS1.1 or CS1.2)

CS1.1. With CONTAINMENT CLOSURE <u>NOT</u> established:

a. Reactor Vessel inventory as indicated by Wide Range Refueling Water Level LESS THAN 7%

OR

- b. Reactor Vessel level cannot be monitored for GREATER THAN 30 minutes with a loss of Reactor Vessel inventory as indicated by unexplained level rise in any of the following:
 - Containment Sump A
 - Containment Sump C
 - Liquid Waste Disposal System
- CS1.2. With CONTAINMENT CLOSURE established:
 - a. Reactor Vessel inventory as indicated by Wide Range Refueling Water Level EQUAL TO 0%

OR

- b. Reactor Vessel level cannot be monitored for GREATER THAN 30 minutes with a loss of Reactor Vessel inventory as indicated by either:
 - Unexplained Containment Sump A, Containment Sump C, OR Liquid Waste Disposal System level rise
 - Erratic Source Range Monitor Indication

Basis:

Under the conditions specified by this IC, continued decrease in Reactor Vessel level is indicative of a loss of inventory control. Inventory loss may be due to a Reactor Vessel breach, pressure boundary leakage, or continued boiling in the Reactor Vessel.

In cold shutdown the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the refueling mode. Entry into cold shutdown conditions may be attained within hours of operating at power or hours after refueling is KNPP 6-C-28 10/22/04

completed. Entry into the refueling mode procedurally may not occur for typically 100 hours or longer after the reactor has been shutdown. Thus the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the refueling mode with irradiated fuel in the Reactor Vessel (note that the heatup threat could be lower for cold shutdown conditions if the entry into cold shutdown was following a refueling). The above forms the basis for needing both a cold shutdown specific IC (CS1) and a refueling specific IC (CS2).

In the cold shutdown mode, normal RCS level and reactor vessel level indication systems (RVLIS) will normally be available. If the RCS is pressurized, then the Wide Range Refueling Water Level indication will not be in service. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that Reactor Vessel inventory loss was occurring by observing sump and tank level changes. <u>RVLIS indication is considered lost if leakage reduces RCS level below its indicating range</u>. Each time annunciator CONTAINMENT SUMP A LEVEL HIGH is received, the corresponding leakrate within containment is calculated from sump pump run history. [Ref. 1, 5] Sump and tank level increases must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage.

When Reactor Vessel water level drops to 616 ft 4 in. el., the level associated without CONTAINMENT CLOSURE established, level is six inches below the bottom of the RCS hot leg vessel penetration. This level can be monitored by Wide Range Refueling Water Level (L9053A for channel A and L9054A for channel B) indication at 7.1% (rounded to 7% for readability). The following indications are off scale low and as such are not available:

- RVLIS: <0%
- Sightglass/Tygon level equal to 246 in. WC.

When Reactor Vessel water level drops to 612 ft 4 in. el., the level associated with CONTAINMENT CLOSURE established, core uncovery is about to occur. Wide Range Refueling Water Level indication of 0% is approximately the top of active fuel.

[Ref. 1, 2]

The 30-minute duration allowed when CONTAINMENT CLOSURE is established allows sufficient time for actions to be performed to recover needed cooling equipment and is considered to be conservative given that level is being monitored via CS1 and CS2. Effluent release is not expected with closure established.

Thus, declaration of a Site Area Emergency is warranted under the conditions specified by the IC. Escalation to a General Emergency is via CG1 (Loss of Reactor Vessel Inventory Affecting Fuel Clad Integrity with Containment Challenged with Irradiated Fuel in the Reactor Vessel) or radiological effluent IC AG1 (Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 1000 mRem TEDE or 5000 mRem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology).

KNPP Basis Reference(s):

- 1. N-RC-36E Draining the Reactor Coolant System, Rev. AE
- 2. SP-36-196A Refueling Water Level Indication System Transmitter Calibration, Rev. G
- 3. N-CCI-56A Open Containment Boundary Tracking, Rev. F
- 4. GNP-08.04.01 Shutdown Safety Assessment, Rev. K
- 5. SP-36-082 Reactor Coolant System Leak Rate Check, Rev. AE
- 6. ES-1.3 Transfer to Containment Sump Recirculation, Rev. W
- 7. N-0-02 Plant Startup from Hot Shutdown to 35% Power, Rev. AN
- 8. A-MDS-30 Miscellaneous Drains and Sumps (MDS) Abnormal Operation, Rev. N

SYSTEM MALFUNCTION

CS2

Initiating Condition - SITE AREA EMERGENCY

Loss of Reactor Vessel Inventory Affecting Core Decay Heat Removal Capability with Irradiated Fuel in the Reactor Vessel.

Operating Mode Applicability: Refueling

Emergency Action Levels: (CS2.1 or CS2.2)

CS2.1. With CONTAINMENT CLOSURE NOT established:

a. Reactor Vessel inventory as indicated by Wide Range Refueling Water Level LESS THAN 7%

OR

- b. Reactor Vessel level cannot be monitored with Indication of core uncovery as evidenced by one or more of the following:
 - Containment Area Radiation Monitor (R-2) reading GREATER THAN 100 mRem/hr
 - Erratic Source Range Monitor Indication

CS2.2. With CONTAINMENT CLOSURE established

a. Reactor Vessel inventory as indicated by Wide Range Refueling Water Level EQUAL TO 0%

OR

- b. Reactor Vessel level cannot be monitored with Indication of core uncovery as evidenced by one or more of the following:
 - Containment Area Radiation Monitor (R-2) reading GREATER THAN 100 mRem/hr
 - Erratic Source Range Monitor Indication

Basis:

Under the conditions specified by this IC, continued decrease in Reactor Vessel level is indicative of a loss of inventory control. Inventory loss may be due to an Reactor Vessel breach or continued boiling in the Reactor Vessel.

In cold shutdown the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the refueling mode Entry into cold shutdown conditions may be attained within hours of operating at power or hours after refueling is completed. Entry into the refueling mode procedurally may not occur for typically 100 or longer after the reactor has been shutdown. Thus the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the refueling mode with irradiated fuel in the KNPP 6-C-31 10/22/04

Reactor Vessel (note that the heatup threat could be lower for cold shutdown conditions if the entry into cold shutdown was following a refueling). The above forms the basis for needing both a cold shutdown specific IC (CS1) and a refueling specific IC (CS2).

When Reactor Vessel water level drops to 616 ft 4 in. el., the level associated without CONTAINMENT CLOSURE established, level is six inches below the bottom of the RCS hot leg vessel penetration. This level can be monitored by Wide Range Refueling Water Level (L9053A for channel A and L9054A for channel B) indication at 7.1% (rounded to 7% for readability). The following indications are off scale low and as such are not available:

- RVLIS: <0%
- Sightglass/Tygon level equal to 246 in. WC.

When Reactor Vessel water level drops to 612 ft 4 in. el., the level associated with CONTAINMENT CLOSURE established, core uncovery is about to occur. Wide Range Refueling Water Level indication of 0% is approximately the top of active fuel.

[Ref. 1, 2]

In Refuel mode at the levels of interest, RVLIS is unavailable but alternate means of level indication (refueling level) are installed to assure that the ability to monitor level will not be interrupted. If all means of level monitoring are not available, however, the Reactor Vessel inventory loss may be detected by the following indirect methods:

- As water level in the Reactor Vessel lowers, the dose rate above the core will rise. The
 dose rate due to this core shine should result in an unplanned alarm on the Containment
 Area Monitor (R-2). R-2 is used instead of the high range containment monitors because if
 a small amount of fuel was uncovered, the location of the high range monitors would
 preclude them reading on scale. Therefore the alarm setpoint of R-2 was selected to
 indicate a rise in containment radiation resulting from the conditions of this EAL [Ref. 8].
- Post-TMI studies indicated that the installed nuclear instrumentation will operate erratically when the core is uncovered and Source Range Monitors (SRM) N-31B and N-32B can be used as a tool for making such determinations. SRM count rate can also be indicated in the Control Room by the audible SRM count rate monitor.

Effluent release is not expected with CONTAINMENT CLOSURE established.

Thus, declaration of a Site Area Emergency is warranted under the conditions specified by the IC. Escalation to a General Emergency is via CG1 (Loss of Reactor Vessel Inventory Affecting Fuel Clad Integrity with Containment Challenged with Irradiated Fuel in the Reactor Vessel) or radiological effluent IC AG1 (Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 1000 mRem TEDE or 5000 mRem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology).

KNPP Basis Reference(s):

- 1. N-RC-36E Draining the Reactor Coolant System, Rev. AE
- 2. SP-36-196A Refueling Water Level Indication System Transmitter Calibration, Rev. G
- 3. N-CCI-56A Open Containment Boundary Tracking, Rev. F
- 4. GNP-08.04.01 Shutdown Safety Assessment, Rev. K
- 5. SP-36-082 Reactor Coolant System Leak Rate Check, Rev. AE
- 6. ES-1.3 Transfer to Containment Sump Recirculation, Rev. W
- 7. N-0-02 Plant Startup from Hot Shutdown to 35% Power, Rev. AN
- 8. C11622, Determination of R-2 Reading with Loss of Inventory, Rev. 0

SYSTEM MALFUNCTION

CG1

Initiating Condition - GENERAL EMERGENCY

Loss of Reactor Vessel Inventory Affecting Fuel Clad Integrity with Containment Challenged with Irradiated Fuel in the Reactor Vessel.

Operating Mode Applicability:

Cold Shutdown Refueling

Emergency Action Level:

CG1.1. Loss of Reactor Vessel inventory as indicated by unexplained level rise in Containment Sump A, Containment Sump C <u>OR</u> Liquid Waste Disposal System

AND

Reactor Vessel Level (a or b):

a. EQUAL TO 0% Wide Range Refueling Water Level for GREATER THAN 30 minutes

OR

- b. cannot be monitored with indication of core uncovery for GREATER THAN 30 minutes as evidenced by one or more of the following:
 - Containment Area Radiation Monitor (R-2) reading GREATER THAN 100 mRem/hr
 - Erratic Source Range Monitor Indication

AND

Indication of CONTAINMENT challenged as indicated by one or more of the following:

- GREATER THAN OR EQUAL TO 6% hydrogen in containment
- CONTAINMENT CLOSURE NOT established
- CONTAINMENT pressure above:
 - 46 psig <u>IF</u> Containment Integrity or Reduced Inventory Containment Integrity is established

OR

• 46 psig <u>IF</u> Refueling Containment Integrity is established with no loop seal penetrations installed at Penetration 42N or 43N.

OR

• 0.6 psig <u>IF</u> Refueling Containment Integrity is established with loop seal penetration installed at either Penetration 42N or 43N.

Basis:

In the cold shutdown mode, normal RCS level and Reactor Vessel level instrumentation systems will normally be available. If the RCS is pressurized, then the Wide Range Refueling Water Level indication will not be in service. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that Reactor Vessel inventory loss was occurring by observing sump and tank level changes. <u>RVLIS indication is considered lost if leakage reduces RCS level below its indicating range.</u>

In the refueling mode, normal means of Reactor Vessel level indication may not be available. Redundant means of Reactor Vessel level indication will be normally installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that Reactor Vessel inventory loss was occurring by observing sump and tank level changes. Wide Range Refueling Water Level is measured by L9053A for channel A and L9054A for channel B.

Containment Sump A, Containment Sump C or Liquid Waste Disposal System level changes may be indicative of a loss of RCS inventory. Containment Sump A receives all liquid waste from floor and equipment drains inside containment including that from Containment Sump C. Each time annunciator CONTAINMENT SUMP A LEVEL HIGH is received, the corresponding leakrate within containment is calculated from sump pump run history. [Ref. 1, 8] Sump level rises must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage. [Ref. 19]

This EAL represents the inability to restore and maintain Reactor Vessel level to above the top of active fuel. Fuel damage is probable if Reactor Vessel level cannot be restored, as available decay heat will cause boiling, further reducing the Reactor Vessel level. When Reactor Vessel water level drops to 612 ft 4 in. el., core uncovery is about to occur. Wide Range Refueling Water Level indication of 0% is approximately the top of active fuel. [Ref. 2]

If all means of level monitoring are not available, the Reactor Vessel inventory loss may be detected by the following indirect methods:

- As water level in the Reactor Vessel lowers, the dose rate above the core will rise. The
 dose rate due to this core shine should result in an unplanned alarm on the Containment
 Area Monitor (R-2). R-2 is used instead of the high range containment monitors because if
 a small amount of fuel was uncovered, the location of the high range monitors would
 preclude them reading on scale. Therefore the alarm setpoint of R-2 was selected to
 indicate a rise in containment radiation resulting from the conditions of this EAL [Ref. 3].
- Post-TMI studies indicated that the installed nuclear instrumentation will operate erratically when the core is uncovered and Source Range Monitors (N-31 and N-32) can be used as a tool for making such determinations.

The GE is declared on the occurrence of the loss or imminent loss of function of <u>all three</u> barriers. Based on the above discussion, RCS barrier failure resulting in core uncovery for 30 minutes or more may cause fuel clad failure. With the CONTAINMENT breached or challenged then the potential for unmonitored fission product release to the environment is high. This represents a direct path for radioactive inventory to be released to the environment. This is consistent with the definition of a GE. CONTAINMENT CLOSURE is the action taken to secure containment and its associated structures, systems, and components as a functional barrier to fission product release under existing plant conditions. CONTAINMENT CLOSURE should not be confused with Refueling Containment Integrity as described in N-FH-53-CLA or CLB [Ref 6, 7]. Reduced Inventory Containment Integrity is described in N-CCI-56A–CLA or CLB [Ref 9, 10]. Site shutdown contingency plans typically provide for re-establishing CONTAINMENT CLOSURE following a loss of heat removal or RCS inventory functions. If the closure is re-established prior to exceeding the temperature or level thresholds of the RCS Barrier and Fuel Clad Barrier EALs, escalation to GE would not occur.

The pressure at which CONTAINMENT is considered challenged is based on the condition of the CONTAINMENT. When the Unit is in the cold shutdown mode and the CONTAINMENT is fully intact, Containment is considered challenged at CONTAINMENT design pressure of 46 psig. Refueling CONTAINMENT Integrity establishes normal CONTAINMENT isolation except that penetrations 42N and 43N may have loop seal penetrations installed. When a loop seal penetration is installed, CONTAINMENT is considered challenged when CONTAINMENT pressure exceeds 0.6 psig. If fiber optic penetration is installed with no loop seal penetration installed, CONTAINMENT is considered at full CONTAINMENT design pressure of 46 psig. [Ref. 20 and 21].

In the early stages of a core uncovery event, it is unlikely that hydrogen buildup due to a core uncovery could result in an explosive mixture of dissolved gasses in CONTAINMENT. However, CONTAINMENT monitoring and/or sampling should be performed to verify this assumption and a General Emergency declared if it is determined that an explosive mixture exists. When hydrogen and oxygen concentrations reach or exceed the deflagration limits (equal to or greater than 6% hydrogen), loss of the containment barrier is possible [Ref. 13, 15, 16]. Containment hydrogen concentration can be obtained from PPCS/SPDS point X8001A and X8002A, or Control Room meters 41615 and 41616.

KNPP Basis Reference(s):

- 1. N-RC-36E Draining the Reactor Coolant System, Rev. AE
- 2. SP-36-196A Refueling Water Level Indication System Transmitter Calibration, Rev. G
- 3. C11622, Determination of R-2 Reading with Loss of Inventory, Rev. 0
- 4. N-0-02 Plant Startup from Hot Shutdown to 35% Power, Rev. AN
- 5. N-RHR-34C-CL Requirements for Entering Reduced Inventory Checklist, Rev. H
- 6. N-FH-53-CLA Refueling Containment Integrity CL, S/G Secondary Side Intact, Rev. G
- 7. N-FH-53-CLB Refueling Containment Integrity CL, S/G Secondary Side Open, Rev. G
- 8. N-CCI-56A Open Containment Boundary Tracking, Rev. F
- 9. N-CCI-56A-CLA Reduced Inventory Cntmt Integrity Checklist SG Secondary Side Intact, Rev. K
- 10. N-CCI-56A-CLB Reduced Inventory Cntmt Integrity Checklist SG Secondary Side Open, Rev. J
- 11. GNP-08.04.01 Shutdown Safety Assessment, Rev. K
- 12. EPIP-TSC-07 RV Head Venting time Calculation, Rev. J
- 13. M-403 Reactor Building Vent System Post-LOCA Hydrogen Control, Rev. Y
- 14. Technical Specifications Table 3.5.6, Amendment No. 105
- **KNPP**

15. FR-C.1 Response to Inadequate Core Cooling, Rev. N

- 16. N-RBV-18C POST-LOCA Hydrogen Control, Rev. K
- 17. F-0.5 Containment, Rev. F
- 18. USAR Section 5.2.1, Rev. 16
- 19. SP-36-082 Reactor Coolant System Leak Rate Check, Rev. AE
- 20. DCR1811, Refueling Containment Loop Seal
- 21. DCR 2167, New Refueling Containment Cableway

Table F-0

Recognition Category F

Fission Product Barrier Degradation

INITIATING CONDITION MATRIX

	GENERAL EMERGENCY		SITE AREA EMERGENCY		ALERT		UE	
FG1	Loss of ANY Two Barriers AND Loss or Potential Loss of Third Barrier	ANY Two Barriers AND Potential Loss of Third FS1 Loss or Potential Loss Two Barriers		FA1 ANY Loss or ANY Potential L of EITHER Fuel Clad OR RC		FU1	ANY Loss or ANY Potential Loss of Containment	
	Op. Modes: Operating, Hot Standby, Hot Shutdown, Intermediate Shutdown		Op. Modes: Operating, Hot Standby, Hot Shutdown, Intermediate Shutdown		Op. Modes: Operating, Hot Standby, Hot Shutdown, Intermediate Shutdown		Op. Modes: Operating, Hot Standby, Hot Shutdown, Intermediate Shutdown	

NOTES

- 1. The logic used for these initiating conditions reflects the following considerations:
 - The Fuel Clad Barrier and the RCS Barrier are weighted more heavily than the Containment Barrier. UE ICs associated with RCS and Fuel Clad Barriers are addressed under System Malfunction ICs.
 - At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from the threshold for a General
 Emergency. For example, if Fuel Clad and RCS Barrier "Loss" EALs existed, that, in addition to offsite dose assessments, would require continual
 assessments of radioactive inventory and containment integrity. Alternatively, if both Fuel Clad and RCS Barrier "Potential Loss" EALs existed, the
 Emergency Director would have more assurance that there was no immediate need to escalate to a General Emergency.
 - The ability to escalate to higher emergency classes as an event deteriorates must be maintained. For example, RCS leakage steadily increasing would represent an increasing risk to public health and safety.
- 2. Fission Product Barrier ICs must be capable of addressing event dynamics. Thus, the EAL Reference Table F-1 states that imminent (i.e., within 2 hours) Loss or Potential Loss should result in a classification as if the affected threshold(s) are already exceeded, particularly for the higher emergency classes.

TABLE F-1 KNPP Emergency Action Level Fission Product Barrier Reference Table Thresholds For LOSS or POTENTIAL LOSS of Barriers*

*Determine which combination of the three barriers are lost or have a potential loss and use the following key to classify the event. Also an event for multiple events could occur which result in the conclusion that exceeding the loss or potential loss thresholds is imminent (i.e., within 1 to 2 hours). In this imminent loss situation use judgment and classify as if the thresholds are exceeded.

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss of ANY two Barriers AND	Loss or Potential Loss of ANY two Barriers	ANY loss or ANY Potential Loss of EITHER	ANY loss or ANY Potential Loss of
Loss or Potential Loss of Third Barrier		Fuel Clad or RCS	Containment

Fuel Clad Barrie	er_EALS	RCS Ban	ier EALS	Containment Barrier EALS		
LOSS	POTENTIAL LOSS	L055	POTENTIAL LOSS	LOSS	POTENTIAL LOSS	
1. Critical Safety Function	<u>Status</u>	1. Critical Safety Function S	tatus	1. Critical Safety Function	Status	
Core-Cooling Red	Core Cooling-Orange OR Heat Sink-Red	Not Applicable	RCS Integrity-Red OR Heat Sink-Red	Not Applicable	Containment-Red	
C	R	0	R	OR		
2. Primary Coolant Activity	Level	2. RCS Leak Rate		2. Containment Pressure		
Coolant Activity GREATER THAN 300 µCi/gm I-131 equivalent	Not Applicable	GREATER THAN available makeup capacity as indicated by a loss of RCS subcooling • LESS THAN 20°F if the reactor is critical	Unisolable leak GREATER THAN 60 gpm the capacity of one charging pump in the normal charging mode	Rapid unexplained decrease following initial rise OR Containment pressure or sump level response not consistent with LOCA	46 PSIG and rising OR Hydrogen concentration GREATER THAN OR EQUAL TO 6% OR Containment pressure	
c	PR	 LESS THAN 30°F if the reactor is sub-critical 		conditions	GREATER THAN 23 psig with LESS THAN one full train of depressurization equipment operating OR	

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TABLE F-1 KNPP Emergency Action Level Fission Product Barrier Reference Table Thresholds For LOSS or POTENTIAL LOSS of Barriers*

*Determine which combination of the three barriers are lost or have a potential loss and use the following key to classify the event. Also an event for multiple events could occur which result in the conclusion that exceeding the loss or potential loss thresholds is imminent (i.e., within 1 to 2 hours). In this imminent loss situation use judgment and classify as if the thresholds are exceeded.

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT	
Loss of ANY two Barriers AND	Loss or Potential Loss of ANY two Barriers	ANY loss or ANY Potential Loss of EITHER	ANY loss or ANY Potential Loss of	
Loss or Potential Loss of Third Barrier		Fuel Clad or RCS	Containment	

Fuel Clad Barr	ier EALS	RCS E	Barrier EALS	Containment Barrier EALS		
L035	POTENTIAL LOSS	L055	POTENTIAL LOSS	L055	POTENTIAL LOSS	
3. Core Exit Thermocoup	le Readings			3. Core Exit Thermoco	ouple Reading	
GREATER THAN OR EQUAL TO 1200°F	GREATER THAN OR EQUAL TO 700°F			Not applicable	Core exit thermocouples GREATER THAN OR EQUAL TO 1200°F and restoration procedures not effective within 15 minutes; OR Core exit thermocouples GREATER THAN OR EQUAL TO 700°F with RCPs NOT running <u>AND</u> restoration procedures not effective within 15 minutes OR RVLIS void fraction rising with at least one RCP running and RCS subcooling LESS THAN 30°F [65°F] and restoration procedures not effective within 15 minutes	

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*Determine which combination of the three barriers are lost or have a potential loss and use the following key to classify the event. Also an event for multiple events could occur which result in the conclusion that exceeding the loss or potential loss thresholds is imminent (i.e., within 1 to 2 hours). In this imminent loss situation use judgment and classify as if the thresholds are exceeded.

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss of ANY two Barriers AND	Loss or Potential Loss of ANY two Barriers	ANY loss or ANY Potential Loss of EITHER	ANY loss or ANY Potential Loss of
Loss or Potential Loss of Third Barrier		Fuel Clad or RCS	Containment

Fuel Clad B	arrier EALS	RCS Ba	nrtier EALS	Containment Barrier EALS			
L033	POTENTIAL LOSS	L035	POTENTIAL LOSS	L035	POTENTIAL LOSS		
	OR		OR	o	R		
4. Reactor Vessel Wa	i <u>ter Level</u>	3. SG Tube Rupture	~	4. SG Secondary Side Release with Primary to- Secondary Leakage			
Not Applicable	RVLIS vold fraction rising AND At least one RCP running AND RCS subcooling LESS THAN 30°F [65°F]	SGTR that results in an ECCS (SI) Actuation	Not Applicable	RUPTURED S/G is also FAULTED outside of containment OR Primary-to-Secondary leakrate GREATER THAN 10 gpm with nonisolable steam release from affected S/G to the environment	Not applicable		
				0	OR		
				5CNMT Isolation Valves S	tatus After CNMT Isolation		
				Containment isolation valve(s) not closed AND Downstream pathway to the environment exists, after containment isolation	Not Applicable		
	OR		OR	OR			

TABLE F-1 KNPP Emergency Action Level Fission Product Barrier Reference Table Thresholds For LOSS or POTENTIAL LOSS of Barriers*

*Determine which combination of the three barriers are lost or have a potential loss and use the following key to classify the event. Also an event for multiple events could occur which result in the conclusion that exceeding the loss or potential loss thresholds is imminent (i.e., within 1 to 2 hours). In this imminent loss situation use judgment and classify as if the thresholds are exceeded.

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss of ANY two Barriers AND	Loss or Potential Loss of ANY two Barriers	ANY loss or ANY Potential Loss of EITHER	ANY loss or ANY Potential Loss of
Loss or Potential Loss of Third Barrier		Fuel Clad or RCS	Containment

Fuel Clad Barrier EALS		RCS_Ban	rier_EALS	Containment Barrier EALS		
LOSS POTENTIAL LOSS		LOSS POTENTIAL LOSS		LOSS	POTENTIAL LOSS	
5. Containment Radiation Monitoring		4. Containment Radiation I	Monitoring	6. Significant Radioactive Inventory in Containment		
Containment rad monitor (R-40/41) reading GREATER THAN 1000 R/hr	Not Applicable	Containment rad monitor (R-40/41) reading GREATER THAN 30 R/hr	Not Applicable	Not Applicable	Containment rad monitor (R-40/41) reading GREATER THAN 4000 R/hr	
OR		OR		OR		
6. Emergency Director Judgment		5. Emergency Director Judgment		7. Emergency Director Judgment		
Any condition in the opinion of the Emergency Director that Indicates Loss or Potential Loss of the Fuel Clad Barrier		Any condition in the opinion of the Emergency Director that indicate Loss or Potential Loss of the RCS Barrier		Any condition in the opinion of the Emergency Director that indicates Loss or Potential Loss of the Containment		

barrier

Basis Information For Table F-1 KNPP Emergency Action Level Fission Product Barrier Reference Table

FUEL CLAD BARRIER EALs: (1 or 2 or 3 or 4 or 5 or 6)

The Fuel Clad Barrier is the zircalloy or stainless steel tubes that contain the fuel pellets.

1. Critical Safety Function Status

RED path indicates an extreme challenge to the safety function. ORANGE path indicates a severe challenge to the safety function.

Core Cooling - ORANGE indicates subcooling has been lost and that some clad damage may occur. Core Cooling-ORANGE path is entered if:

- RCS subcooling based on CETs is equal to or less than 30°F [65°F] and
- No RCPs are running, and
- Core Exit Thermocouples (CETs) are reading between 700°F and 1200°F

OR

- RCS subcooling based on CETs is equal to or less than 30°F [65°F], and
- At least one RCP is running, and
- RVLIS Void Fraction is Rising

[Ref. 1, 2]

Heat Sink - RED indicates the ultimate heat sink function is under extreme challenge and thus these two items (Core Cooling – ORANGE or Heat Sink – RED) indicate potential loss of the Fuel Clad Barrier. Heat Sink-Red path is entered if narrow range level in both S/Gs is less than 4% [15%] and total feedwater flow to S/Gs is less than 200 gpm.

[Ref. 4, 5]

Core Cooling - RED indicates significant superheating and core uncovery and is considered to indicate loss of the Fuel Clad Barrier. Core Cooling-RED path is entered if Core Exit Thermocouples (CETs) are equal to or greater than 1200°F.

CSFST setpoints enclosed in brackets (e.g., [65°F], etc.) are used under adverse containment conditions. Adverse containment condition thresholds apply when containment pressure is greater than 4 psig or containment radiation exceeds 10E+05 R/hr.

2. Primary Coolant Activity Level

This value is 300 μ Ci/gm I₁₃₁ equivalent. Assessment by the NUMARC EAL Task Force indicates that this amount of coolant activity is well above that expected for iodine spikes and corresponds to less than 5% fuel clad damage. This amount of radioactivity indicates significant clad damage and thus the Fuel Clad Barrier is considered lost.

There is no equivalent "Potential Loss" EAL for this item.

3. Core Exit Thermocouple Readings

Core Exit Thermocouple Readings are included in addition to the Critical Safety Functions to include conditions when the CSFs may not be in use (initiation after SI is blocked).

The "Loss" EAL 1200 degrees F reading should correspond to significant superheating of the coolant. This value corresponds to the temperature reading that indicates core cooling - RED in Fuel Clad Barrier EAL #1 which is 1200 degrees F. [Ref. 1, 6]

The "Potential Loss" EAL 700 degrees F reading should correspond to loss of subcooling. This value corresponds to the temperature reading that indicates core cooling - ORANGE in Fuel Clad Barrier EAL #1 which is 700 degrees F. [Ref.1, 2]

4. Reactor Vessel Water Level

There is no "Loss" EAL corresponding to this item because it is better covered by the other Fuel Clad Barrier "Loss" EALs.

The "Potential Loss" EAL is indicative of core uncovery but, when the reactor is at pressure and temperature, RVLIS should not be used for a quantitative value (i.e., top of active fuel). Functional restoration procedure FR-C.2 specifies monitoring of RVLIS void fraction trend and RCS subcooling instead of the water level corresponding to the top of active fuel.

The "Potential Loss" EAL is therefore defined by the Core Cooling - ORANGE path. The trend in RVLIS RCS void fraction is used to check the effectiveness of safety injection in restoring RCS inventory. If void fraction percent is decreasing and RCS subcooling based on Core Exit Thermocouples (CETs) is greater than 30°F [65°F], safety injection has been successful in restoring RCS inventory and core cooling. In the event that RCS void fraction is increasing and subcooling requirements are not met, core cooling continues to be degraded and some fuel cladding damage may occur. Setpoints enclosed in brackets are used under adverse containment conditions. Adverse containment condition thresholds apply when containment pressure is greater than 4 psig or containment radiation exceeds 10E+05 R/hr. [Ref. 7]

5. Containment Radiation Monitoring

The 1000 R/hr reading is a value which indicates the release of reactor coolant, with elevated activity indicative of fuel damage, into the containment. The reading is calculated assuming the instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with a concentration of 300 μ Ci/gm dose equivalent I-131 into the containment atmosphere. [Ref. 8, 9, 10] Reactor coolant concentrations of this magnitude are several times larger than the maximum concentrations (including iodine spiking) allowed within technical specifications and are therefore indicative of fuel damage. This value is higher than that specified for RCS barrier Loss EAL #4. Thus, this EAL indicates a loss of both the fuel clad barrier and a loss of RCS barrier.

Monitors used for this fission product barrier loss threshold are the containment high-range area monitors R-40 and R-41.

There is no "Potential Loss" EAL associated with this item.

6. Emergency Director Judgment

This EAL addresses any other factors that are to be used by the Emergency Director in determining whether the Fuel Clad barrier is lost or potentially lost. Such a determination should include imminent barrier degradation, barrier monitoring capability and dominant accident sequences.

- <u>Imminent barrier degradation</u> exists if the degradation will likely occur within two hours based on a projection of current safety system performance. The term "imminent" refers to recognition of the inability to reach safety acceptance criteria before completion of all checks.
- <u>Barrier monitoring</u> capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of offsite monitoring results.
- <u>Dominant accident sequences</u> lead to degradation of all fission product barriers and likely entry to the CSFSTs. The Emergency Director should be mindful of the Loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

In addition, the inability to monitor the barrier should also be incorporated in this EAL as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost.

RCS BARRIER EALs: (1 or 2 or 3 or 4 or 5)

The RCS Barrier includes the RCS primary side and its connections up to and including the pressurizer safety and relief valves, and other connections up to and including isolation valves.

1. Critical Safety Function Status

RED path indicates an extreme challenge to the safety function derived from appropriate instrument readings, and these CSFs indicate a potential loss of RCS barrier.

RCS Integrity-Red path is entered if:

- Temperature decrease in both RCS cold legs is equal to or greater than 100°F in the last 60 minutes, and
- Any RCS cold leg temperatures are equal to or less than 274°F.

The combination of these two conditions indicates the RCS barrier is under extreme challenge and should be considered a Potential Loss of the RCS barrier. [Ref. 11, 12]

Heat Sink-Red path is entered if:

- Narrow range level in both S/Gs is less than 4% [15%]
- Total feedwater flow to S/Gs is less than 200 gpm.

The combination of these two conditions indicates the heat sink function is under extreme challenge. This condition addresses loss of functions required for hot shutdown with the reactor at pressure and temperature and should be considered a Potential Loss of the RCS barrier. [Ref. 4, 5]

Critical Safety Function Status Tree (CSFST) setpoints enclosed in brackets are used under adverse containment conditions. Adverse containment condition thresholds apply when containment pressure is greater than 4 psig or containment radiation exceeds 10E+05 R/hr.

There is no "Loss" EAL associated with this item.

2. RCS Leak Rate

The "Loss" EAL addresses conditions where leakage from the RCS is greater than available inventory control capacity such that a loss of subcooling has occurred. The loss of subcooling is the fundamental indication that the inventory control systems are inadequate in maintaining RCS pressure and inventory against the mass loss through the leak. Loss of subcooling is defined by:

- LESS THAN 20°F if the reactor is critical
- LESS THAN 30°F if the reactor is sub-critical

Core exit thermocouples LESS THAN 20°F is the subcooling margin threshold while critical. This is based on the minimum subcooling allowed for normal operation defined in Operating Procedure A-RC-36-D. [Ref. 23]

Core exit thermocouples LESS THAN 30°F is the subcooling margin threshold while subcritical. This is the level specified in Critical Safety Function Status Trees. IPEOPs define this value as a loss of RCS subcooling. [Ref. 1]

The "Potential Loss" EAL is based on the inability to maintain normal liquid inventory within the Reactor Coolant System (RCS) by normal operation of the Chemical and Volume Control System which is considered as one variable-speed, positive displacement charging pump discharging to the charging header. A second charging pump being required is indicative of a substantial RCS leak. 60 gpm is the design flow rate for each charging pump. [Ref. 13]

3. SG Tube Rupture

This EAL is intended to address the full spectrum of Steam Generator (SG) tube rupture events in conjunction with Containment Barrier "Loss" EAL #4 and Fuel Clad Barrier EALs. The "Loss" EAL addresses RUPTURED SG(s) for which the leakage is large enough to cause actuation of ECCS (SI). ECCS (SI) actuation is caused by:

- PRZR pressure less than 1815 psig
- S/G pressure less than 500 psig
- Containment pressure greater than 4 psig

Per IPEOP E-0, Reactor Trip or Safety Injection, the Operators are directed to perform a manual Safety Injection actuation if PRZR level is less than 5% or RCS subcooling based on Core Exit Thermocouples (CETs) is less than 30°F.

By itself, this EAL will result in the declaration of an Alert. However, if the SG is also FAULTED (i.e., two barriers failed), the declaration escalates to a Site Emergency per Containment Barrier "Loss" EAL #4. [Ref. 13, 14]

There is no "Potential Loss" EAL.

4. Containment Radiation Monitoring

The 30 R/hr reading is a value which indicates the release of reactor coolant to the containment. The reading is calculated assuming the instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with normal operating concentrations (i.e., within Technical Specifications) into the containment atmosphere. [Ref. 8, 9, 10] This reading is less than that specified for Fuel Clad Barrier EAL #5. Thus, this EAL would be indicative of a RCS leak only. If the radiation monitor reading increased to that specified by Fuel Clad Barrier EAL #5, fuel damage would also be indicated.

Monitors used for this fission product barrier loss threshold are the containment high-range area monitors R-40 and R-41.

There is no "Potential Loss" EAL associated with this item.

5. Emergency Director Judgment

This EAL addresses any other factors that are to be used by the Emergency Director in determining whether the RCS barrier is lost or potentially lost. Such a determination should include imminent barrier degradation, barrier monitoring capability and dominant accident sequences.

- <u>Imminent barrier degradation</u> exists if the degradation will likely occur within two hours based on a projection of current safety system performance. The term "imminent" refers to recognition of the inability to reach safety acceptance criteria before completion of all checks.
- <u>Barrier monitoring</u> capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of offsite monitoring results.
- <u>Dominant accident sequences</u> lead to degradation of all fission product barriers and likely entry to the CSFSTs. The Emergency Director should be mindful of the Loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

In addition, the inability to monitor the barrier should also be incorporated in this EAL as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost.

CONTAINMENT BARRIER EALs: (1 or 2 or 3 or 4 or 5 or 6 or 7)

The Containment Barrier includes the Shield Building and Containment and its connections up to and including the outermost containment isolation valves. This barrier also includes the main steam, feedwater, and blowdown lines +outside the Containment up to and including the isolation valve(s).

1. Critical Safety Function Status

There is no "Loss" EAL associated with this item.

RED path indicates an extreme challenge to the safety function. Containment-Red path is entered if containment pressure is equal to or greater than 46 psig. This pressure is the containment design pressure and is in excess of that expected from the design basis loss of coolant accident, and thus represents a potential loss of containment. Conditions leading to a containment RED path result from RCS barrier and/or Fuel Clad Barrier Loss. Thus, this EAL is primarily a discriminator between Site Emergency and General Emergency representing a potential loss of the third barrier. [Ref. 15, 16, 17]

2. Containment Pressure

Rapid unexplained loss of pressure (i.e., not attributable to containment spray or condensation effects) following an initial pressure rise indicates a loss of containment integrity. USAR Section 14.3.4.2 describes containment pressure response for a bounding LOCA. [Ref. 17]

Containment pressure and sump levels should rise as a result of the mass and energy release into containment from a LOCA. Thus, sump level or pressure not increasing indicates containment bypass and a loss of containment integrity.

The 46 PSIG for potential loss of containment is based on the containment design pressure. [Ref. 15, 16, 17]

If hydrogen concentration reaches or exceeds 6% in an oxygen rich environment, an explosive mixture exists. If the combustible mixture ignites inside containment, loss of the Containment barrier could occur. To generate such levels of combustible gas, loss of the Fuel Cladding and RCS barriers must also have occurred As described above, this EAL is primarily a discriminator between Site Emergency and General Emergency representing a potential loss of the third barrier. [Ref. 6, 18]

The third potential loss EAL represents a potential loss of containment in that the containment heat removal/depressurization system (but not including containment venting strategies) are either lost or performing in a degraded manner, as indicated by containment pressure greater than the setpoint (23 psig) at which the equipment was supposed to have actuated. One internal containment spray pump and two containment fan cooler units comprise one train of depressurization equipment. This equipment will provide 100% of the required cooling capacity during post-accident conditions. Each internal containment spray system consists of a spray pump, spray header, nozzles, valves, piping, instruments, and controls to ensure an operable flow path capable of taking suction from the RWST upon an ESF actuation signal. Each containment fan cooler unit consists of cooling coils, accident backdraft damper, accident fan, service water outlet valves, and controls necessary to ensure an operable service water flow path. [Ref. 15, 16, 19, 20, 21]

3. Core Exit Thermocouples

There is no "Loss" EAL associated with this item.

In this EAL, the function restoration procedures are those emergency operating procedures that address the recovery of the core cooling critical safety functions. The procedure is considered effective if the temperature is decreasing or if the vessel water level is increasing.

Severe accident analyses (e.g., NUREG-1150) have concluded that function restoration procedures can arrest core degradation within the reactor vessel in a significant fraction of the core damage scenarios, and that the likelihood of containment failure is very small in these events. Given this, it is appropriate to provide a reasonable period to allow function restoration procedures to arrest the core melt sequence. Whether or not the procedures will be effective should be apparent within 15 minutes. The Emergency Director should make the declaration as soon as it is determined that the procedures have been, or will be ineffective.

RVLIS void fraction increasing and RCS subcooling less than or equal to 30°F [65°F] is indicative of core uncovery. When the reactor is at pressure and temperature, RVLIS should not be used for a quantitative value (i.e., top of active fuel). Function restoration procedure FR-C.2 specifies monitoring of RVLIS void fraction trend and RCS subcooling instead of the water level corresponding to the top of active fuel. This is defined by the Core Cooling - ORANGE path. The trend in RVLIS RCS void fraction is used to check the effectiveness of safety injection in restoring RCS inventory. If void fraction percent is decreasing and RCS subcooling based on Core Exit Thermocouples (CETs) is greater than 30°F [65°F], safety injection has been successful in restoring RCS inventory and core cooling. In the event that RCS void fraction is increasing and subcooling requirements are not met, core cooling continues to be degraded and some fuel cladding damage may occur. Setpoints enclosed in brackets are used under adverse containment conditions. Adverse containment condition thresholds apply when containment pressure is greater than 4 psig or containment radiation exceeds 10E+05 R/hr.

The conditions in this potential loss EAL represent an imminent core melt sequence which, if not corrected, could lead to vessel failure and an increased potential for containment failure. In conjunction with the Core Cooling and Heat Sink criteria in the Fuel and RCS barrier columns, this EAL would result in the declaration of a General Emergency -- loss of two barriers and the potential loss of a third. If the function restoration procedures are ineffective, the Operating Crew will be directed to go to Severe Accident Management Guidelines (SACRG-1). [Ref. 1, 6, 7]

There is no "Loss" EAL associated with this item.

4. SG Secondary Side Release With Primary To Secondary Leakage

This "loss" EAL recognizes that SG tube leakage can represent a bypass of the containment barrier as well as a loss of the RCS barrier. The first "loss" EAL addresses the condition in which a RUPTURED steam generator is also FAULTED. This condition represents a bypass of the RCS and containment barriers. In conjunction with RCS Barrier "loss" EAL #3, this would always result in the declaration of a Site Emergency. A faulted S/G means the existence of secondary side leakage that results in an uncontrolled lowering in steam generator pressure or the steam generator being completely depressurized. A ruptured S/G means the existence of primary-to-secondary leakage of a magnitude sufficient to require or cause a reactor trip and safety injection. Confirmation should be based on diagnostic activities consistent with E-0, Reactor Trip or Safety Injection. [Ref. 14]

The second "loss" EAL addresses SG tube leaks that exceed 10 gpm in conjunction with a nonisolable release path to the environment from the affected steam generator. The threshold for establishing the nonisolable secondary side release is intended to be a prolonged release of radioactivity from the RUPTURED steam generator directly to the environment. This could be expected to occur when the main condenser is unavailable to accept the contaminated steam (i.e., SGTR with concurrent loss of offsite power and the RUPTURED steam generator is required for plant cooldown or a stuck open relief valve). If the main condenser is available, there may be releases via air ejectors, gland seal exhausters, and other similar controlled, and often monitored, pathways. These pathways do not meet the intent of a nonisolable release path to the environment. These minor releases are assessed using Abnormal Rad Levels / Radiological Effluent ICs.

A pressure boundary leakage of 10 gpm is used as the threshold in IC SU5.1, RCS Leakage, and is deemed appropriate for this EAL. For smaller breaks, not exceeding the normal charging capacity threshold in RCS Barrier "Potential Loss" EAL #2 (RCS Leak Rate) or not resulting in ECCS actuation in EAL #3 (SG Tube Rupture), this EAL results in a UE. For larger breaks, RCS barrier EALs #2 and #3 would result in an Alert. For SG tube ruptures which may involve multiple steam generators or unisolable secondary line breaks, this EAL would exist in conjunction with RCS barrier "Loss" EAL #3 and would result in a Site Emergency. Escalation to General Emergency would be based on "Potential Loss" of the Fuel Clad Barrier.

5. Containment Isolation Valve Status After Containment Isolation

This EAL is intended to address incomplete containment isolation that allows direct release to the environment. It represents a loss of the containment barrier.

The use of the modifier "direct" in defining the release path clarifies that release paths through interfacing liquid systems is not applicable to this EAL. The existence of an in-line charcoal filter does not make a release path indirect since the filter is not effective at removing fission noble gases. Typical filters have an efficiency of 95-99% removal of iodine. Given the magnitude of the core inventory of iodine, significant releases could still occur. In addition, since the fission product release would be driven by boiling in the reactor vessel, the high humidity in the release stream can be expected to render the filters ineffective in a short period.

There is no "Potential Loss" EAL associated with this item.

6. Significant Radioactive Inventory in Containment

There is no "Loss" EAL associated with this item.

The4000 R/hr reading is a value which indicates significant fuel damage well in excess of the EALs associated with both loss of Fuel Clad and loss of RCS Barriers. [Ref. 8, 9, 10] A major release of radioactivity requiring offsite protective actions from core damage is not possible unless a major failure of fuel cladding allows radioactive material to be released from the core into the reactor coolant.

Regardless of whether containment is challenged, this amount of activity in containment, if released, could have such severe consequences that it is prudent to treat this as a potential loss of containment, such that a General Emergency declaration is warranted. NUREG-1228, "Source Estimations During Incident Response to Severe Nuclear Power Plant Accidents," indicates that such conditions do not exist when the amount of clad damage is less than 20%.

Monitors used for this fission product barrier loss threshold are the containment high-range area monitors R-40 and R-41.

7. Emergency Director Judgment

This EAL addresses any other factors that are to be used by the Emergency Director in determining whether the Containment barrier is lost or potentially lost. Such a determination should include imminent barrier degradation, barrier monitoring capability and dominant accident sequences.

- <u>Imminent barrier degradation</u> exists if the degradation will likely occur within two hours based on a projection of current safety system performance. The term "imminent" refers to recognition of the inability to reach safety acceptance criteria before completion of all checks.
- <u>Barrier monitoring</u> capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of offsite monitoring results.
- <u>Dominant accident sequences</u> lead to degradation of all fission product barriers and likely entry to the CSFSTs. The Emergency Director should be mindful of the Loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

In addition, the inability to monitor the barrier should also be incorporated in this EAL as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost.

KNPP Basis Reference(s):

- 1. F-0.2 Core Cooling, Rev. F
- 2. FR-C.2 Response to Degraded Core Cooling, Rev. M
- 3. E-0 QRF Quick Reference Foldout, Section E-0, Rev. H
- 4. F-0.3 Heat Sink, Rev. E
- 5. FR-H.1 Response to Loss of Secondary Heat Sink, Rev. T
- 6. FR-C.1 Response to Inadequate Core Cooling, Rev. N
- 7. BKG FR-C.2 Response to Degraded Core Cooling, Rev. B
- 8. EPIP-TSC-09A Core Damage Assessment, Rev. K
- 9. C11617, Determination of Containment Radiation Monitor EALs, Rev 0
- 10. F-0.4 Integrity, Rev. E
- 11. FR-P-1 Response to Imminent Pressurized Thermal Shock, Rev. P
- 12. USAR Section 9.2.2, Rev. 18
- 13. E-0 Reactor Trip or Safety Injection, Rev. V
- 14. F-0.5 Containment, Rev. F
- 15. FR-Z.1 Response to High Containment Pressure, Rev. L
- 16. USAR Section 14.3.4.2, Rev. 18
- 17. N-RBV-18C POST-LOCA Hydrogen Control, Rev. K
- 18. Annunciator 47021F Containment Spray Activated, Rev. A
- 19. N-CCI-56A-CLA Reduced Inventory Cntmt Integrity Checklist SG Secondary Side Intact, Rev. K
- 20. Technical Specifications LCO 3.3.c, Amendment No. 172
- 21. EOP Setpoints, Rev. 8/31/90
- 22. A-RC-36D Reactor Coolant Leak, Rev. AE

TABLE H-0

Recognition Category H

Hazards and Other Conditions Affecting Plant Safety

INITIATING CONDITION MATRIX

UE		ALERT		S	SITE AREA EMERGENCY		GENERAL EMERGENCY		
HU1	Natural and Destructive Phenomena Affecting the PROTECTED AREA. Op. Modes: All	HA1	Natural and Destructive Phenomena Affecting the Plant VITAL AREA. <i>Op. Modes: All</i>						
HU2	FIRE Within PROTECTED AREA Boundary Not Extinguished Within 15 Minutes of Detection. Op. Modes: All	HA2	FIRE or EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown. <i>Op. Modes: All</i>						
HU3	Release of Toxic or Flammable Gases Deemed Detrimental to Operation of the Plant. <i>Op. Modes: All</i>	HA3	Release of Toxic or Flammable Gases Within or Contiguous to a VITAL AREA Which Jeopardizes Operation of Systems Required to Establish or Maintain Safe Shutdown. Op. Modes: All						
HU4	Confirmed Security Event Which Indicates a Potential Degradation in the Level of Safety of the Plant. Op. Modes: All	HA4	Confirmed Security Event in a Plant PROTECTED AREA. <i>Op. Modes: All</i>	HS1	Confirmed Security Event in a Plant VITAL AREA. <i>Op. Modes: All</i>	HG1	Security Event Resulting in Loss Of Physical Control of the Facility. <i>Op. Modes: All</i>		
HU5	Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of a UE. <i>Op. Modes: All</i>	HA6	Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of an Alert. <i>Op. Modes: All</i>	HS3	Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of Site Area Emergency. <i>Op. Modes: All</i>	HG2	Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of General Emergency. Op. Modes: All		
		HA5	Control Room Evacuation Has Been Initiated. <i>Op. Modes: All</i>	HS2	Control Room Evacuation Has Been Initiated and Plant Control Cannot Be Established. Op. Modes: All				

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Initiating Condition – UNUSUAL EVENT

Natural and Destructive Phenomena Affecting the PROTECTED AREA.

Operating Mode Applicability: All

Emergency Action Level: (HU1.1 or HU1.2 or HU1.3 or HU1.4 or HU1.5 or HU1.6 or HU1.7)

HU1.1. Earthquake felt in plant as indicated by:

Consensus of Control Room operators on duty **AND** Activation of seismic monitor with Trigger light lit in Relay Room on RR159 (SER 330 Seismic Monitor Event)

- HU1.2. Report by plant personnel of tornado or high winds GREATER THAN 100 mph striking within PROTECTED AREA boundary.
- HU1.3. Vehicle crash into plant structures containing functions and systems required for safe shutdown of the plant within the PROTECTED AREA boundary.
- HU1.4. Report by plant personnel of an unanticipated EXPLOSION within PROTECTED AREA boundary resulting in VISIBLE DAMAGE to permanent structure or equipment.
- HU1.5. Report of turbine failure resulting in casing penetration or damage to turbine or generator seals.
- HU1.6. Uncontrolled flooding in the following areas of the plant that has the potential to affect safety related equipment needed for the current operating mode:
 - Diesel Generator A Room
 - Diesel Generator B Room
 - Safeguards Alley
 - Relay Room
 - CRDM Equipment Room
 - RHR Pump Pits
 - Auxiliary Building Basement
 - Screen House
- HU1.7. High or low lake level in excess of column "Unusual Event", Lake-Forebay Level Thresholds, Table H-2 for GREATER THAN 15 minutes.

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Т	Table H-2 Lake-Forebay Level Thresholds (GREATER THAN 15 min.)									
Unusual Event					Ale	rt				
Level	Number of Running Circulating Water Pumps			Level	Number of Running Circulating Water Pumps					
	0	1	2		0	1	2			
High GREATER THAN OR EQUAL TO 586.0 ft	Above bottom of bar #2 on south wall	GREATER THAN OR EQUAL TO 98%*	GREATER THAN OR EQUAL TO 88%*	High GREATER , THAN OR EQUAL TO 589.9 ft	Above bottom of bar #3 on south wall	Above bottom of bar #1 on south wall	GREATER THAN OR EQUAL TO 94%*			
Low LESS THAN 569.5 ft	LESS THAN 53.1%*	LESS THAN 46.9%*	• N/A	Low LESS THAN 568.5 ft	LESS THAN 50.0%*	N/A	N/A			

* Computer point L9075A

Basis:

UEs in this IC are categorized on the basis of the occurrence of an event of sufficient magnitude to be of concern to plant operators. Areas identified in the EALs define the location of the event based on the potential for damage to equipment contained therein. Escalation of the event to an Alert occurs when the magnitude of the event is sufficient to result in damage to equipment contained in the specified location.

HU1.1. Damage may be caused to some portions of the site, but should not affect ability of safety functions to operate. Method of detection is based on instrumentation, or operator assessment [Ref. 1, 2]. Consensus of the Control Room operators with respect to ground motion helps avoid unnecessary classification if the seismic switches inadvertently trip or detect vibrations not related to an earthquake. As defined in the EPRI-sponsored "Guidelines for Nuclear Plant Response to an Earthquake", dated October 1989, a *"felt earthquake"* is:

An earthquake of sufficient intensity such that: (a) the vibratory ground motion is felt at the nuclear plant site and recognized as an earthquake based on a consensus of control room operators on duty at the time, and (b) for plants with operable seismic instrumentation, the seismic switches of the plant are activated. For most plants with seismic instrumentation, the seismic switches are set at an acceleration of about 0.01g.

HU1.2 is based on the assumption that a tornado striking (touching down) or high winds within the PROTECTED AREA may have potentially damaged plant structures containing functions or systems required for safe shutdown of the plant. The high wind value is based on site-specific FSAR design basis [Ref. 3]. If such damage is confirmed visually or by other in-plant indications, the event may be escalated to Alert. Even though the meteorological towers are outside of the Protected Area, winds in excess of 100 mph detected there can be assumed to be inside of the Protected Area.

HU1.3 is intended to address crashes of vehicle types large enough to cause significant damage to plant structures containing functions and systems required for safe shutdown of the plant [Ref. 4]. If the crash is confirmed to affect a plant VITAL AREA, the event may be escalated to Alert.

For HU1.4 only those EXPLOSIONs of sufficient force to damage permanent structures or equipment within the PROTECTED AREA should be considered [Ref. 4]. No attempt is made in this EAL to assess the actual magnitude of the damage. The occurrence of the EXPLOSION with reports of evidence of damage is sufficient for declaration. The Emergency director also needs to consider any security aspects of the EXPLOSION, if applicable.

HU1.5 is intended to address main turbine rotating component failures of sufficient magnitude to cause observable damage to the turbine casing or to the seals of the turbine generator. Of major concern is the potential for leakage of combustible fluids (lubricating oils) and gases (hydrogen cooling) to the plant environs. Actual FIREs and flammable gas build up are appropriately classified via HU2 and HU3. Generator seal damage observed after generator purge does not meet the intent of this EAL because it did not impact normal operation of the plant. This EAL is consistent with the definition of a UE while maintaining the anticipatory nature desired and recognizing the risk to non-safety related equipment. Escalation of the emergency classification is based on potential damage done by missiles generated by the failure or in conjunction with a steam generator tube rupture. These latter events would be classified by the radiological ICs or Fission Product Barrier ICs.

HU1.6 addresses the effect of flooding caused by internal events such as component failures, equipment misalignment, or outage activity mishaps. The listed internal flooding areas are those vulnerable areas indicated in the KNPP PRA that, should significant internal flooding occur (such as a Service Water or Circulating Water pipe rupture), could impact areas that contain systems required for safe shutdown of the plant that are not designed to be wetted or submerged [Ref. 5]. Escalation of the emergency classification is based on the damage caused or by access restrictions that prevent necessary plant operations or systems monitoring.

HU1.7 covers high lake (forebay) water level conditions that could be a precursor of more serious events as well as low lake (forebay) water level conditions which may threaten operability of plant cooling systems. Lake water level greater than or equal to 586 ft. International Great Lakes Datum (IGLD) corresponds to the floor elevation of the Service Water Pump Room and access tunnel. Lake water level less than 569.5 ft IGLD corresponds to one foot below the Alert (design) threshold [Ref. 6, 7, 8].

KNPP does not have instrumentation for taking direct readings of the lake level. However the intake forebay level is monitored for this purpose. When no circulating water pumps are operating, the intake forebay level is equal to lake level. However, when the Circulating Water Pumps are operating forebay level is reduced compared to actual lake level due to the hydraulic resistance of the plant intake. KNPP has correlated the intake forebay level with actual lake level when either one or both Circulating Water Pumps are operating, adjusting the EAL thresholds accordingly. In most cases the Circulating Water Pumps will trip (42% indicated forebay level) prior to exceeding the forebay level that corresponds to the low lake level threshold.

The classification should be declared if the threshold is exceeded for greater than 15 minutes. This allows for short duration dynamic effects associated with the KNPP forebay and will avoid unnecessary event declaration due to shifting of Circulating Water Pumps and other dynamic effects in the forebay.

The International Great Lakes Datum (IGLD 1955) is a reference used to represent water levels in the Great Lakes region.

KNPP Basis Reference(s):

- 1. USAR Table 5.2-1 Allowable Stress Criteria Reactor Containment Vessel, Rev. 16
- 2. Alarm Response procedure 47023-K Seismic Trouble Beta Window Box #02-K3, Rev. E
- 3. USAR Section 5.2.2 Shield Building Design Wind Load, Rev. 16
- 4. Drawing A-449 Plan of Plant Area, Fence, Lighting and CCTV Support, Rev. F
- 5. KNPP PRA Section 7.0 Internal Flooding Analysis Workbook, Rev. 0401
- 6. USAR Section 2.6 Hydrology, Rev. 18
- 7. Alarm Response Procedure 47051-N Forebay Level Low Beta Window Box #05-N1, Rev. C
- KNPP Safety Evaluation Review for Kewaunee Proposed EAL Changes (TAC No. MB1860) 8/22/2001

Initiating Condition – UNUSUAL EVENT

FIRE Within PROTECTED AREA Boundary Not Extinguished Within 15 Minutes of Detection.

Operating Mode Applicability: All

Emergency Action Level:

HU2.1. FIRE in the PROTECTED AREA not extinguished within 15 minutes of control room notification or verification of a control room alarm

Basis:

The purpose of this IC is to address the magnitude and extent of FIREs that may be potentially significant precursors to damage to safety systems. As used here, detection is visual observation and report by plant personnel or sensor alarm indication. The 15 minute time period begins with a credible notification that a FIRE is occurring, or indication of a VALID fire detection system alarm. An alarm is assumed to be an indication of a FIRE unless it is disproved within the 15 minute period by personnel dispatched to the scene. In other words, a personnel report from the scene may be used to disprove a sensor alarm if received within 15 minutes of the alarm, but shall not be required to verify the alarm.

The intent of this 15 minute duration is to size the FIRE and to discriminate against small FIREs that are readily extinguished (e.g., smoldering waste paper basket). The applicable areas are limited and apply to buildings and areas contiguous (in actual contact with or immediately adjacent) to plant VITAL AREAs or other significant buildings or areas.

Escalation to a higher emergency class is by IC HA2, "FIRE or EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown".

KNPP Basis Reference(s):

- 1. KNPP Fire Protection Program Plan Section 5.19, Rev. 5
- 2. Drawing A-449 Plan of Plant Area, Fence, Lighting and CCTV Support, Rev. F

Initiating Condition – UNUSUAL EVENT

Release of Toxic or Flammable Gases Deemed Detrimental to Normal Operation of the Plant.

Operating Mode Applicability: All

Emergency Action Levels: (HU3.1 or HU3.2)

- HU3.1. Report or detection of toxic or flammable gases that has or could enter the site area boundary in amounts that can affect NORMAL PLANT OPERATIONS.
- HU3.2. Report by Local, County or State Officials for evacuation or sheltering of site personnel based on an offsite event.

Basis:

This IC is based on the existence of uncontrolled releases of toxic or flammable gas that may enter the site boundary and affect normal plant operations. It is intended that releases of toxic or flammable gases are of sufficient quantity, and the release point of such gases is such that normal plant operations would be affected. This would preclude small or incidental releases, or releases that do not impact structures needed for plant operation. The EALs are intended to not require significant assessment or quantification. The IC assumes an uncontrolled process that has the potential to affect plant operations, or personnel safety.

Escalation of this EAL is via HA3, which involves a quantified release of toxic or flammable gas affecting VITAL AREAs.

KNPP Basis Reference(s):

None

Initiating Condition – UNUSUAL EVENT

Confirmed Security Event Which Indicates a Potential Degradation in the Level of Safety of the Plant.

Operating Mode Applicability: All

Emergency Action Levels: (HU4.1 or HU4.2)

HU4.1. Security Shift Supervisor reports ANY of the following:

- Suspected sabotage device discovered within the plant PROTECTED AREA
- Suspected sabotage device discovered outside the PROTECTED AREA or in the plant switchyard
- Confirmed tampering with safety-related equipment
- A hostage or extortion situation that disrupts NORMAL PLANT OPERATIONS
- Civil disturbance or strike which disrupts NORMAL PLANT OPERATIONS
- Internal disturbance that is <u>not</u> a short lived or that is not a harmless outburst involving ANY individuals within the PROTECTED AREA
- Malevolent use of a vehicle outside the PROTECTED AREA which disrupts normal plant operations

HU4.2 A credible site specific security threat notification

Basis:

Reference is made to the Security Shift Supervisor because this individual is the designated person on-site qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict secrecy controls placed on the plant Safeguards Contingency Plan.

HU4.1 is based on the Security And Safeguards Contingency Plan. Security events which do not represent a potential degradation in the level of safety of the plant, are reported under 10 CFR 73.71 or in some cases under 10 CFR 50.72. Examples of security events that indicate Potential Degradation in the Level of Safety of the Plant are provided below for consideration.

INTRUSION into the plant PROTECTED AREA by a HOSTILE FORCE would result in EAL escalation to an ALERT or higher.

The intent of HU4.2 is to ensure that appropriate notifications for the security threat are made in a timely manner. Only the plant to which the specific threat is made need declare the Unusual Event.

The determination of "credible" is made through use of information found in the Security And Safeguards Contingency Plan.
A credible site specific security threat is a threat of physical attack to the plant that represents a potential degradation of the level of safety to the plant.

A higher initial classification could be made based upon the nature and timing of the threat and potential consequences. The licensee shall consider upgrading the emergency response status and emergency classification in accordance with the Security And Safeguards Contingency Plan and Emergency Plans.

- 1. NRC Safeguards Advisory 10/6/01
- 2. Security And Safeguards Contingency Plan
- 3. Letter from Mr. B. A. Boger (NRC) to Ms. Lynette Hendricks (NEI) dated 2/4/02

Initiating Condition – UNUSUAL EVENT

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of a UE.

Operating Mode Applicability: All

Emergency Action Level:

HU5.1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in process or have occurred which indicate a potential degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

Basis:

This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the UE emergency class.

From a broad perspective, one area that may warrant Emergency Director judgment is related to likely or actual breakdown of site-specific event mitigating actions. Examples to consider include inadequate emergency response procedures, transient response either unexpected or not understood, failure or unavailability of emergency systems during an accident in excess of that assumed in accident analysis, or insufficient availability of equipment and/or support personnel.

KNPP Basis Reference(s):

None

HA1

Initiating Condition – ALERT

Natural and Destructive Phenomena Affecting the Plant VITAL AREA.

Operating Mode Applicability:	All
Emergency Action Levels:	(HA1.1 or HA1.2 or HA1.3 or HA1.4 or HA1.5)

- HA1.1. Seismic event GREATER THAN Operating Basis Earthquake (OBE) as indicated by activation of seismic monitor with OBE Limit Exceeded light lit in Relay Room on RR159 (SER 331 Seismic Monitor Operational Basis Earthquake)
- HA1.2. Tornado or high winds GREATER THAN 100 mph within PROTECTED AREA boundary and resulting in VISIBLE DAMAGE to any plant structures or equipment located in Table H-1 areas or Control Room indication of degraded performance of those systems located within Table H-1 areas.

	Table H-1 Safe Shutdown/VITAL Areas
•	Shield Building (Reactor Building)
٠	Auxiliary Building
•	Safeguards Alley
•	Diesel Generator Rooms (includes "A" Diesel Room to Screen House Tunnel)
•	Screenhouse/Forebay
•	Technical Support Center Basement
•	Control Room
•	Control Room AC Equipment Room
•	Relay Room
•	Safeguards Battery Rooms

- HA1.3. Vehicle crash within PROTECTED AREA boundary and resulting in VISIBLE DAMAGE to any plant structures or equipment located in Table H-1 areas or Control Room indication of degraded performance of those systems located within Table H-1 areas.
- HA1.4. Turbine failure-generated missiles result in any VISIBLE DAMAGE to or penetration of any plant areas listed in Table H-1:
- HA1.5. Uncontrolled flooding in the following areas of the plant that results in degraded safety system performance as indicated in the control room or that creates industrial safety

hazards (e.g., electric shock) that precludes access necessary to operate or monitor safety equipment:

- Diesel Generator A Room
- Diesel Generator B Room
- Safeguards Alley
- Relay Room
- CRDM Equipment Room
- RHR Pump Pits
- Auxiliary Building basement
- Screen House

HA1.6. High or low lake level in excess of column "Alert", Lake-Forebay Level Thresholds, Table H-2 for GREATER THAN 15 minutes.

]	Table H-2	Lake-Fore	bay Level '	Thresholds (C	GREATER TH	HAN 15 min.	
Unusual Event				Alert			
Level	Number of Running Circulating Water Pumps		Level	Number of Running Circulating Water Pumps			
	0	1	2 ·		0	1	2
High GREATER THAN OR EQUAL TO 586.0 ft	Above bottom of bar #2 on south wall	GREATER THAN OR EQUAL TO 98%*	GREATER THAN OR EQUAL TO 88%*	High GREATER THAN OR EQUAL TO 589.9 ft	Above bottom of bar #3 on south wall	Above bottom of bar #1 on south wall	GREATER THAN OR EQUAL TO 94%*
Low LESS THAN 569.5 ft	LESS THAN 53.1%*	LESS THAN 46.9%*	N/A	Low LESS THAN 568.5 ft	LESS THAN 50.0%*	N/A	N/A

* Computer point L9075A

Basis:

The EALs in this IC escalate from the UE EALs in HU1 in that the occurrence of the event has resulted in VISIBLE DAMAGE to plant structures or areas containing equipment necessary for a safe shutdown, or has caused damage to the safety systems in those structures evidenced by control indications of degraded system response or performance. The occurrence of VISIBLE DAMAGE and/or degraded system response is intended to discriminate against lesser events. The initial "report" should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this EAL to assess the actual magnitude of the damage. The significance here is not that a particular system or structure was damaged, but rather, that the event was of sufficient magnitude to cause this degradation. Escalation to higher classifications occurs on the basis of other ICs (e.g., System Malfunction).

HA1.1 is based on the USAR design basis operating earthquake of 0.06 g horizontal or 0.04 g vertical acceleration. Seismic events of this magnitude can result in a plant VITAL AREA being

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subjected to forces beyond design limits, and thus damage may be assumed to have occurred to plant safety systems. [Ref. 1, 2]

HA1.2 is based on the FSAR design basis wind speed of 100 mph [Ref. 3, 4, 5]. Wind loads of this magnitude can cause damage to safety functions.

HA1.3 is intended to address crashes of vehicle types large enough to cause significant damage to plant structures containing functions and systems required for safe shutdown of the plant.

HA1.4 is intended to address the threat to safety related equipment imposed by missiles generated by main turbine rotating component failures. Table H-1 lists areas that contain systems and components required for the safe shutdown functions of the plant.. This EAL is, therefore, consistent with the definition of an ALERT in that if missiles have damaged or penetrated areas containing safety-related equipment the potential exists for substantial degradation of the level of safety of the plant.

HA1.5 addresses the effect of internal flooding that has resulted in degraded performance of systems affected by the flooding, or has created industrial safety hazards (e.g., electrical shock) that preclude necessary access to operate or monitor safety equipment. The inability to operate or monitor safety equipment represents a potential for substantial degradation of the level of safety of the plant. This flooding may have been caused by internal events such as component failures, equipment misalignment, or outage activity mishaps. The listed internal flooding areas are those vulnerable areas indicated in the KNPP PRA that should significant internal flooding occur (such as a Service Water or Circulating Water pipe rupture), could impact areas that contain systems required for safe shutdown of the plant that are not designed to be wetted or submerged. [Ref. 6, 7]. . HA1.6 covers flooding or seiche. This EAL can be a precursor of more serious events. Lake water level greater than or equal to 588 ft International Great Lakes Datum (IGLD) corresponds to levels approaching design limits which if exceeded threatens operability of safety related equipment. Lake water level less than 568.5 ft IGLD corresponds to design levels (with added conservatism) to ensure Service Water Pumps have adequate NPSH and that vortexing does not occur [Ref. 8, 9].

KNPP does not have instrumentation for taking direct readings of the lake level. However the intake forebay level is monitored for this purpose. When no circulating water pumps are operating, the intake forebay level is equivalent to lake level. However, when the Circulating Water Pumps are operating forebay level is reduced compared to actual lake level due to the hydraulic resistance of the plant intake. KNPP has correlated the intake forebay level with actual lake level when either one or both Circulating Water Pumps are operating, adjusting the EAL thresholds accordingly. In most cases the Circulating Water Pumps will trip (42% indicated forebay level) prior to exceeding the forebay level that corresponds to the low lake level threshold.

The classification should be declared if the threshold is exceeded for greater than 15 minutes. This allows for short duration dynamic effects associated with the KNPP forebay and will avoid unnecessary event declaration due to shifting of Circulating Water Pumps and other dynamic effects in the forebay.

The International Great Lakes Datum (IGLD 1955) is a reference used to represent water levels in the Great Lakes region.

- 1. USAR Table 5.2-1 Allowable Stress Criteria Reactor Containment Vessel, Rev. 16
- 2. Alarm Response procedure 47023-K Seismic Trouble Beta Window Box #02-K3, Rev. E
- 3. USAR Section 5.2.2 Shield Building Design Wind Load, Rev. 16
- 4. KNPP Fire Protection Program Plan Section 5.19, Rev. 5
- 5. Drawing A-449 Plan of Plant Area, Fence, Lighting and CCTV Support, Rev. F
- 6. E-CW-04 Loss of Circulating Water, Rev. V
- 7. KNPP PRA Section 7.0 Internal Flooding Analysis Workbook, Rev. 0401
- 8. USAR Section 2.6 Hydrology, Rev. 18
- KNPP Safety Evaluation Review for Kewaunee Proposed EAL Changes (TAC No. MB1860) 8/22/2001

Initiating Condition – ALERT

FIRE or EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown.

Operating Mode Applicability: All

Emergency Action Level:

HA2.1. FIRE or EXPLOSION in any of the following areas (Table H-1):

Table I	H-1 Safe Shutdown/VITAL Areas
Shield	d Building (Reactor Building)
Auxili	ary Building
Safeg	juards Alley
Diese Scree	el Generator Rooms (includes "A" Diesel Room to en House Tunnel)
Scree	enhouse/Forebay
Techr	nical Support Center Basement
Contr	ol Room
Contr	ol Room AC Equipment Room
Relay	/ Room
Safeg	guards Battery Rooms

AND

Affected safety system parameter indications show degraded performance or plant personnel report VISIBLE DAMAGE to permanent structures or equipment needed for safe shutdown.

Basis:

These areas contain systems and components required for the safe shutdown functions of the plant. The KNPP safe shutdown analyses were consulted for equipment and plant areas required for the applicable mode. This will make it easier to determine if the FIRE or EXPLOSION is potentially affecting one or more redundant trains of safety systems [Ref. 1, 2]. Escalation to a higher emergency class, if appropriate, will be based on System Malfunction, Fission Product Barrier Degradation, Abnormal Rad Levels / Radiological Effluent, or Emergency Director Judgment ICs.

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This EAL addresses a FIRE / EXPLOSION and not the degradation in performance of affected systems. System degradation is addressed in the System Malfunction EALs. The reference to damage of systems is used to identify the magnitude of the FIRE / EXPLOSION and to discriminate against minor FIREs / EXPLOSIONs. The reference to safety systems is included to discriminate against FIREs / EXPLOSIONs in areas having a low probability of affecting safe operation. The significance here is not that a safety system was degraded but the fact that the FIRE / EXPLOSION was large enough to cause damage to these systems. Thus, the designation of a single train was intentional and is appropriate when the FIRE / EXPLOSION is large enough to affect more than one component.

This situation is not the same as removing equipment for maintenance that is covered by a plant's Technical Specifications. Removal of equipment for maintenance is a planned activity controlled in accordance with procedures and, as such, does not constitute a substantial degradation in the level of safety of the plant. A FIRE / EXPLOSION is an UNPLANNED activity and, as such, does constitute a substantial degradation in the level of safety of the plant. In this situation, an Alert classification is warranted.

The inclusion of a "report of VISIBLE DAMAGE" should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this EAL to assess the actual magnitude of the damage. The occurrence of the EXPLOSION with reports of evidence of damage is sufficient for declaration. The declaration of an Alert and the activation of the Technical Support Center will provide the Emergency Director with the resources needed to perform these damage assessments. The Emergency Director also needs to consider any security aspects of the EXPLOSIONs, if applicable.

- 1. KNPP Fire Protection Program Plan Section 5.19, Rev. 5
- 2. Drawing A-449 Plan of Plant Area, Fence, Lighting and CCTV Support, Rev. F

HA3

Initiating Condition -- ALERT

Release of Toxic or Flammable Gases Within or Contiguous to a VITAL AREA Which Jeopardizes Operation of Systems Required to Maintain Safe Operations or Establish or Maintain Safe Shutdown.

Operating Mode Applicability: All

Emergency Action Levels: (HA3.1 or HA3.2)

HA3.1. Report or detection of toxic gases within or contiguous to a Safe Shutdown/VITAL AREA (Table H-1) in concentrations that may result in an atmosphere IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH).

	Table H-1 Safe Shutdown/VITAL Areas	
•	Shield Building (Reactor Building)	
•	Auxiliary Building	
•	Safeguards Alley	
•	Diesel Generator Rooms (includes "A" Diesel Room to Screen House Tunnel)	
•	Screenhouse/Forebay	
•	Technical Support Center Basement	
•	Control Room	
•	Control Room AC Equipment Room	
•	Relay Room	
•	Safeguards Battery Rooms	

HA3.2. Report or detection of gases in concentration greater than the LOWER FLAMMABILITY LIMIT within or contiguous to a Safe Shutdown/VITAL AREA (Table H-1).

Basis:

This IC is based on gases that affect the safe operation of the plant. This IC applies to buildings and areas contiguous (in actual contact with or immediately adjacent) to plant Safe Shutdown/VITAL AREAs or other significant buildings or areas [Ref. 1, 2]. The intent of this IC is not to include buildings (e.g., warehouses) or other areas that are not contiguous or immediately adjacent to plant Safe Shutdown/VITAL AREAs. It is appropriate that increased monitoring be done to ascertain whether consequential damage has occurred. Escalation to a higher emergency class, if appropriate, will be based on System Malfunction, Fission Product Barrier Degradation, Abnormal Rad Levels / Radioactive Effluent, or Emergency Director Judgment ICs.

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HA3.1 is met if measurement of toxic gas concentration results in an atmosphere that is IDLH within a Safe Shutdown/VITAL AREA or any area or building contiguous to Safe Shutdown/VITAL AREA. Exposure to an IDLH atmosphere will result in immediate harm to unprotected personnel, and would preclude access to any such affected areas.

HA3.2 is met when the flammable gas concentration in a Safe Shutdown/VITAL AREA or any building or area contiguous to a Safe Shutdown/VITAL AREA exceed the LOWER FLAMMABILITY LIMIT. Flammable gasses, such as hydrogen and acetylene, are routinely used to maintain plant systems (hydrogen) or to repair equipment/components (acetylene - used in welding). This EAL addresses concentrations at which gases can ignite/support combustion. An uncontrolled release of flammable gasses within a facility structure has the potential to affect safe operation of the plant by limiting either operator or equipment operations due to the potential for ignition and resulting equipment damage/personnel injury. Once it has been determined that an uncontrolled release is occurring, then sampling must be done to determine if the concentration of the released gas is within this range.

- 1. KNPP Fire Protection Program Plan Section 5.19, Rev. 5
- 2. Drawing A-449 Plan of Plant Area, Fence, Lighting and CCTV Support, Rev. F

HA4

Initiating Condition -- ALERT

Confirmed Security Event in a Plant PROTECTED AREA.

Operating Mode Applicability: All

Emergency Action Levels: (HA4.1 or HA4.2)

HA4.1. INTRUSION into the plant PROTECTED AREA by a HOSTILE FORCE.

- HA4.2. Security Shift Supervisor reports any of the following:
 - Sabotage device discovered in the plant PROTECTED AREA
 - Standoff attack on the protected area by a HOSTILE FORCE (i.e., Sniper)
 - ANY Security event of increasing severity that persists for > 30 minutes:
 - Credible bomb threats
 - Hostage / Extortion
 - Suspicious Fire or Explosion
 - Significant Security System Hardware Failure
 - Loss of contact with Security Officers

Basis:

This class of security events represents an escalated threat to plant safety above that contained in the UE. A confirmed INTRUSION report is satisfied if physical evidence indicates the presence of a HOSTILE FORCE within the PROTECTED AREA.

The Security And Safeguards Contingency Plan identifies numerous events/conditions that constitute a threat/compromise to station security. Only those events that involve actual or potential substantial degradation to the level of safety of the plant need to be considered.

INTRUSION into a VITAL AREA by a HOSTILE FORCE will escalate this event to a Site Area Emergency.

Reference is made to Security Shift Supervisor because this individual is the designated person on-site qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict secrecy controls placed on the plant Physical Security Plan.

- 1. NRC Safeguards Advisory 10/6/01
- 2. Security And Safeguards Contingency Plan
- 3. Letter from Mr. B. A. Boger (NRC) to Ms. Lynette Hendricks (NEI) dated 2/4/02
- 4. Physical Security Plan

HA5

Initiating Condition -- ALERT

Control Room Evacuation Has Been Initiated.

Operating Mode Applicability: All

Emergency Action Level:

HA5.1. Entry into E-O-06, Fire in Alternate Fire Zone for control room evacuation.

Basis:

With the control room evacuated, additional support, monitoring and direction through the Technical Support Center and/or other emergency response facility is necessary. E-O-06, Fire in Alternate Fire Zone, provides specific instructions for evacuating the Control Room/Building and establishing plant control at the Dedicated Shutdown Panel and in alternate locations. Inability to establish plant control from outside the control room will escalate this event to a Site Area Emergency.

KNPP Basis Reference(s):

1. E-O-06, Fire in Alternate Fire Zone, Rev. W

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Initiating Condition – ALERT

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of an Alert.

Operating Mode Applicability: All

Emergency Action Level:

HA6.1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in process or have occurred which involve actual or likely potential substantial degradation of the level of safety of the plant. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Basis:

This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the Alert emergency class. Refer to EPIP-AD-19 for EPA Protective Action Guideline exposure levels.

- 1. EPA 400, Manual of Protective Action Guides And Protective Actions For Nuclear Incidents, October 1991
- 2. EPIP-AD-19 Determining Protective Action Recommendations, Rev. T

HS1

Initiating Condition – SITE AREA EMERGENCY

Confirmed Security Event in a Plant VITAL AREA.

Operating Mode Applicability: All

Emergency Action Levels: (HS1.1 or HS1.2)

HS1.1. INTRUSION into the plant VITAL AREA by a HOSTILE FORCE.

HS1.2. Security Supervision reports ANY of the following:

- A security event that results in the loss of control of ANY VITAL AREAS (other than Control Room)
- Imminent loss of physical control of the facility (remote shutdown capability) due to a security event
- A confirmed sabotage discovered in a VITAL AREA

Basis:

This class of security events represents an escalated threat to plant safety above that contained in the Alert IC in that a HOSTILE FORCE has progressed from the PROTECTED AREA to a VITAL AREA.

Consideration is given to the following types of events when evaluating an event against the criteria of the site specific Security Contingency Plan: SABOTAGE and HOSTAGE / EXTORTION. The Safeguards Contingency Plan identifies numerous events/conditions that constitute a threat/compromise to a Station's security. Only those events that involve Actual or Likely Major failures of plant functions needed for protection of the public need to be considered.

Loss of Plant Control would escalate this event to a GENERAL EMERGENCY.

Reference is made to Security Shift Supervisor because this individual is the designated person on-site qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict secrecy controls placed on the plant Physical Security Plan.

- 1. NRC Safeguards Advisory 10/6/01
- 2. Security And Safeguards Contingency Plan
- 3. Letter from Mr. B. A. Boger (NRC) to Ms. Lynette Hendricks (NEI) dated 2/4/02
- 4. Physical Security Plan

Initiating Condition – SITE AREA EMERGENCY

Control Room Evacuation Has Been Initiated and Plant Control Cannot Be Established.

Operating Mode Applicability: All

Emergency Action Level:

HS2.1. Control room evacuation has been initiated.

AND

Control of the plant cannot be established per E-O-06, Fire in Alternate Fire Zone within 15 minutes.

Basis:

Expeditious transfer of safety systems has not occurred but fission product barrier damage may not yet be indicated. The intent of this IC is to capture those events where control of the plant cannot be reestablished in a timely manner. The determination of whether or not control is established at the Dedicated Shutdown Panel is based on Emergency Director (ED) judgment. The ED is expected to make a reasonable, informed judgment within the time for transfer that the operator has control of the plant from the Dedicated Shutdown Panel.

E-O-06, Fire in Alternate Fire Zone, provides specific instructions for evacuating the Control Room/Building and establishing plant control at the Dedicated Shutdown Panel and in alternate locations.

The intent of the EAL is to establish control of important plant equipment and knowledge of important plant parameters in a timely manner. Primary emphasis should be placed on those components and instruments that supply protection for and information about safety functions. Typically, these safety functions are reactivity control (ability to shutdown the reactor and maintain it shutdown), RCS inventory (ability to cool the core), and secondary heat removal (ability to maintain a heat sink).

Escalation of this event, if appropriate, would be by Fission Product Barrier Degradation, Abnormal Rad Levels/Radiological Effluent, or Emergency Director Judgment ICs.

KNPP Basis Reference(s):

1. E-O-06, Fire in Alternate Fire Zone, Rev. W

Initiating Condition – SITE AREA EMERGENCY

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of Site Area Emergency.

Operating Mode Applicability: All

Emergency Action Level:

HS3.1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

Basis:

This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency class description for Site Area Emergency. Refer to EPIP-AD-19 for EPA Protective Action Guideline exposure levels.

- 1. EPA 400, Manual of Protective Action Guides And Protective Actions For Nuclear Incidents, October 1991
- 2. EPIP-AD-19 Determining Protective Action Recommendations, Rev. T

Initiating Condition – GENERAL EMERGENCY

Security Event Resulting in Loss Of Physical Control of the Facility.

Operating Mode Applicability: All

Emergency Action Level:

HG1.1. A HOSTILE FORCE has taken control of plant equipment such that plant personnel are unable to operate equipment required to maintain safety functions as indicated by loss of physical control of EITHER:

A VITAL AREA (including the Control Room) such that operation of equipment required for safe shutdown is lost

OR

Spent fuel pool cooling systems if imminent fuel damage is likely

Basis:

This IC encompasses conditions under which a HOSTILE FORCE has taken physical control of VITAL AREAs (containing vital equipment or controls of vital equipment, including the Control Room) required to maintain safety functions and control of that equipment cannot be transferred to and operated from another location. Typically, these safety functions are reactivity control (ability to shut down the reactor and keep it shutdown) RCS inventory (ability to cool the core), and secondary heat removal (ability to maintain a heat sink). If control of the plant equipment necessary to maintain safety functions can be transferred to another location, then the above initiating condition is not met.

This EAL should also address loss of physical control of spent fuel pool cooling systems if imminent fuel damage is likely (e.g., freshly off-loaded reactor core in pool).

Loss of physical control of the control room or remote shutdown capability may prevent the ability to maintain safety functions.

- 1. NRC Safeguards Advisory 10/6/01
- 2. Security And Safeguards Contingency Plan
- 3. Letter from Mr. B. A. Boger (NRC) to Ms. Lynette Hendricks (NEI) dated 2/4/02
- 4. Physical Security Plan

Initiating Condition – GENERAL EMERGENCY

Other Conditions Existing Which in the Judgment of the Emergency Director Warrant Declaration of General Emergency.

Operating Mode Applicability: All

Emergency Action Level:

HG2.1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

Basis:

This EAL is intended to address unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the General Emergency class. Refer to EPIP-AD-19 for EPA Protective Action Guideline exposure levels.

- 1. EPA 400, Manual of Protective Action Guides And Protective Actions For Nuclear Incidents, October 1991
- 2. EPIP-AD-19 Determining Protective Action Recommendations, Rev. T

Table S-0

Recognition Category S

System Malfunction

INITIATING CONDITION MATRIX

ALERT

busses reduced to a single

power source for GREATER

additional single failure would

Op. Modes: Power Operation.

System Instrumentation to Com-

Protection System Setpoint Has

plete or Initiate an Automatic

Reactor Trip Once a Reactor

Been Exceeded and Manual

Reactor Trip Was Successful,

Op. Modes: Power Operation,

Hot Standby, Hot Shutdown

Hot Standby, Hot Shutdown, Intermediate Shutdown Failure of Reactor Protection

result in station blackout.

SA5

SA2

AC power capability to essential

THAN 15 minutes such that any

SITE AREA EMERGENCY

- SS1 Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses. Op. Modes: Power Operation, Hot Standby, Hot Shutdown, Intermediate Shutdown
- SS2 Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Trip Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Reactor Trip Was NOT Successful. Op. Modes: Power Operation, Hot Standby
- SS4 Complete Loss of Heat Removal Capability. Op. Modes: Power Operation, Hot Standby, Hot Shutdown, Intermediate Shutdown
- SS6 Inability to Monitor a SIGNIFICANT TRANSIENT in Progress. Op. Modes: Power Operation, Hot Standby, Hot Shutdown, Intermediate Shutdown

GENERAL EMERGENCY

- SG1 Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power to Essential Busses. Op. Modes: Power Operation, Hot Standby, Hot Shutdown, Intermediate Shutdown
- SG2 Failure of the Reactor Protection System to Complete an Automatic Reactor Trip and Manual Reactor Trip was NOT Successful and There is Indication of an Extreme Challenge to the Ability to Cool the Core. Op. Modes: Power Operation, Hot Standby

UE

SU1 Loss of All Offsite Power to Essential Busses for GREATER THAN 15 Minutes. Op. Modes: Power Operation, Hot Standby, Hot Shutdown, Intermediate Shutdown

- SU2 Inability to Reach Required Shutdown Within Technical Specification Limits. Op. Modes: Power Operation, Hot Standby, Hot Shutdown, Intermediate Shutdown
- SU3 UNPLANNED Loss of Most or All Safety System Annunciation or Indication in The Control Room for GREATER THAN 15 Minutes Op. Modes: Power Operation, Hot Standby, Hot Shutdown, Intermediate Shutdown
- SA4 UNPLANNED Loss of Most or All Safety System Annunciation or Indication in Control Room With Either (1) a SIGNIFICANT TRANSIENT in Progress, or (2) Compensatory Non-Alarming Indicators are Unavailable. Op. Modes: Power Operation, Hot Standby, Hot Shutdown, Intermediate Shutdown

Recognition Category S

System Malfunction

INITIATING CONDITION MATRIX

SS3 Loss of All Vital DC Power. Op. Modes: Power Operation, Hot Standby, Hot Shutdown, Intermediate Shutdown

- SU4 Fuel Clad Degradation. Op. Modes: Power Operation, Hot Standby, Hot Shutdown, Intermediate Shutdown
- SU5 RCS Leakage. Op. Modes: Power Operation, Hot Standby, Hot Shutdown, Intermediate Shutdown
- SU6 UNPLANNED Loss of All Onsite or Offsite Communications Capabilities. Op. Modes: Power Operation, Hot Standby, Hot Shutdown, Intermediate Shutdown
- SU8 Inadvertent Criticality. Op Modes: Hot Shutdown, Intermediate Shutdown

SU1

Initiating Condition -- UNUSUAL EVENT

Loss of All Offsite Power to Essential Busses for GREATER THAN 15 Minutes.

Operating Mode Applicability:

Power Operation Hot Standby Hot Shutdown Intermediate Shutdown

Emergency Action Level:

SU1.1. Loss of all offsite power to Bus 5 AND Bus 6 for GREATER THAN 15 minutes.

AND

Emergency diesel generators are supplying power to Bus 5 AND Bus 6.

Basis:

Prolonged loss of AC power reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete Loss of AC Power (e.g., Station Blackout). Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

The 4160 VAC system is divided into six busses, two of which are Engineered Safety Features (ESF) busses 5 and 6. The ESF busses supply power to Safety Injection (SI) pumps, Residual Heat Removal (RHR) pumps, containment heat removal equipment, etc.

Offsite power is available from the 345 kVAC and 138 kVAC systems. The 345 kVAC system is connected to the North Appleton line, the Point Beach line, the main transformers, and transformer T-10. The 345 kVAC is the normal supply to the 13.8 kVAC system through transformer T-10, which feeds the Tertiary Auxiliary Transformer (TAT). The TAT normally provides power to ESF bus 5. The TAT is not considered available to power both ESF busses in an emergency situation due to its size. As a contingency, however, it is acceptable to use the TAT to power both ESF busses when guidance for sequencing and monitoring TAT loads is available in the Control Room. The Reserve Auxiliary Transformer (RAT) and Main Auxiliary Transformer (MAT) provide backup sources to bus 5, in that order.

The 138 kVAC system is connected to the Shoto/Mishicot line, the East Krok line and transformer T-10. The 138 kVAC system is the normal supply to the Reserve Auxiliary Transformer (RAT) via the East and West substation busses. (When the 345 kVAC system is unavailable, the 138 kVAC system can supply power to transformer T-10 and the TAT.) The RAT normally provides power to ESF bus 6. The TAT and MAT provide backup sources to bus 6 in that order.

When the main turbine generator is on line, generator output supplies power to the Main Auxiliary Transformer (MAT) and the 4160 VAC busses. When the main turbine generator is off line, the 345 kVAC system can be aligned to backfeed the MAT. Note that the time required to effect the backfeed is likely longer than the fifteen-minute interval associated with this EAL. If off-normal KNPP 6-S-3 10/22/04

plant conditions have already established the backfeed, however, its power to the ESF busses may be considered an offsite power source.

Following a loss of power, ECA 0.0 provides guidance to restore power to ESF busses. For the purpose of classification under this EAL, offsite power sources include any of the following:

- 345 kVAC system supplying power to transformer T-10 and the TAT
- 138 kVAC system supplying power to transformer T-10 and the TAT
- 138 kVAC system supplying power to the RAT
- 345 kVAC system supplying power to the MAT on backfeed through the main transformers when the main turbine generator is off line

- 1. ECA-0.0 Loss of All AC Power, Rev. AB
- 2. USAR Figure 8.2-2, Rev. 16
- 3. USAR Section 8.2.3, Rev. 18
- 4. GNP-08.04.01 Shutdown Safety Assessment, Rev. K

SU2

Initiating Condition -- UNUSUAL EVENT

Inability to Reach Required Shutdown Within Technical Specification Limits.

Operating Mode Applicability:

Power Operation Hot Standby Hot Shutdown Intermediate Shutdown

Emergency Action Level:

SU2.1. Plant is not brought to required operating mode within Technical Specifications LCO Action Statement Time.

Basis:

Limiting Conditions of Operation (LCOs) require the plant to be brought to a required shutdown mode when the Technical Specification required configuration cannot be restored. Depending on the circumstances, this may or may not be an emergency or precursor to a more severe condition. In any case, the initiation of plant shutdown required by the KNPP Technical Specifications requires a one hour report under 10 CFR 50.72 (b) Non-emergency events. The plant is within its safety envelope when being shut down within the allowable action statement time in the Technical Specifications. An immediate UE is required when the plant is not brought to the required operating mode within the allowable action statement time in the Technical Specifications. Declaration of a UE is based on the time at which the LCO-specified action statement time period elapses under the site Technical Specifications and is not related to how long a condition may have existed. Other required Technical Specification shutdowns that involve precursors to more serious events are addressed by other System Malfunction, Hazards, or Fission Product Barrier Degradation ICs.

KNPP Basis Reference(s):

1. KNPP Technical Specifications

SU3

Initiating Condition -- UNUSUAL EVENT

UNPLANNED Loss of Most or All Safety System Annunciation or Indication in The Control Room for GREATER THAN 15 Minutes

Operating Mode Applicability:

Power Operation Hot Standby Hot Shutdown Intermediate Shutdown

Emergency Action Level:

SU3.1. UNPLANNED loss of most or all annunciators or indicators associated with safety systems for GREATER THAN 15 minutes on Mechanical Vertical Panels A, B and C, Mechanical Control Consoles A, B and C, Electrical Vertical Panel and Electrical Control Console

Basis:

This IC and its associated EAL are intended to recognize the difficulty associated with monitoring changing plant conditions without the use of a major portion of the annunciation or indication equipment.

Recognition of the availability of computer based indication equipment is considered (e.g., PPCS, SER or SPDS).

Quantification of "Most" is arbitrary, however, it is estimated that if approximately 75% of the safety system annunciators or indicators are lost, there is an increased risk that a degraded plant condition could go undetected. It is not intended that plant personnel perform a detailed count of the instrumentation lost but use the value as a judgment threshold for determining the severity of the plant conditions.

It is further recognized that plant design provides redundant safety system indication powered from separate uninterruptable power supplies. While failure of a large portion of annunciators is more likely than a failure of a large portion of indications, the concern is included in this EAL due to difficulty associated with assessment of plant conditions. The loss of specific, or several, safety system indicators should remain a function of that specific system or component operability status. This is addressed by the specific Technical Specification. The initiation of a Technical Specification imposed plant shutdown related to the instrument loss will be reported via 10 CFR 50.72. If the shutdown is not in compliance with the Technical Specification action, the UE is based on SU2 "Inability to Reach Required Shutdown Within Technical Specification Limits."

The specified panels for this EAL include annunciators and indicators identified in the Abnormal Operating Procedures, in the Emergency Operating Procedures, and in other EALs (e.g., area, process, and/or effluent rad monitors, etc.).

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Due to the limited number of safety systems in operation during cold shutdown, refueling, and defueled modes, no IC is indicated during these modes of operation.

This UE will be escalated to an Alert if a transient is in progress during the loss of annunciation or indication.

- 1. USAR Figure 7.7-1, Rev. 18
- 2. A-SER-52B Abnormal Sequential Event Recorder, Annunciator, and Status Panel System, Rev. C
- 3. N-CP-46 Honeywell Plant Process Computer, Rev. S
- 4. A-CP-46 Abnormal Honeywell Plant Process Computer, Rev. AR
- 5. N-SER-52 Control Room Sequential Event Recorder, Rev. D

SU4

Initiating Condition -- UNUSUAL EVENT

Fuel Clad Degradation.

Operating Mode Applicability:

Power Operation Hot Standby Hot Shutdown Intermediate Shutdown

Emergency Action Levels: (SU4.1 or SU4.2)

- SU4.1. RCS Letdown Line (R-9) radiation monitor GREATER THAN 2000 mR/hr indicating fuel clad degradation.
- SU4.2. Coolant sample activity GREATER THAN ANY of the following indicating fuel clad degradation:
 - 1.0 µCi/gram dose equivalent lodine-131 for more than 48 hours in one continuous time interval
 - 60 µCi/gram dose equivalent lodine-131
 - 91/Ē µCi/cc gross radioactivity

Basis:

This IC is included as a UE because it is considered to be a potential degradation in the level of safety of the plant and a potential precursor of more serious problems. SU5.1 addresses RCS Letdown Line (R-9) radiation monitor readings that provide indication of fuel clad integrity. [Ref. 4 & 5] SU4.2 addresses coolant samples exceeding coolant technical specifications [Ref. 1].

2000 mR/hr was calculated using the following:

0.01% fuel cladding defect equals 7.2E+1 mR/hr increase on R-9 [Ref. 4] 0.2745% fuel cladding defect equals 1.0 μCi/gram dose equivalent lodine-131 [Ref. 5].

Therefore 1976.4 mR/hr increase on R-9 is equal to 1.0 μ Ci/gram dose equivalent lodine-131

R-9 background is equivalent to 56 mR/hr [Ref. 4], which is added to the calculated dose rate above.

With the addition of background R-9 will read 2032.4 mR/hr (rounded to 2000 mR/hr) equal to 1.0 μ Ci/gram dose equivalent lodine-131.

Escalation of this IC to the Alert level is via the Fission Product Barrier Degradation Monitoring ICs. Though the referenced Technical Specification limits are applicable when average reactor coolant temperature is GREATER THAN 500°F, it is appropriate that the EAL's be applicable in all modes, as they indicate a potential degradation in the level of safety of the plant. The companion IC to SU4 for the Cold Shutdown/Refueling modes is CU5.

- 1. Technical Specifications LCO 3.1.c.1.A, Amendment No. 167
- 2. E-2021 Integrated Logic Diagram Radiation Monitoring, Rev. X
- 3. A-RC-36A High Reactor Coolant Activity, Rev. J
- 4. USAR Section 9, Rev. 16
- 5. CN-CRA-99-28 Rev. 1

SU5

Initiating Condition -- UNUSUAL EVENT

RCS Leakage.

Operating Mode Applicability:

Power Operation Hot Standby Hot Shutdown Intermediate Shutdown

Emergency Action Levels:

(SU5.1 or SU5.2)

SU5.1. Unidentified or pressure boundary leakage GREATER THAN 10 gpm.

SU5.2. Identified leakage GREATER THAN 25 gpm.

Basis:

This IC is included as a UE because it may be a precursor of more serious conditions and, as result, is considered to be a potential degradation of the level of safety of the plant. Positive indications in the Control Room of Reactor Coolant System (RCS) leakage to the containment are provided by equipment that monitors:

- Charging/Letdown flow mismatch
- Containment air activity
- Containment atmosphere humidity
- Containment Sump A in leakage

[Ref. 1, 2]

The 10 gpm value for the unidentified and pressure boundary leakage was selected as it is observable with normal control room indications. Lesser values must generally be determined through time-consuming surveillance tests (e.g., mass balances). SP-36-82 provides instructions for calculating primary system leak rate by water inventory balances for off-normal events and for operations troubleshooting [Ref, 2]. The EAL for identified leakage is set at a higher value due to the lesser significance of identified leakage in comparison to unidentified or pressure boundary leakage. In either case, escalation of this IC to the Alert level is via Fission Product Barrier Degradation ICs.

- 1. Technical Specifications LCO 3.1.d, Amendment No. 165
- 2. SP-36-82 Reactor Coolant System Leak Rate Check, Rev. AE

SU6

Initiating Condition -- UNUSUAL EVENT

UNPLANNED Loss of All Onsite or Offsite Communications Capabilities.

Operating Mode Applicability:	Power Operation
	Hot Standby
	Hot Shutdown
	Intermediate Shutdown

Emergency Action Levels: (SU6.1 or SU6.2)

SU6.1. Loss of all Table C-1 onsite communications capability affecting the ability to perform routine operations.

	Table C-1 Onsite Communications Systems	
•	Intraplant Paging (Gai-tronics)	
•	Sound powered phones	
•	PBX telephone system	
•	 Personal communications system (PCS phones) 	
•	Portable radio communications system	

SU6.2. Loss of all Table C-2 offsite communications capability.

Table C-2 Offsite Communications Systems

- PBX telephone system
- NRC FTS System (including ENS and HPN)
- Dial select phones

Basis:

The purpose of this IC and its associated EALs is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks necessary for plant operations or the ability to communicate problems with offsite authorities. The loss of offsite communications ability is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72.

The availability of one method of ordinary offsite communications is sufficient to inform state and local authorities of plant problems. This EAL is intended to be used only when extraordinary means (e.g., relaying of information from radio transmissions, individuals being sent to offsite locations, etc.) are being utilized to make communications possible.

Table C-1 onsite communications loss encompasses the loss of all means of routine communications (e.g., commercial telephones, sound powered phone systems, page party system (Gaitronics) and radios / walkie talkies). Due to its limited capability, the emergency gai-tronics is not listed in Table C-1.

Table C-2 offsite communications loss encompasses the loss of all means of communications with offsite authorities. This includes the NRC FTS System (including Emergency Notification System - ENS and Health Physics Network – HPN), commercial telephone lines, telecopy transmissions, and dedicated phone systems.

KNPP Basis Reference(s):

1. N-COM-44-CL Communications Systems CL, Rev. K

SU8

Initiating Condition – UNUSUAL EVENT

Inadvertent Criticality.

Operating Mode Applicability:

Hot Shutdown Intermediate Shutdown

Emergency Action Level:

SU8.1. An UNPLANNED sustained positive startup rate observed on nuclear instrumentation.

Basis:

This IC addresses inadvertent criticality events. While the primary concern of this IC is criticality events that occur in Cold Shutdown or Refueling modes (NUREG 1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States), the IC is applicable in other modes in which inadvertent criticalities are possible. This IC indicates a potential degradation of the level of safety of the plant, warranting an Unusual Event classification. This IC excludes inadvertent criticalities that occur during planned reactivity changes associated with reactor startups (e.g., criticality earlier than estimated). The Cold Shutdown/Refueling IC is CU8.

This condition can be identified using the startup rate monitor. The term "sustained" is used in order to allow exclusion of expected short term positive startup rates from planned control rod movements such as shutdown bank withdrawal. These short term positive startup rates are the result of the rise in neutron population due to subcritical multiplication.

This condition can be identified using startup rate monitors (NI-31D/32D - Source Range Startup Rate).

Escalation would be by the Fission Product Barrier Matrix, as appropriate to the operating mode at the time of the event, or by Emergency Director Judgment.

Note: This EAL is SU8 following SU6. SU7 is not used in NEI 99-01 Revision 4 and that convention is carried forward here.

KNPP Basis Reference(s):

1. N-0-02 Plant Startup from Hot Shutdown to 35% Power, Rev. AN

Initiating Condition -- ALERT

Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Trip Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Reactor Trip Was Successful.

Operating Mode Applicability:

Power Operation Hot Standby Hot Shutdown

Emergency Action Level:

SA2.1. Indication(s) exist that a Reactor Protection System setpoint was exceeded AND

RPS automatic trip did <u>not</u> reduce power to LESS THAN 5% AND

Any of the following operator actions are successful in reducing power to LESS THAN 5%:

- Use of Manual Reactor Trip push buttons
- De-energizing Busses 33 AND 43

Basis:

This condition indicates failure of the automatic protection system to trip the reactor. This condition is more than a potential degradation of a safety system in that a front line automatic protection system did not function in response to a plant transient and thus the plant safety has been compromised, and design limits of the fuel may have been exceeded. An Alert is indicated because conditions exist that lead to potential loss of fuel clad or RCS. Reactor protection system setpoint being exceeded, rather than limiting safety system setpoint being exceeded, is specified here because failure of the automatic protection system is the issue. A manual trip is any set of actions by the reactor operator(s) at the control room consoles which causes control rods to be rapidly inserted into the core and brings the reactor subcritical (e.g., reactor trip button). Failure of manual trip would escalate the event to a Site Area Emergency.

Following a successful reactor trip, nuclear power promptly drops to only a few percent of nominal, and then decays away to a level some 8 decades less. Reactor power levels resulting from radioactive fission product decay are never more than a few percent of nominal power and also lower in time. Heat removal safety systems are sized to remove only decay heat and not significant core power. Reactor power levels at or above 5% (in a core that is supposed to be shutdown) are considered an extreme challenge to the Fuel Cladding barrier and warrant a Critical Safety Function Status Tree (CSFST) Subcriticality-Red path priority. The setpoint has been chosen because it is clearly readable on the power range meters. Reactor power levels in the power range are indicated on Mechanical Control Console "B" nuclear instruments NI-41, 42, 43 and 44.

Following any automatic reactor trip signal, plant procedures prescribe operator insertion of redundant manual trip signals to ensure reactor shutdown is achieved. A successful manual trip is any set of actions by the reactor operator(s) in the Control Room that causes control rods to be KNPP 6-S-14 10/22/04

rapidly inserted into the core and brings the reactor subcritical. Manual trip includes the procedural direction to deenergize Busses 33 and 43 to ensure rod insertion. Control rod insertion completed from the Rod Drive Equipment Room is not considered a successful manual trip as action is required outside the Control Room. Manual insertion of control rods from the Control Room is not considered rapid insertion that brings the reactor sub-critical.

Note: This EAL is SA2 following SU8. SA1 is not used in NEI 99-01 Revision 4 and that convention is carried forward here.

- 1. E-0 Reactor Trip or Safety Injection, Rev. V
- 2. ES-0.1 Reactor Trip Response, Rev. P
- 3. F-0.1 Subcriticality, Rev. C
- 4. Technical Specifications 2.3.a, Amendment No. 162

SA4

Initiating Condition -- ALERT

UNPLANNED Loss of Most or All Safety System Annunciation or Indication in Control Room With Either (1) a SIGNIFICANT TRANSIENT in Progress, or (2) Compensatory Non-Alarming Indicators are Unavailable.

Operating Mode Applicability:

Power Operation Hot Standby Hot Shutdown Intermediate Shutdown

Emergency Action Level:

SA4.1. UNPLANNED loss of most or all annunciators or indicators associated with safety systems for GREATER THAN 15 minutes on Mechanical Vertical Panels A, B and C, Mechanical Control Consoles A, B and C, Electrical Vertical Panel and Electrical Control Console

AND

Either of the following: (a or b)

a. A SIGNIFICANT TRANSIENT is in progress.

OR

b. COMPENSATORY NON-ALARMING INDICATIONS are unavailable.

Basis:

This IC and its associated EAL are intended to recognize the difficulty associated with monitoring changing plant conditions without the use of a major portion of the annunciation or indication equipment during a transient. Recognition of the availability of computer based indication equipment is considered (e.g., SPDS, plant computer, etc.).

SIGNIFICANT TRANSIENT includes response to automatic or manually initiated functions such as reactor trips, runbacks involving greater than 25% thermal power change, ECCS injections, or thermal power oscillations of 10% or greater.

COMPENSATORY NON-ALARMING INDICATIONS include the plant process computer (PPCS), SPDS, plant recorders, or plant instrument displays in the control room. If both a major portion of the annunciation system and all computer monitoring are unavailable, the Alert is required.

"Planned" loss of annunciators or indicators includes scheduled maintenance and testing activities.

Quantification of "Most" is arbitrary, however, it is estimated that if approximately 75% of the safety system annunciators or indicators are lost, there is an increased risk that a degraded plant condition could go undetected. It is not intended that plant personnel perform a detailed count of the instrumentation lost but use the value as a judgment threshold for determining the severity of the plant conditions. It is also not intended that the Shift Manager be tasked with making a judgment decision as to whether additional personnel are required to provide increased monitoring of system operation.

It is further recognized that plant design provides redundant safety system indication powered from separate uninterruptable power supplies. While failure of a large portion of annunciators is more likely than a failure of a large portion of indications, the concern is included in this EAL due to difficulty associated with assessment of plant conditions. The loss of specific, or several, safety system indicators should remain a function of that specific system or component operability status. This will be addressed by the specific Technical Specification. The initiation of a Technical Specification imposed plant shutdown related to the instrument loss will be reported via 10 CFR 50.72. If the shutdown is not in compliance with the Technical Specification action, the UE is based on SU2 "Inability to Reach Required Shutdown Within Technical Specification Limits."

The specified panels for this EAL include annunciators and indicators identified in the Abnormal Operating Procedures, in the Emergency Operating Procedures, and in other EALs (e.g., area, process, and/or effluent rad monitors, etc.).

Due to the limited number of safety systems in operation during cold shutdown, refueling and defueled modes, no IC is indicated during these modes of operation.

This Alert will be escalated to a Site Area Emergency if the operating crew cannot monitor the transient in progress.

Note: This EAL is SA4 following SA2. SA3 is not used in NEI 99-01 Revision 4 and that convention is carried forward here.

- 1. USAR Figure 7.7-1, Rev. 18
- 2. A-SER-52B Abnormal Sequential Event Recorder, Annunciator, and Status Panel System, Rev. C
- 3. NEI 99-01, Rev. 4, Section 5.4 Definitions
- 4. N-CP-46 Honeywell Plant Process Computer, Rev. S
- 5. A-CP-46 Abnormal Honeywell Plant Process Computer, Rev. AR
- 6. N-SER-52 Control Room Sequential Event Recorder, Rev. D

Initiating Condition -- ALERT

AC power capability to essential busses reduced to a single power source for GREATER THAN 15 minutes such that any additional single failure would result in station blackout.

Operating Mode Applicability:

Power Operation Hot Standby Hot Shutdown Intermediate Shutdown

Emergency Action Level:

- SA5.1. AC power capability to Bus 5 AND Bus 6 reduced to only one of the following sources for GREATER THAN 15 minutes:
 - One emergency diesel generator (A or B)
 - TAT
 - RAT
 - MAT on backfeed

AND

Any additional single failure will result in station blackout.

Basis:

This IC and the associated EALs are intended to provide an escalation from IC SU1, "Loss of All Offsite Power To Essential Busses for Greater Than 15 Minutes." The condition indicated by this IC is the degradation of the offsite and onsite power systems such that any additional single failure would result in a station blackout. This condition could occur due to a loss of offsite power with a concurrent failure of one emergency diesel generator to supply power to its emergency busses. Another related condition could be the loss of onsite emergency diesels with only one train of emergency busses being backfed from offsite power. Offsite power sources include the 345 kVAC system or 138 kVAC system to the Tertiary Auxiliary Transformer (TAT), the 345 kVAC system or 138 kVAC system to the Reserve Auxiliary Transformer (RAT), and the 345 kVAC system to the Main Auxiliary Transformer (MAT) on backfeed through the main transformers. Note that the time required to effect a backfeed to the MAT is likely longer than the fifteen-minute interval. If off-normal plant conditions have already established the backfeed, however, its power to the ESF busses may be considered an offsite power source. Onsite power sources consist of 1A Diesel Generator to Bus 5 and 1B Diesel Generator to Bus 6. Several combinations of power failures could therefore satisfy this EAL. The subsequent loss of the single remaining power source would escalate the event to a Site Area Emergency in accordance with IC SS1, "Loss of All Offsite and Loss of All Onsite AC Power to Essential Busses."
KNPP Basis Reference(s):

- 1. ECA-0.0 Loss of All AC Power, Rev. AB
- 2. USAR Figure 8.2-2, Rev. 16
- 3. USAR Section 8.2.3, Rev. 18
- 4. USAR Section 8.2.4, Rev. 18
- 5. GNP-08.04.01 Shutdown Safety Assessment, Rev. K

SYSTEM MALFUNCTION

SS1

Initiating Condition -- SITE AREA EMERGENCY

Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses.

Operating Mode Applicability:

Power Operation Hot Standby Hot Shutdown Intermediate Shutdown

Emergency Action Level:

SS1.1. Loss of ALL power to Bus 5 AND Bus 6 for GREATER THAN 15 minutes.

Basis:

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal and the Service Water System. Prolonged loss of all AC power will cause core uncovering and loss of containment integrity, thus this event can escalate to a General Emergency.

Offsite power sources include the 345 kVAC system or 138 kVAC system to the Tertiary Auxiliary Transformer (TAT), the 345 kVAC or 138 kVAC system to the Reserve Auxiliary Transformer (RAT), and the 345 kVAC system to the Main Auxiliary Transformer (MAT) on backfeed through the main transformers. Note that the time required to effect a backfeed to the MAT is likely longer than the fifteen-minute interval. If off-normal plant conditions have already established the backfeed, however, its power to the ESF busses may be considered an offsite power source. Onsite power sources consist of 1A Diesel Generator to Bus 5 and 1B Diesel Generator to Bus 6.

Escalation to General Emergency is via Fission Product Barrier Degradation or IC SG1, "Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power."

Consideration should be given to operable loads necessary to remove decay heat or provide Reactor Vessel makeup capability when evaluating loss of AC power to safety-related 4160 VAC busses. Even though a safety-related 4160 VAC bus may be energized, if necessary loads (i.e., loads that if lost would inhibit decay heat removal capability or Reactor Vessel makeup capability) are not operable on the energized bus then the bus should not be considered operable. If this bus was the only energized bus then a Site Area Emergency per SS1 should be declared.

KNPP Basis Reference(s):

- 1. ECA-0.0 Loss of All AC Power, Rev. AB
- 2. USAR Figure 8.2-2, Rev. 16
- 3. USAR Section 8.2.3, Rev. 18
- 4. USAR Section 8.2.4, Rev. 18
- 5. GNP-08.04.01 Shutdown Safety Assessment, Rev. K

SYSTEM MALFUNCTION

SS2

Initiating Condition -- SITE AREA EMERGENCY

Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Trip Once a Reactor Protection System Setpoint Has Been Exceeded and Manual Reactor Trip Was NOT Successful.

Operating Mode Applicability:	[•] Power Operation
	Hot Standby

Emergency Action Level:

SS2.1. Indication(s) exist that automatic and manual trip were NOT successful in reducing power to LESS THAN 5%. Manual Reactor Trips include use of Manual Reactor Trip push buttons or De-energizing Busses 33 AND 43.

Basis:

Automatic and manual trip are not considered successful if action away from the Control Room was required to trip the reactor.

Under these conditions, the reactor is producing more heat than the maximum decay heat load for which the safety systems are designed. A Site Area Emergency is indicated because conditions exist that lead to imminent loss or potential loss of both fuel clad and RCS. Although this IC may be viewed as redundant to the Fission Product Barrier Degradation IC, its inclusion is necessary to better assure timely recognition and emergency response. Escalation of this event to a General Emergency would be via Fission Product Barrier Degradation or Emergency Director Judgment ICs.

Automatic or manual reactor trip is considered successful if actions taken (use of Manual Reactor Trip push buttons or De-energizing Busses 33 AND 43) result in reducing reactor power less than 5%. Reactor power levels in the power range are indicated on N-41, 42, 43 and 44. Automatic and manual trips are not considered successful if action away from the Control Room (e.g., Rod Drive Equipment Room) is required to trip the reactor. Manual insertion of control rods from the Control Room is not considered rapid insertion that brings the reactor sub-critical.

KNPP Basis Reference(s):

- 1. E-0 Reactor Trip or Safety Injection, Rev. V
- 2. ES-0.1 Reactor Trip Response, Rev. P
- 3. F-0.1 Subcriticality, Rev. C
- 4. FR-S.1 Response to Nuclear Power Generation/ATWS, Rev. Q

SYSTEM MALFUNCTION

SS3

Initiating Condition -- SITE AREA EMERGENCY

Loss of All Vital DC Power.

Operating Mode Applicability:

Power Operation Hot Standby Hot Shutdown Intermediate Shutdown

Emergency Action Level:

SS3.1. Loss of all vital DC power based on LESS THAN 105 VDC on Train A AND Train B Safeguards DC Distribution Systems for GREATER THAN 15 minutes.

Basis:

Loss of all DC power compromises ability to monitor and control plant safety functions. Prolonged loss of all DC power will cause core uncovering and loss of containment integrity when there is significant decay heat and sensible heat in the reactor system. Escalation to a General Emergency would occur by Abnormal Rad Levels/Radiological Effluent, Fission Product Barrier Degradation, or Emergency Director Judgment ICs. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

The loss of a safeguards DC train consists of a combination of loss of power to specified DC distribution panels. These panels include: BRA (BRB)-102, and BRA (BRB)-104. In all cases, BRA (BRB)-102 panel indicating less than 105 VDC constitutes a loss of the associated DC distribution train. However, a loss of power to the BRA (BRB) -104 panel, which does not have voltage indication, also constitutes a loss of the associated DC distribution train.

125 VDC safeguard main distribution cabinets (BRA-102 and BRB-102) supply two safeguard sub-distribution cabinets (BRA-104 and BRB-104) and provide for connection of safeguard batteries (BRA-101 and BRB-101) to their associated battery chargers (BRA-108 and BRB-108). The combination of low voltages on the specified distribution cabinets results in a total loss of vital 125 VDC power. The 125 VDC safeguards distribution system supplies circuit breaker control power, Control Room alarms, Control Room controls, diesel generator controls, and the Reactor Protection System. The 125 VDC safeguard system is also the standby power source to the AC inverters. BRA-102 and BRB-102 voltage is displayed on Control Room indicators 4494001 and 4494002, respectively. Undervoltage is alarmed on Control Room Sequence of Event Recorder (SER) points 490011196 and 490011200 and annunciators 447101A and 47101B, respectively.

Each of the 125 VDC batteries has been sized to carry the expected shutdown loads following a reactor trip and a loss of all AC power for a period of eight hours without battery terminal voltage falling below 105 VDC. This voltage value therefore incorporates a margin of at least 15 minutes of operation before the onset of inability to operate loads. The nominal battery cell voltage is 2.20 VDC. Low battery terminal voltage activates Control Room SER point 49001832 and annunciator 47105A. The batteries are located in Battery Rooms A and B on the Turbine Building Mezzanine Floor (606 ft el.).

KNPP Basis Reference(s):

- 1. USAR 8.2.2, Rev. 18
- 2. USAR 8.2.3, Rev. 18
- 3. Technical Specifications B3.7, 4/23/2001
- 4. Plant Drawing 237127A-E233, Rev. AQ

SYSTEM MALFUNCTION

SS4

Initiating Condition -- SITE AREA EMERGENCY

Complete Loss of Heat Removal Capability.

Operating Mode Applicability:

Power Operation Hot Standby Hot Shutdown Intermediate Shutdown

Emergency Action Level:

SS4.1. Loss of core cooling and heat sink.

Basis:

This EAL addresses complete loss of functions, including Service Water System, required for hot shutdown with the reactor at pressure and temperature. Reactivity control is addressed in other EALs.

Under these conditions, there is an actual major failure of a system intended for protection of the public. Thus, declaration of a Site Area Emergency is warranted. Escalation to General Emergency would be via Abnormal Rad Levels / Radiological Effluent, Emergency Director Judgment, or Fission Product Barrier Degradation ICs.

KNPP Basis Reference(s):

None

SYSTEM MALFUNCTION

SS6

Initiating Condition -- SITE AREA EMERGENCY

Inability to Monitor a SIGNIFICANT TRANSIENT in Progress.

Operating Mode Applicability:

Power Operation Hot Standby Hot Shutdown Intermediate Shutdown

Emergency Action Level:

SS6.1. Loss of most or all annunciators associated with safety systems on Mechanical Vertical Panels A, B and C, Mechanical Control Consoles A, B and C, Electrical Vertical Panel and Electrical Control Console.

AND

SIGNIFICANT TRANSIENT in progress.

AND

COMPENSATORY NON-ALARMING INDICATIONS are unavailable.

AND

Indications needed to monitor the ability to shut down the reactor, maintain the core cooled, maintain the reactor coolant system intact, and maintain containment intact are unavailable.

Basis:

This IC and its associated EAL are intended to recognize the inability of the control room staff to monitor the plant response to a transient. A Site Area Emergency is considered to exist if the control room staff cannot monitor safety functions needed for protection of the public.

SIGNIFICANT TRANSIENT includes response to automatic or manually initiated functions such as reactor trips, runbacks involving greater than 25% thermal power change, ECCS injections, or thermal power oscillations of 10% or greater.

COMPENSATORY NON-ALARMING INDICATIONS include the plant process computer (PPCS), SPDS, plant recorders, or plant instrument displays in the control room.

Indications needed to monitor safety functions necessary for protection of the public include control room indications, computer generated indications and dedicated annunciation capability. The specific indications are those used to monitor the ability to shut down the reactor, maintain the core cooled, to maintain the reactor coolant system intact, and to maintain containment intact.

"Planned" and "UNPLANNED" actions are not differentiated since the loss of instrumentation of this magnitude is of such significance during a transient that the cause of the loss is not an ameliorating factor.

Quantification of "Most" is arbitrary, however, it is estimated that if approximately 75% of the safety system annunciators or indicators are lost, there is an increased risk that a degraded plant condition could go undetected. It is not intended that plant personnel perform a detailed count of the instrumentation lost but use the value as a judgment threshold for determining the severity of the plant conditions. It is also not intended that the Shift Supervisor be tasked with making a judgment decision as to whether additional personnel are required to provide increased monitoring of system operation.

Note: This EAL is SS6 following SS4. SS5 is not used in NEI 99-01 Revision 4 and that convention is carried forward here.

KNPP Basis Reference(s):

- 1. USAR Figure 7.7-1, Rev. 18
- 2. A-SER-52B Abnormal Sequential Event Recorder, Annunciator, and Status Panel System, Rev. C
- 3. NEI 99-01, Rev. 4, Section 5.4 Definitions
- 7. N-CP-46 Honeywell Plant Process Computer, Rev. S
- 8. A-CP-46 Abnormal Honeywell Plant Process Computer, Rev. AR
- 9. N-SER-52 Control Room Sequential Event Recorder, Rev. D
- 10. UG-0 User's Guide for Emergency and Abnormal Procedures, Rev. D

11. F-0.1 Subcriticality, Rev. C

12. F-0.2 Core Cooling, Rev. F

- 13. F-0.3 Heat Sink, Rev. E
- 14. F-0.4 Integrity, Rev. E
- 15. F-0.5 Containment, Rev. F
- 16. F-0.6 Inventory, Rev. F

SYSTEM MALFUNCTION

SG1

Initiating Condition – GENERAL EMERGENCY

Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power to Essential Busses.

Operating Mode Applicability:

Power Operation Hot Standby Hot Shutdown Intermediate Shutdown

Emergency Action Level:

SG1.1. Loss of all offsite power to Bus 5 AND Bus 6

AND

Failure of all emergency diesel generators to supply power to Bus 5 AND Bus 6.

AND

Either of the following: (a or b)

a. Restoration of either Bus 5 OR Bus 6 within 4 hours is not likely

OR

b. Continuing degradation of core cooling based on Fission Product Barrier monitoring as indicated by a Core Cooling-RED or Core Cooling-ORANGE

Basis:

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal and the Service Water System. Prolonged loss of all AC power will lead to loss of fuel clad, RCS, and containment. The 4 hours to restore AC power is based on the site blackout coping analysis performed in conformance with 10 CFR 50.63 and Regulatory Guide 1.155, "Station Blackout,". Four hours includes appropriate allowance for offsite emergency response including evacuation of surrounding areas. Although this IC may be viewed as redundant to the Fission Product Barrier Degradation IC, its inclusion is necessary to better assure timely recognition and emergency response.

This IC is specified to assure that in the unlikely event of a prolonged station blackout, timely recognition of the seriousness of the event occurs and that declaration of a General Emergency occurs as early as is appropriate, based on a reasonable assessment of the event trajectory.

Offsite power sources include the 345 kVAC system or 138 kVAC system to the Tertiary Auxiliary Transformer (TAT), the 345 kVAC system or 138 kVAC system to the Reserve Auxiliary

Transformer (RAT), and the 345 kVAC system to the Main Auxiliary Transformer (MAT) on backfeed through the main transformers. Time required to effect a backfeed to the MAT is likely longer than the four hours. If shutddown plant conditions have already established the backfeed, however, its power to the ESF busses may be considered an offsite power source. Onsite power sources consist of Diesel Generator A to Bus 5 and Diesel Generator B to Bus 6.

The likelihood of restoring at least one emergency bus should be based on a realistic appraisal of the situation since a delay in an upgrade decision based on only a chance of mitigating the event could result in a loss of valuable time in preparing and implementing public protective actions. In addition, under these conditions, fission product barrier monitoring capability may be degraded. Although it may be difficult to predict when power can be restored, it is necessary to give the Emergency Director a reasonable idea of how quickly (s)he may need to declare a General Emergency based on two major considerations:

- 1. Are there any present indications that core cooling is already degraded to the point that Loss or Potential Loss of Fission Product Barriers is imminent? (Refer to Table F-1 for more information.)
- 2. If there are no present indications of such core cooling degradation, how likely is it that power can be restored in time to assure that a loss of two barriers with a potential loss of the third barrier can be prevented?

Thus, indication of continuing core cooling degradation must be based on Fission Product Barrier monitoring with particular emphasis on Emergency Director judgment as it relates to imminent Loss or Potential Loss of fission product barriers and degraded ability to monitor fission product barriers.

KNPP Basis Reference(s):

- 1. ECA-0.0 Loss of All AC Power, Rev. AB
- 2. USAR Figure 8.2-2, Rev. 16
- 3. USAR Section 8.2.3, Rev. 18
- 4. USAR Section 8.2.4, Rev. 18
- 5. GNP-08.04.01 Shutdown Safety Assessment, Rev. K
- 6. F-0.2 Core Cooling, Rev. F
- 7. FR-C.2 Response to Degraded Core Cooling, Rev. M
- 8. E-0 QRF Quick Reference Foldout, Section E-0, Rev. H

SYSTEM MALFUNCTION

SG2

Initiating Condition - GENERAL EMERGENCY

Failure of the Reactor Protection System to Complete an Automatic Reactor Trip and Manual Reactor Trip was NOT Successful and There is Indication of an Extreme Challenge to the Ability to Cool the Core.

Operating Mode Applicability:

Power Operation Hot Standby

Emergency Action Level:

SG2.1. Indication(s) exist that automatic and manual reactor trip were NOT successful in reducing power to LESS THAN 5%.

AND

Either of the following: (a or b)

a. Indication(s) exists that the core cooling is extremely challenged as indicated by Core Cooling - RED.

OR

b. Indication(s) exists that heat removal is extremely challenged as indicated by Heat Sink - RED.

Basis:

Automatic and manual reactor trips are not considered successful if action away from the reactor control console is required to trip the reactor.

Under the conditions of this IC and its associated EALs, the efforts to bring the reactor subcritical have been unsuccessful and, as a result, the reactor is producing more heat than the maximum decay heat load for which the safety systems were designed. Although there are capabilities to reduce reactor power, such as emergency boration, the continuing temperature rise indicates that these capabilities are not effective. This situation could be a precursor for a core melt sequence.

The extreme challenge to the ability to cool the core is intended to mean that the core exit temperatures are at or approaching 1200 degrees F or that the reactor vessel water level is below the top of active fuel. This EAL equates to a Core Cooling RED condition and an entry into function restoration procedure FR-C.1.

Another consideration is the inability to initially remove heat during the early stages of this sequence. If emergency feedwater flow is insufficient to remove the amount of heat required by design from at least one steam generator, an extreme challenge should be considered to exist. This EAL equates to a Heat Sink RED condition.

In the event either of these challenges exist at a time that the reactor has not been brought below the power associated with the safety system design (5% power) a core melt sequence exists. In this situation, core degradation can occur rapidly. For this reason, the General Emergency declaration is intended to be anticipatory of the fission product barrier matrix declaration to permit maximum offsite intervention time.

Automatic or manual reactor trip is considered successful if actions taken (use of Manual Reactor Trip push buttons or De-energizing Busses 33 AND 43) result in reducing reactor power less than 5%. Reactor power levels in the power range are indicated on N-41, 42, 43 and 44. Automatic and manual trips are not considered successful if action away from the Control Room (e.g., Rod Drive Equipment Room) is required to trip the reactor. Manual insertion of control rods from the Control Room is not considered rapid insertion that brings the reactor sub-critical.

KNPP Basis Reference(s):

- 1. E-0 Reactor Trip or Safety Injection, Rev. V
- 2. ES-0.1 Reactor Trip Response, Rev. P
- 3. F-0.1 Subcriticality, Rev. C
- 4. FR-S.1 Response to Nuclear Power Generation/ATWS, Rev. Q
- 5. F-0.2 Core Cooling, Rev. F
- 6. FR-C.1 Response to Inadequate Core Cooling, Rev. N
- 7. F-0.3 Heat Sink, Rev. E
- 8. FR-H.1 Response to Loss of Secondary Heat Sink, Rev. T

ATTACHMENT 3

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JUSTIFICATION MATRIX

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Kewaunee Nuclear Power Plant EALs vs NEI 99-01 rev 4 EALs Differences / Deviations / Site Specific Information

Kewaunee Nuclear Power Plant EALs vs NEI 99-01 rev 4 EALs

Definitions

The following definitions were used from RIS 2003-18 Sup 1 to define Differences and Deviations contained in this submittal:

Difference: An EAL change where the basis scheme guidance differs in wording but agrees in meaning and intent, such that classification of an event would be the same, whether using the basis scheme guidance or the site-specific proposed EAL

Deviation: An EAL change where the basis scheme guidance differs in wording and is altered in meaning or intent, such that classification of the event could be different between the basis scheme guidance and the site-specific proposed EAL.

Generic Differences

The generic changes listed below are not deviation because they do not alter the meaning or intent of associated EAL's, such that classification of the event could be different between the NEI guidance and the plant EAL:

- Each EAL was numbered sequentially in the subgroups. In example: "RU1.1" is the first EAL in subgroup RU1. This was done to improve communication at the KNPP emergency facilities and with offsite agencies.
- ISFSI and Permanently Defueled NEI EAL section are not applicable to KNPP and have been deleted.
- The symbols <, >, etc. were replaced with "LESS THAN", "GREATER THAN", etc. is to be consistent with other KNPP documents (Procedures Writer Guide GNP-03.01.04) and for human factors.
- The "LESS THAN", "GREATER THAN", etc wording is capitalized to be consistent with other KNPP documents (Procedures Writer Guide GNP-03.01.04) and for human factors.
- "Reactor Scram" was replaced with "Reactor Trip" to be consistent with KNPP wording.
- Capitalization and Bold of logic "AND" / "OR" is to be consistent with other KNPP documents and for human factors.
- NEI Operating Mode Applicability "Startup" was deleted and "Intermediate Shutdown" was added to conform to KNPP's Operating Modes. Also, Power Operation was changed to Operating to conform to KNPP's Operating Modes. Refer to Technical Specification page TS 1.0-4.
- NOUE (Notice of Unusual Event) was changed to KNPP wording of UE (Unusual Event).
- The words "increase" and "decrease" has been replaced with "raise" / "rise" and "lowering". This change was done to be consistent with KNPP communication standards

and for human factors. The words 'increase' and 'decrease' are not normally used because they are easily misunderstood.

- "Reactor Vessel" was used in place of "RPV" to match site procedure verbiage and PWR terminology.
- "Exceeds" was replaced with "GREATER THAN" to allow consistency between other KNPP documents.
- Words that are defined in the EAL Bases were capitalized to indicate define words.

General Development Information

Unless otherwise documented in the EAL bases, values and setpoints contained with in the EAL's were made in accordance with NEI 99-01 rev 4 guidelines and are not addressed separately in the Difference and Deviation Matrix.

NEI 99-01 / KNPP Cross Reference

99-01 IC	99-01 EAL #	PBNP EAL Number	
Abnormal Radiation Levels / Radiological Effluent			
AU1	1	RU1.1	
	2	RU1.2	
	3	RU1.3	
	4	N/A	
	5	N/A	
AU2	1	RU2.1	
	2	RU2.2	
AA1	1	RA1.1	
	2	RA1.2	
	3	RA1.3	
	4	N/A	
	5	N/A	
AA2	1	RA2.1	
	2	RA2.2	
AA3	1	RA3.1	
	2	RA3.2	
AS1	1	RS1.1	
	2	RS1.2	
	3	N/A	
	4	RS1.3	
AG1	1	RG1.1	
	2	RG1.2	
	3	N/A	
	4	RG1.3	
Cold Sh	utdown / Refueling S	ystem Malfunction	
CU1	1	CU1.1	
	2	CU1.2	
CU2	1	CU2.1	
	2	CU2.2	
CU3	1	<u>CU3.1</u>	
CU4	1	CU4.1	
	2	CU4.2	
CUS	1	<u> </u>	
	2	CU5.2	
C00	1		
CT 17	2	CU0.2	
	1		
C08	1		
CA1	1	C08.1	
CAI	2		
CA2		CA21	
	2	CA22	
CA3	<u> </u>	CA3 1	
	1	CA4 1	
	2	CA4 2	
	3	CA4 3	
CS1	1	CS1.1	
	2	CS1.2	
	-		

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99-01 IC	99-01 EAL #	PBNP EAL Number
CS2	1	CS2.1
	2	CS2.2
CG1	1	CG1.1
	2 .	CG1.1
	3	CG1.1
	Defueled Station Ma	lfunction
D-AU1	1	N/A
	2	N/A
D-AU2	1	N/A
D-SU1	1	N/A
	2	N/A
D-HU1	1	N/A
D-HU2	1	N/A
D-HU3	1	N/A
	2	N/A
	3	N/A
· · · · · · · · · · · · · · · · · · ·	4	N/A
	5	N/A
	6	N/A
	7	
	8	N/A
D-AA1	1	N/A
	2	N/A
D-AA2	1	N/A
	2	
D-HA1	1	N/A
D-HA2	1	N/A
Events Related	to Independent Spent	Fuel Storage Installations
E-HU1	1	N/A
	2	N/A
	3	N/A
E-HU2	1	N/A
F. F	ission Product Barrier	Degradation
FU1		FU1.1
FA1		FA1.1
FS1		FS1.1
FG1		FG1.1
Fuel Cladding Loss - 1		Fuel Cladding Loss - 1
Fuel Cladding Loss - 2		Fuel Cladding Loss - 2
Fuel Cladding Loss - 3		Fuel Cladding Loss - 3
Fuel Cladding Loss - 4		Fuel Cladding Loss - 4
Fuel Cladding Loss - 5		Fuel Cladding Loss – 5
Fuel Cladding Loss - 6		N/A
Fuel Cladding Loss - 7		Fuel Cladding Loss – 6
Fuel Cladding P-Loss - 1		Fuel Cladding P-Loss - 1
Fuel Cladding P-Loss - 2		Fuel Cladding P-Loss - 2
Fuel Cladding P-Loss - 3		Fuel Cladding P-Loss - 3
Fuel Cladding P-Loss - 4		Fuel Cladding P-Loss - 4
Fuel Cladding P-Loss – 5		Fuel Cladding P-Loss – 5
Fuel Cladding P-Loss – 6		N/A
Fuel Cladding P-Loss - 7		Fuel Cladding P-Loss - 6
RCS Loss - 1		RCS Loss - 1

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99-01 IC	99-01 EAL #	PBNP EAL Number
RCS Loss - 2		RCS Loss - 2
RCS Loss - 3		RCS Loss - 3
RCS Loss - 4		RCS Loss - 4
RCS Loss – 5		N/A
RCS Loss - 6		RCS Loss - 5
RCS P-Loss -1		RCS P-Loss -1
RCS P-Loss -2		RCS P-Loss -2
RCS P-Loss -3		RCS P-Loss -3
RCS P-Loss -4		RCS P-Loss -4
RCS P-Loss –5		N/A
RCS P-Loss -6		RCS P-Loss -5
Containment Loss - 1		Containment Loss - 1
Containment Loss – 2		Containment Loss – 2
Containment Loss – 3		Containment Loss – 3
Containment Loss – 4	· · · · · · · · · · · · · · · · · · ·	Containment Loss – 4
Containment Loss – 5		Containment Loss – 5
Containment Loss – 6		Containment Loss – 6
Containment Loss - 7		N/A
Containment Loss - 8		Containment Loss - 7
Containment P-Loss - 1		Containment P-Loss - 1
Containment P-Loss - 2		Containment P-Loss - 2
Containment P-Loss - 3		Containment P-Loss - 3
Containment P-Loss – 4		Containment P-Loss – 4
Containment P-Loss – 5		Containment P-Loss – 5
Containment P-Loss – 6		Containment P-Loss – 6
Containment P-Loss – 7		N/A
Containment P-Loss - 8		Containment P-Loss - 8
Hazards a	and Other Conditions A	Affecting Plant Safety
HU1	1	HU1.1
	2	HU1.2
	3	HU1.3
	4	HU1.4
	5	HU1.5
	6	HU1.6
	7	HU1.7
HU2	1	HU2.1
HU3	1	HU3.1
	2	HU3.2
HU4	1	HU4.1
	2	HU4.2
HU5	1	HU5.1
HA1	1	HA1.1
	2	HA1.2
	3	HA1.3
	4	HA1.4
	5	HA1.5
	6	HA1.6
HA2	11	HA2.1
HA3	1	HA3.1
	2	HA3.2
HA4	1	HA4.1
	2	HA4.2

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99-01 IC	99-01 EAL #	PBNP EAL Number	
HA5	1	HA5.1	
HA6	1	HA6.1	
HS1	1	HS1.1	
	2	HS1.2	
HS2	1	HS2.1	
HS3	1	HS3.1	
HG1	1	HG1.1	
HG2	· 1	HG2.1	
	System Malfunction	n	
SU1	1	SU1.1	
SU2	1	SU2.1	
SU3	1	SU3.1	
SU4	1	SU4.1	
	2	SU4.2	
SU5	1	SU5.1	
	2	SU5.2	
SU6	1	SU6.1	
	2	SU6.2	
SU8	1	N/A	
	2	SU8.1	
SA2	1	SA2.1	
SA4	1	SA4.1	
SA5	1	SA5.1	
SS1	1	SS1.1	
SS2	1	SS2.1	
SS3	1	SS3.1	
SS4	1	SS4.1	
SS6	1	SS6.1	
SG1	1	SG1.1	
SG2	. 1	SG2.1	

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General Difference for section: Abnormal Rad Levels / Radiological Effluent section designation was changed from "A" (AU, AA, etc) to "R" (RU, RA, etc.).

NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording
AU1	Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two Times the Radiological Effluent Technical Specifications for 60 Minutes or Longer.	RUI	Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Environment that Exceeds Two Times the Offsite Dose Calculation Manual for 60 Minutes or Longer.
Mode App.	A11		All
Site specific	None		
Difference	• The Offsite Dose Calculation Manual (ODCM) gives the site-specific technical specifications for gaseous and liquid releases.		
	• This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL.		
Deviation	None		

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Word	ling
1	VALID reading on any effluent monitor that exceeds two times the alarm setpoint established by a current radioactivity discharge permit for 60 minutes or longer.	RU1.1	VALID reading on any effluent GREATER THAN two times the established by a current radioac permit for 60 minutes or longer <u>Auxiliarv Building</u> R-13 Aux. Bldg. Vent Exhaust R-14 Aux. Bldg. Vent Exhaust <u>Reactor Building</u> R-12 Containment Gas R-21 Containment Vent <u>Liquid Radwaste</u> R-18 Waste Disposal System Liquid	 monitor that is the alarm setpoint thirty discharge <u>Action Value</u> 2.61E+05 cpm 2.62E+05 cpm 4.41E+05 cpm 4.40E+05 cpm 2 X Calculated ODCM Setpoint
Site specific	 Monitors listed include ODCM associated effluent monitors at KNPP. Values identified are the results of calculations documented in C11620. 			
Difference	 "2 X Calculated ODCM Setpoint" was used due to setpoint being calculated for each discharge permit and is dependent upon flow rate of discharge. This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL. 			
Deviation	None			

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
2	VALID reading on one or more of the following radiation monitors that exceeds the reading shown for 60 minutes or longer: (site-specific list)	RU1.2	VALID reading on one or more of the following radiation monitors that is GREATER THAN the reading shown for 60 minutes or longer.Liquid RadwasteAction ValueR-16 Containment FCU SW3.38E+05 cpmReturn3.38E+05 cpmR-19 S/G Blowdown Liquid2.58E+06 cpmR-20 Aux Bldg SW Return1.03E+05 cpm
Mode App.	All		All
Site specific	 Monitors listed include ODCM associated effluent monitors at KNPP. Values identified are the results of calculations documented in C11620. 		
Difference	None		
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
3	Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates, with a release duration of 60 minutes or longer, in excess of two times (site- specific technical specifications).	RU1.3	Confirmed sample analyses for gaseous or liquid release indicates concentrations or release rates, with a release duration of 60 minutes or longer, in excess of two times the ODCM limit
Site specific	• The Offsite Dose Calculation Manual (ODCM) gives the site-specific technical specifications for gaseous and liquid releases.		
Difference	None		
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
4	VALID reading on perimeter radiation monitoring system greater than 0.10 mR/hr above normal background sustained for 60 minutes or longer [for sites having telemetered perimeter monitors]	N/A	N/A
Site specific	N/A		
Difference	Deleted NEI 99-01 example EAL#4 because plant is not equipped with perimeter radiation monitoring.		
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
5	VALID indication on automatic real- time dose assessment capability greater than (site-specific value) for 60 minutes or longer [for sites having such capacity]	N/A	N/A
Site specific	N/A		
Difference	 Deleted NEI 99-01 example EAL#5 because plant is not equipped with automatic real-time dose assessment capabilities. 		
Deviation	None		

RU1 – Basis	RU1 – Basis Justification		
KNPP S	pecific Additions/Deletions		Justification
1. Added the rac for the	specific information pertaining to liation monitors listed and the basis values listed.	1.	This information was added to explain the monitor values.
2. Develo NEI B	opment information contained in the asis was deleted.	2.	Development information is not necessary after the site specific information has been developed. The basis would be very confusing if these statements were left in along with the site specific information.
3. Delete	d reference to EAL#4	3.	KNPP is not equipped with perimeter radiation monitors.
4. Delete	4. Deleted reference to EAL#5 4. KNPP is not equipped with automatic real-tim assessment capabilities.		KNPP is not equipped with automatic real-time dose assessment capabilities.
Difference	 Difference Specific Rad monitors listed, giving the 2 times ODCM values to support EAL determination. "2 X Calculated ODCM Setpoint" was used for R-18 due to setpoint being calculated for each discharge permit and is dependent upon flow rate of discharge. EAL #4 and #5 Basis information is not applicable to KNPP and was deleted. 		
Deviations	None		

NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording	
AU2	Unexpected Increase in Plant Radiation	RU2	Unexpected Rise in Plant Radiation	
Mode App.	All		A11	
Site specific	None			
Difference	None			
Deviation	None			

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
1	 a. VALID (site-specific) indication of uncontrolled water level decrease in the reactor refueling cavity, spent fuel pool, or fuel transfer canal with all irradiated fuel assemblies remaining covered by water. AND b. Unplanned VALID (site-specific) Direct Area Radiation Monitor 	RU2.1	VALID indication of uncontrolled water level lowering in the reactor refueling cavity, spent fuel pool, or fuel transfer canal with all irradiated fuel assemblies remaining covered by water as indicated by Spent Fuel Pool low water level alarm setpoint (3 ft 4 in below floor, SER 159/160) <u>OR</u> Visual observation <u>AND</u> Any UNPLANNED VALID Area Radiation
	reading increases		Monitor reading rises as indicated by:
			• R2, Containment Area ALER I Alarm
			RS, Fuel Handling Area ALERI Alarm
			• R10, New Fuel Pit Area ALERI Alarm
Site specific	• "Spent fuel pool low water level alar remote indication of decreasing wate	m setpoint"] r level.	has been included because it is the only means of
	• "Visual observation" has been includ 01 Rev. 4. basis (pg. 5-A-5).	ed to addres	s the site-specific indication listed in the NEI 99-
	• R2, R5, and R10 radiation monitors a	are located ir	the containment and fuel handling areas.
Difference	• The NEI term "Direct" has been deleted because the monitors used at KNPP to assess this threshold are commonly referred to as Area Radiation Monitors. Three monitors are provided in the EAL although the NEI indicates only one monitor. These monitors are used to classify the event because they are available in the control room to aid in classifying the event occurring in the SFP area and the use of these monitors allows for failure of a single monitor.		
	• The phrase "any" has been added to a to meet the condition.	indicate only	one of the Area Radiation Monitors is necessary
	• These changes are not a deviation be classification of the event could be d	cause they de ifferent betw	o not alter the meaning or intent, such that een the NEI guidance and the plant EAL.
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording		
2	Unplanned VALID Direct Area Radiation Monitor readings increases by a factor of 1000 over normal* levels. *Normal levels can be considered as the highest reading in the past twenty- four hours excluding the current peak value.	RU2.2	Any UNPLANNED VALID Area Radiation Monitor reading rises by a factor of 1000 over normal* levels. *Normal levels can be considered as the highest reading in the past twenty-four hours excluding the current peak value.		
Site specific	None				
Difference	 "Any" has been added to clarify the fact that the threshold is met if there is a rise one or more of the indicated readings The NEI term "Direct" has been deleted because the monitors used at KNPP to assess this EAL are commonly referred to as Area Radiation Monitors. These changes are not a deviation because they do not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL. 				
Deviation	None				

RU2 – Basis Justification						
KNPP S	pecific Additions/Deletions	Justification				
Added the Spent Fuel Pool (SFP) low level alarm and the KNPP specific elevation information that corresponds to applicable levels in the SFP.		This information was added to clearly identify the instrumentation to be used with respect to this EAL.				
Difference	One paragraph was added for clarification of site specific information.					
Deviations	None					

NEI IC# NEI IC Wording KNPP KNPP IC Wording IC#(s) Any Unplanned Release of Gaseous or Any UNPLANNED Release of Gaseous or Liquid Radioactivity to the Liquid Radioactivity to the Environment that RA1 exceeds 200 times the Offsite Dose Calculation Environment that Exceeds 200 Times AA1 the Radiological Effluent Technical Manual for 15 minutes or Longer Specifications for 15 Minutes or Longer Mode All All App. Site None specific Difference • The Offsite Dose Calculation Manual (ODCM) gives the site-specific technical specifications for gaseous and liquid releases. This change is not a deviation because it does not alter the meaning or intent, such that • classification of the event could be different between the NEI guidance and the plant EAL. Deviation None

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Word	ling
	VALID reading on any effluent monitor that exceeds 200 times the alarm setpoint established by a current radioactivity discharge permit for 15		VALID reading on effluent more THAN 200 times the alarm setp by a current radioactivity dischar minutes or longer.	nitor GREATER soint established arge permit for 15
	minutes or longer		Auxiliary Building	Action Value
			R-13 Aux. Bldg. Vent Exhaust	2.61E+07 cpm
			R-14 Aux. Bldg. Vent Exhaust	2.62E+07 cpm
1		RA1.1	Reactor Building	
-			R-12 Containment Gas	4.41E+07 cpm
			R-21 Containment Vent	4.40E+07 cpm
			Liquid Radwaste	
			R-18 Waste Disposal System	
			Liquid	2 X Calculated ODCM Setpoint
Site specific	 Monitors listed include routine ODCM effluent monitors at KNPP. Values identified are the results of calculations documented in C11620. 			
Difference	• "2 X Calculated ODCM Setpoint" was used due to setpoint being calculated for each discharge permit and is dependent upon flow rate of discharge.			
	• This change is not a deviation because classification of the event could be d	se it does not ifferent betw	t alter the meaning or intent, such yeen the NEI guidance and the pla	that ant EAL.
Deviation	None			

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wor	rding	
	VALID reading on one or more of the following radiation monitors that exceeds the reading shown for 15	RA1.2	VALID reading on one or mor radiation monitors GREATER reading shown for 15 minutes	e of the following THAN the or longer.	
	minutes or longer:		Liquid Radwaste	Action Value	
2	(site-specific list)		R-16 Containment FCU SW		
-			Return	3.38E+07 cpm	
			R-19 S/G Blowdown Liquid	2.58E+08 cpm	
			R-20 Aux Bldg SW Return	1.03E+07 cpm	
Site specific	 Monitors listed include non-routine ODCM effluent monitors at KNPP. Values identified are the results of calculations documented in C11620. 				
Difference	None				
Deviation	None				

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording		
3	Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates, with a release duration of 15 minutes or longer, in excess of 200 times (site- specific technical specifications)	RA1.3	Confirmed sample analyses for gaseous or liquid release indicate concentrations or release rates, with a release duration of 15 minutes or longer, in excess of 200 times ODCM limit		
Site specific	• The ODCM (Offsite Dose Calculation Manual) gives the site-specific technical specifications for gaseous and liquid releases.				
Difference	None				
Deviation	None				

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording	
4	VALID reading on perimeter radiation monitoring system greater than 10.0 mR/hr above normal background sustained for 15 minutes or longer [for sites having telemetered perimeter monitors]	N/A	N/A	
Site specific	N/A			
Difference	• Deleted NEI 99-01 Example EAL #4 because the plant is not equipped with perimeter radiation monitoring.			
Deviation	None		· · · · · · · · · · · · · · · · · · ·	

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording	
5	VALID indication on automatic real- time dose assessment capability greater than (site-specific value) for 15 minutes or longer [for sites having such capability]	N/A	N/A	
Site specific	N/A			
Difference	• Deleted NEI 99-01 Example EAL #5 because the plant is not equipped with automatic real-time dose assessment capability.			
Deviation	None			

RA1 – Basi	RA1 – Basis Justification					
KNPP	Specific Additions/Deletions		Justification			
1. Adde the ra for th	d specific information pertaining to idiation monitors listed and the basis ie values listed.	1.	This information was added to explain the monitor values.			
2. Deleted reference to EAL#4		2.	KNPP is not equipped with perimeter radiation monitors.			
3. Deleted reference to EAL#5		3.	KNPP is not equipped with automatic real-time dose assessment capabilities.			
4. Development information contained in the NEI Basis was deleted.		4.	Development information is not necessary after the site specific information has been developed. The basis would be very confusing if these statements were left in along with the site specific information.			
Difference	• Information was added to explain the basis for the monitor values.					
• "2 X Calculated ODCM Setpoint" was used for R-18 due to setpoint being calculated discharge permit and is dependent upon flow rate of discharge.						
	• EAL #4 and #5 Basis information	on is not a	applicable to KNPP and was deleted.			
Deviations	None					

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NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording		
AA2	Damage to Irradiated Fuel or Loss of Water Level that Has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel	RA2	Damage to Irradiated Fuel or Loss of Water Level that Has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel		
Mode App.	All		All		
Site specific	None				
Difference	None				
Deviation	None				

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording	
1	A VALID (site-specific) alarm or reading on one or more of the following radiation monitors: (site-specific monitors) Refuel Floor Area Radiation Monitor Fuel Handling Building Ventilation Monitor Refueling Bridge Area Radiation Monitor	RA2.1	 A VALID radiation indication high alarm or reading on one or more of the following radiation monitor resulting from damage to irradiated fuel or loss of water level: R-2, Containment Area R-5, Fuel Handling Area R-13 or R-14, Aux Bldg Vent Exhaust R-11 or R-12, Containment Particulate/Gas Ventilation R-21, Containment Vent 	
Site specific	 The listed radiation monitors represent the site-specific equivalents of Refuel Floor Area Radiation Monitor, Auxiliary Building Ventilation Monitor, Containment Ventilation Monitors, and Spent Fuel Pool Area Radiation Monitor. "Radiation Indication High" is the appropriate terminology for KNPP. 			
Difference	 Added the wording: "resulting from damage to irradiated fuel or loss of water level" to be consistent with NEI basis. This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL. 			
Deviation	None			

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
2	Water level less than (site-specific) feet for the reactor refueling cavity, spent fuel pool and fuel transfer canal that will result in irradiated fuel uncovering	RA2.2	Water level LESS THAN 50% Wide Range Refueling Water Level <u>OR</u> GREATER THAN 14 ft. below top of Spent Fuel Pool that will result in irradiated fuel uncovering.
Site specific	• Added site specific indications of 50% Wide Range Refueling Water Level and 14 ft. below top of Spent Fuel Pool. The values inserted are the maximum height the fuel could be during refueling. This would be bounding and conservative for all conditions. Since there is no remote level indication for corresponding Spent Fuel Pool Level, KNPP would rely on visual observation for the Spent Fuel Pool (a installed ruler on side).		
Difference	 The Fuel Transfer Canal was removed because there is no level indication and when fuel is located in the canal it is lined-up to the cavity and fuel pool. 		
	• Replaced "and" with " <u>OR</u> " since either level lowering can result in irradiated fuel uncovery.		
	 These changes are not a deviation because they do not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL. 		
Deviation	• None		

RA2 – Basis Justification				
KNP S	pecific Additions/Deletions	Justification		
Added the fol each pool is a at 608 ft el. F [Ref. 4].	lowing statement - The top of at 649 ft 6 in. el. and the bottom is uel occupies the bottom 14 ft.	This statement was added to provide clear reference to site specific information.		
Difference	Site specific information was added for clarity.			
Deviations	None			

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NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording	
AA3	Release of Radioactive Material or Increases in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown	RA3	Release of Radioactive Material or Rise in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown	
Mode App.	All	•	All	
Site specific	None			
Difference	None			
Deviation	None			

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
1	VALID (site-specific) radiation monitor readings GREATER THAN 15 mR/hr in areas requiring continuous occupancy to maintain plant safety functions: (Site-specific) list	RA3.1	VALID radiation monitor readings GREATER THAN 15 mR/hr in areas requiring continuous occupancy to maintain plant safety functions: Control Room (Rad Monitor R1) <u>OR</u> Central Alarm Station (Rad Monitor R1) <u>OR</u> Secondary Alarm Station (by survey)
Site specific	 Control Room, Central Alarm Statio continuous occupancy to maintain pl "by survey" has been added because 	n and Second ant safety fu automatic n	dary Alarm Station are site specific areas requiring inctions. nonitoring is not available in these areas.
Difference	None		
Deviation	None		

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording	
2	VALID (site-specific) radiation monitor readings GREATER THAN <site-specific> values in areas requiring infrequent access to maintain plant safety functions. (Site-specific) list</site-specific>	RA3.2	 Any VALID radiation monitor readings GREATER THAN 6 R/hr in areas requiring infrequent access to maintain plant safety functions Auxiliary Building Safeguards Alley Diesel Generator Rooms (includes "A" Diesel Room to Screen House Tunnel) Screenhouse/Forebay Relay Room Safeguard Battery Room 	
Site specific	 6 R/hr is the site specific value which areas. Site-specific list of areas requiring in 	h based on th ifrequent acc	ne administrative dose limit for access to these	
Difference	 "Any" has been added to clarify the fact that the threshold is met if there is a rise one or more of the indicated readings. This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL. 			
Deviation	None			

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RA3 – Basi	RA3 – Basis Justification				
<u>KNPP S</u>	pecific Additions/Deletions		Justification		
1. Added requir	site specific information for areas ng continuous occupancy.	1.	This information was added to clarify the applicable areas.		
2. Added the do requiri	a paragraph explaining the basis of se rate (6 Rem/hr) used for areas ing infrequent access.	2.	The basis of this number and specifically the estimated time that it was based on is important in understanding the intent of this EAL.		
3. A para radiati Moniti identif radiati	graph explaining that in-plant on surveys and/or Area Radiation or (ARM) readings should be used to y VALID unplanned dose rate on monitor readings.	3.	This was added to ensure clarity as to the meaning of the term - VALID unplanned dose rate radiation monitor readings		
 General KNPP plant specific information was added or replaced non-specific NEI information. 		4.	This information was added for explanation and clarification of site specifics.		
5. Develo NEI B	opment information contained in the asis was deleted.	5.	Development information is not necessary after the site specific information has been developed. The basis would be very confusing if these statements were left in along with the site specific information.		
Difference	Clarification and explanation of th	e EAL b	asis was added.		
Deviations None					

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NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording	
AS1	Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mR TEDE or 500 mR Thyroid CDE for the Actual or Projected Duration of the Release	RS1	Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 100 mRem TEDE or 500 mRem Thyroid CDE for the Actual or Projected Duration of the Release	
Mode App.	All		All	
Site specific	None			
Difference	 "mRem" was used instead of "mR" based on a request for use of this nomenclature from the Wisconsin State Emergency Management Office 			
	• This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL			
Deviation	None			

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wor	ding	
	NOTE: If dose assessment results are available at the time of declaration, the classification should be based on EAL #2 instead of EAL #1.While necessary declarations should not be delayed awaiting results, the dose assessment should be initiated / completed in order to determine if the classification should be subsequently escalated		NOTE: If dose assessment resu at the time of declaration, the c should be based on RS1.2 inste RS1.1.While necessary declara be delayed awaiting results, the should be initiated / completed determine if the classification s subsequently escalated.	Its are available lassification ad of tions should not e dose assessment in order to hould be	
	VALID reading on one or more of the following radiation monitors that exceeds or is expected to exceed the		VALID reading on any monito exceeds or is expected to excee shown for 15 minutes or longer	rs listed that d the reading	
	reading shown for 15 minutes or longer		Auxiliary Building	Action Value	
	(site-specific list)		Range	1 00E+04 cpm	
1		RS1.1	01-09 Aux. Bldg. SPING Hi	21002 · 0 · 0pm	
			Range	1.00E+01 cpm	
			Reactor Building		
			02-07 Rx Bldg. Vent SPING M	lid	
			Range	2.00E+03 cpm	
			Main Steam Line (PORV)		
			R-31 'A' Steamline Lo Range	1.77E+02 mR/hr	
			R-33 'B' Steamline Lo Range	1.77E+02 mR/hr	
			Main Steam Line (SG Safety)	R 20E 01 D #	
			R-33 'B' Steamline Lo Range	8.30E+01 mR/hr	
Site specific	 Monitors listed include all effluent monitors at KNPP. Values identified are the results of calculations documented in C11620. 				
Difference	 The phrase "one or more" has been replaced by "any." The use of the term "any" is equivalent to "one or more", decreases EAL user reading burden and, thereby, increases the potential for timely and accurate emergency classifications 				
	 This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL 				
Deviation	None				

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording		
2	Dose assessment using actual meteorology indicates doses greater than 100 mR TEDE or 500 mR thyroid CDE at or beyond the site boundary	RS1.2	Dose assessment using actual meteorology indicates doses GREATER THAN 100 mRem TEDE or 500 mRem Thyroid CDE at or beyond the site boundary.		
Site specific	None				
Difference	 "mRem" was used instead of "mR" based on a request for use of this nomenclature from the Wisconsin State Emergency Management Office This shange is not a deviation because it does not alter the meaning or intert, such that 				
	classification of the event could be different between the NEI guidance and the plant EAL				
Deviation	None				

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording	
3	A VALID reading sustained for 15 minutes or longer on perimeter radiation monitoring system greater than 100 mR/hr. [for sites having telemetered perimeter monitors]	N/A	N/A	
Site specific	N/A			
Difference	Deleted NEI 99-01 Example EAL #3 because the plant is not equipped with perimeter radiation monitoring.			
Deviation	None			

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	NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording			
	4	Field survey results indicate closed window dose rates exceeding 100 mR/hr expected to continue for more than one hour; or analyses of field survey samples indicate thyroid CDE of 500 mR for one hour of inhalation, at or beyond the site boundary	RS1.3	Field survey results indicate closed window dose rates exceeding 100 mRem/hr expected to continue for more than one hour, at or beyond the site boundary. <u>OR</u> Analyses of field survey samples indicate thyroid CDE of 500 mRem for one hour of inhalation, at or beyond the site boundary			
	Site specific	None .					
	Difference	"" "mRem" was used instead of "mR" based on a request for use of this nomenclature from the Wisconsin State Emergency Management Office					
		 Added "at or beyond the site boundar 	 Added "at or beyond the site boundary" prior to OR for clarity of the logic statement. 				
 These changes are not a deviation because th classification of the event could be different 				o not alter the meaning or intent, such that een the NEI guidance and the plant EAL			
	Deviation	None					

RS1 – Basis Justification						
KNPP Specific Additions/Deletions		Justification				
 Added specific information pertaining to the radiation monitors listed and the basis for the values listed. 		1.	This information was added to explain the monitor values.			
2. General KNPP plant specific information was added or replaced non-specific NEI information.		2.	This information was added for explanation and clarification of site specifics.			
3. Development information contained in the NEI Basis was deleted.		3.	Development information is not necessary after the site specific information has been developed. The basis would be very confusing if these statements were left in along with the site specific information.			
Difference Site specific basis information was ad		dded for	clarification of radiation monitor values.			
Deviations None.						

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NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording	
AG1	Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 1000 mR TEDE or 5000 mR Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology	RG1	Offsite Dose Resulting from an Actual or Imminent Release of Gaseous Radioactivity Exceeds 1000 mRem TEDE or 5000 mRem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology	
Mode App.	All	All		
Site specific	None			
Difference	• "mRem" was used instead of "mR" based on a request for use of this nomenclature from the Wisconsin State Emergency Management Office			
	• This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL			
Deviation	None			

	NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL W	ording
		NOTE: If dose assessment results are available at the time of declaration, the classification should be based on EAL #2 instead of EAL #1.While necessary declarations should not be delayed awaiting results, the dose assessment should be initiated / completed in order to determine if the classification should be subsequently escalated.		NOTE: If dose assessment re at the time of declaration, the should be based on RG1.2 in RG1.1.While necessary decla be delayed awaiting results, t should be initiated / complete determine if the classification subsequently escalated.	esults are available e classification stead of arations should not the dose assessment ed in order to a should be
		VALID reading on one or more of the following radiation monitors that exceeds or expected to exceed the		VALID reading on any moni exceeds or is expected the rea minutes or longer.	tors listed that ading shown for 15
		longer:		Auxiliary Building	Action Value
		(site-specific list)		01-07 Aux. Bldg. SPING Mi	đ
				Range	1.00E+05 cpm
				01-09 Aux. Bldg. SPING Hi	
				Range	1.00E+02 cpm
	1		RG1.1	<u>Reactor Building</u> 02-07 Rx Bldg. Vent SPING Mid Range	2.00E+04 cpm
				02-09 Rx Bldg. Vent SPING	
·				Hi Range	2.00E+01 cpm
				Main Steam Line (PORV)	
				R-31 'A' Steamline Lo	
				Range	1.77E+03 mR/hr
				R-32 'A' Steamline High	
				Range	1.77E+00 R/hr
				R-33 B' Steamline Lo	1 77E+02 D/h
				D 24 (D' Steamline High	1.//E+05 IIIK/III
				R-54 B Steamme High Range	1 77E+00 B/hr
				Tunge	1.77 <u>1</u> 2.00101
				Main Steam Line (SG Safet	v)
				R-31 'A' Steamline Lo	
				Range	8.30E+02 mR/hr
				R-33 'B' Steamline Lo	
				Range	8.30E+02 mR/hr
ŀ	Site	 Monitors listed include all effluent m 	onitors at K	NPP. Values identified are the	results of

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specific		calculations documented in C11620.
Difference	-	The phrase "one or more" has been replaced by "any." The use of the term "any" is equivalent to "one or more", decreases EAL user reading burden and, thereby, increases the potential for timely and accurate emergency classifications
	•	This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL
Deviation	No	one

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
2	Dose assessment using actual meteorology indicates doses greater than 1000 mR TEDE or 5000 mR thyroid CDE at or beyond the site boundary	RG1.2	Dose assessment using actual meteorology indicates doses GREATER THAN 1000 mRem TEDE or 5000 mRem thyroid CDE at or beyond the site boundary
Site specific	None		
Difference	 "mRem" was used instead of "mR" based on a request for use of this nomenclature from the Wisconsin State Emergency Management Office This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL 		
Deviation	None		

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
3	A VALID reading sustained for 15 minutes or longer on perimeter radiation monitoring system greater than 1000 mR/hr. [for sites having telemetered perimeter monitors]	N/A	N/A
Site specific	N/A		
Difference	Deleted NEI 99-01 Example EAL #3 because the plant is not equipped with perimeter radiation monitoring		
Deviation	None		······································

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
4	Field survey results indicate closed window dose rates exceeding 1000 mR/hr expected to continue for more than one hour; or analyses of field survey samples indicate thyroid CDE of 5000 mR for one hour of inhalation, at or beyond site boundary.	RG1.3	 Field survey results indicate closed window dose rates exceeding 1000 mRem/hr expected to continue for more than one hour, at or beyond site boundary. <u>OR</u> Analyses of field survey samples indicate thyroid CDE of 5000 mRem for one hour of inhalation, at or beyond site boundary
Site specific	None		
Difference	 "mRem" was used instead of "mR" based on a request for use of this nomenclature from the Wisconsin State Emergency Management Office Added "at or beyond the site boundary" prior to OR for clarity of the logic statement. 		
	 These changes are not a deviation be classification of the event could be d 	cause they d ifferent betw	o not alter the meaning or intent, such that ween the NEI guidance and the plant EAL
Deviation	None		

RG1 – Basis Justification				
KNPP Specific Additions/Deletions			Justification	
1. Added the rac for the	l specific information pertaining to liation monitors listed and the basis values listed.	1.	This information was added to explain the monitor values.	
2. Generative was ad inform	al KNPP plant specific information defined or replaced non-specific NEI mation.	2.	This information was added for explanation and clarification of site specifics.	
3. Development information contained in the NEI Basis was deleted.		3.	Development information is not necessary after the site specific information has been developed. The basis would be very confusing if these statements were left in along with the site specific information.	
Difference	Site specific basis information was added for clarification of radiation monitor values			
Deviations	None.	ine.		

NEI IC# NEI IC Wording KNPP KNPP IC Wording IC#(s) ÷., RCS Leakage CU1 CU1 **RCS** Leakage Mode Cold Shutdown Cold Shutdown App. Site None specific Difference None Deviation None

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
1	Unidentified or pressure boundary leakage greater than 10 gpm	CU1.1	Unidentified or pressure boundary leakage GREATER THAN 10 gpm
Site specific	None		
Difference	None		
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
2	Identified leakage greater than 25 gpm	CU1.2	Identified leakage GREATER THAN 25 gpm
Site specific	None		
Difference	None		······································
Deviation	None		

Cold Shutdown / Refueling System Malfunction

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CU1 – Basis	CU1 – Basis Justification				
KNPP S	pecific Additions/Deletions	Justification			
Added: Positive indic Reactor Coola containment a monitors: Chargin Contain Contain Runoff contain Sump A	ations in the Control Room of ant System (RCS) leakage to the are provided by equipment that ng/Letdown flow mismatch ament air activity ament atmosphere humidity from the air recirculation units and ament floor drains to Containment A In-leakage	Supplemental information was added to provide guidance as to positive indications of RCS leakage.			
Difference	Added site specific supplemental inf	supplemental information to aid in EAL determination.			
Deviations	None				

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NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording
CU2	UNPLANNED Loss of RCS Inventory with Irradiated Fuel in the RPV	CU2	UNPLANNED Loss of RCS Inventory with Irradiated Fuel in the Reactor Vessel
Mode App.	Refueling		Refueling
Site specific	None		
Difference	None		
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
1	UNPLANNED RCS level decrease below the RPV flange for \geq 15 minutes	CU2.1	UNPLANNED RCS level lowering below the Reactor Vessel flange (21.5%) for GREATER THAN OR EQUAL TO 15 minutes.
Site specific	 21.5% is the site specific value from the reactor vessel level indicator at the flange per N-RC-36E, Draining the Reactor Coolant System 		
Difference	None		
Deviation	None		· · ·

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
2	 a. Loss of RPV inventory as indicated by unexplained {site-specific} sump and tank level increase <u>AND</u> b. RPV level cannot be monitored 	CU2.2	Loss of Reactor Vessel inventory as indicated by unexplained Containment Sump A, Containment Sump C or Liquid Waste Disposal System level rise <u>AND</u> Reactor Vessel level cannot be monitored
Site specific	 "Containment Sump A, Containment Sump C, and Liquid Waste Disposal System" are the site specific indications for loss of reactor vessel level inventory 		
Difference	None		
Deviation	None		

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CU2 – Basis Justification				
KNPP Specific Additions/Deletions Justification				
Added site specific information on sumps, tanks and reactor vessel level indication to the basis where appropriate. Unnecessary NEI EAL development information was deleted.		The site specific information will make EAL determination easier and less time consuming. Also, removed unnecessary information the end user would not need.		
Difference	Added site specific information to the basis.			
Deviations	None			

NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording
CU3	Loss of All Offsite Power to Essential Busses for Greater Than 15 Minutes	CU3	Loss of All Offsite Power to Essential Busses for GREATER THAN 15 Minutes
Mode App.	Cold Shutdown, Refueling		Cold Shutdown, Refueling
Site specific	None		
Difference	None		
Deviation	None		

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
1	 a. Loss of power to (site-specific) transformers for greater than 15 minutes. AND b. At least (site-specific) emergency generators are supplying power to emergency busses 	CU3.1	Loss of all offsite power to Bus 5 AND Bus 6 for GREATER THAN 15 minutes <u>AND</u> At least one emergency diesel generator is supplying power to Bus 5 or Bus 6
Site specific	 "all offsite power to Bus 5 and Bus 6" – has been used in place of "transformers" to focus the classification on the loss of offsite power capability rather than the status of one or more transformers that may or may not be capable of powering the essential buses Safety related Bus 5 and Bus 6 identifies the site specific ESF busses "One diesel generator" is the site specific number needed to power one ESF bus. 		
Difference	 The NEI example EAL condition "Loss of power to (site-specific) transformers for greater than 15 minutes" has been changed to "Loss of offsite power to Bus 5 and Bus 6 for GREATER THAN 15 min." The KNPP wording focuses the classification on the loss of offsite power capability rather than the status of one or more transformers that may or may not be capable of powering the essential buses. This simplifies the EAL wording and meets the intent of the NEI IC. This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL 		
Deviation	None		

CU3 – Basis Justification				
KNPP	Specific Additions/Deletions	Justification		
1. Added site informatic purpose o	e specific system description on on offsite power sources for the f classification under this EAL.	1. This information was added to clarify the conditions under which this EAL would apply.		
2. Removed	the companion unit paragraph.	2. KNPP is a single unit site.		
Difference	Added site specific information on offsite power sources.			
Deviations	None			

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NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording
CU4	UNPLANNED Loss of Decay Heat Removal Capability with Irradiated Fuel in the RPV	CU4	UNPLANNED Loss of Decay Heat Removal Capability with Irradiated Fuel in the Reactor Vessel
Mode App.	Cold Shutdown, Refueling		Cold Shutdown, Refueling
Site specific	None.		
Difference	None		
Deviation	None	·	

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
1	An UNPLANNED event results in RCS temperature exceeding the Technical Specification cold shutdown temperature limit	CU4.1	An UNPLANNED event results in RCS temperature GREATER THAN 200°F
Site specific	 LESS THAN OR EQUAL to 200 °F limit. 	" is the Tech	nical Specification cold shutdown temperature
Difference	None		
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
2	Loss of all RCS temperature and RPV level indication for > 15 minutes	CU4.2	Loss of all RCS temperature and Reactor Vessel level indication for GREATER THAN 15 minutes.
Site specific	None		
Difference	None		
Deviation	None		

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C	CU4 – Basis Justification			
	KNPP	Specific Additions/Deletions		Justification
1.	Deleted 3 informatio	0 minute time (and associated on) in discussing escalation to Alert.	I. The 30 min number wa	nute time statement was incorrect and a single s not available for KNPP.
2.	Added site instrumen level is no	e specific information describing tation on which Reactor Vessel water ormally monitored.	2. This inform available to classification	nation was added to clarify indications persons making decisions on this EAL on.
Dif	 ifference Deleted escalation 30 minute statement. Added site specific information. 			
De	viations	N/A		

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NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording
CU5	Fuel Clad Degradation	CU5	Fuel Clad Degradation
Mode App.	Cold Shutdown, Refueling		Cold Shutdown, Refueling
Site specific	None		
Difference	None		
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP KNPP EAL Wording EAL#(s)	
1	(Site-specific) radiation monitor readings indicating fuel clad degradation greater than Technical Specification allowable limits	CU5.1 RCS Letdown Line (R-9) radiation monitor GREATER 2000 mR/hr indicating fuel clad degradation	
Site specific	 RCS Letdown Line (R-9) is the site specific monitor designated to indicate fuel clad failure. 2000 mR/hr is equal to the Technical Specification allowable limits 		
Difference	 Reworded NEI EAL for readability This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL 		
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
2	(Site-specific) coolant sample activity value indicating fuel clad degradation greater than Technical Specification allowable limits	CU5.2	 Coolant sample activity GREATER THAN <u>ANY</u> of the following indicating fuel clad degradation: 1.0 μCi/gram dose equivalent Iodine-131 for more than 48 hours in one continuous time interval 60 μCi/gram dose equivalent Iodine- 131. 91/Ē μCi/cc gross radioactivity

Site specific	 The following are KNPP Technical Specification Limits for coolant sample activity: 1.0 μCi/gram dose equivalent Iodine-131 for more than 48 hours in one continuous time interval 60 μCi/gram dose equivalent Iodine-131. 91/E μCi/cc gross radioactivity
Difference	 "technical specification allowable limits" – was deleted as it duplicates the site specific tech spec value already listed in the EAL
	 This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL
Deviation	None

Cold Shutdown	Defueling System Malfunction
	Neruenny System Manufelion

CU5 – Basis	Justification	•	
KNPP S	pecific Additions/Deletions	•••	Justification
1. Added setpoi	l site-specific information on R-9 nt for SU4.1	1.	This information was added to clarify the information used to determine the R-9 setpoint
Difference	Added KNPP site specific informatio	n	
Deviations	N/A		

NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording	
CU6	UNPLANNED Loss of All Onsite or Offsite Communications Capabilities	CU6	UNPLANNED Loss of All Onsite or Offsite Communications Capabilities	
Mode App.	Cold Shutdown, Refueling		Cold Shutdown, Refueling	
Site specific	None			
Difference	None			
Deviation	None			

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
1	Loss of all (site-specific list) onsite communications capability affecting the ability to perform routine operations	CU6.1	Loss of all Table C-1 onsite communications capability affecting the ability to perform routine operations
Site specific	Table C-1 lists site specific equipment used for onsite communications		
Difference	None		
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
2	Loss of all (site-specific list) offsite communications capability	CU6.2	Loss of all Table C-2 offsite communications capability
Site specific	Table C-2 lists site specific equipment used for offsite communications		
Difference	None		
Deviation	None		

CU6 – Bas	is Justification	
KNPP	Specific Additions/Deletions	Justification
Explanation o basis.	f Tables C1 and C2 was added to the	Tables C1 and C2 were added to clearly delineate between onsite communication equipment and offsite communication equipment.
Difference	Explanation of Tables C1 and C2 were added.	
Deviations	None	

NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording
CU7	UNPLANNED Loss of Required DC Power for Greater than 15 Minutes	CU7	UNPLANNED loss of Required DC power for GREATER THAN 15 minutes
Mode App.	Cold Shutdown, Refueling		Cold Shutdown, Refueling
Site specific	None		
Difference	None		
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
1	 a. UNPLANNED Loss of Vital DC power to required DC busses based on (site-specific) bus voltage indications. AND b. Failure to restore power to at least one required DC bus within 15 minutes from the time of loss. 	CU7.1	 UNPLANNED Loss of Vital DC power based on LESS THAN 105 VDC on Train A <u>AND</u> Train B Safeguards DC Distribution System. <u>AND</u> Failure to restore power to at least one required Train of the Safeguards DC Distribution System within 15 minutes from the time of loss.
Site specific	 LESS THAN 105 VDC on Train A AND Train B Safeguards DC Distribution System is the KNPP design voltage and specific DC buses. 		
Difference	 The design of the KNPP 125v DC Distribution System is such that a loss of different combinations of distribution panels and buses could constitute a loss of DC power to a Train. These combinations that would cause a loss of DC power are covered in the basis for this EAL. This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL 		
Deviation	None		

CU7 – Basis Justification			
KNPP	Specific Additions/Deletions	Justification	
Added site specific information on safeguards DC train and DC distribution panels. Unnecessary NEI EAL development information was deleted.		This information was added for explanation and clarification of the specific equipment involved when making determinations under this EAL. Also, removed unnecessary information the end user would not need.	
Difference	Added site specific information.		
Deviations	None		

NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording
CU8	Inadvertent Criticality	CU8	Inadvertent Criticality
Mode App.	Cold Shutdown, Refueling		Cold Shutdown, Refueling
Site specific	None		
Difference	None	·	
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)		KNPP EAL Wording
1	An UNPLANNED extended positive period observed on nuclear instrumentation	N/A	N/A	
Site specific	N/A			
Difference	Not applicable, BWR NEI EAL.			
Deviation	N/A			

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
2	An UNPLANNED sustained positive startup rate observed on nuclear instrumentation	CU8.1	An UNPLANNED sustained positive startup rate observed on nuclear instrumentation
Site specific	None		
Difference	None		
Deviation	None		

CU8 – Basis Justification			
KNPP S	pecific Additions/Deletions	Justification	
Added the sent identified using Source Range S	ence - This condition can be startup rate meters (NI-31D/32D - Startup Rate).	This was added to provide site specific information to the basis.	
Difference	Added site specific information.		
Deviations	None.		

NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording
CA1	Loss of RCS Inventory	CA1	Loss of RCS Inventory
Mode App.	Cold Shutdown		Cold Shutdown
Site specific	N/A		
Difference	None		
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
1	Loss of RCS inventory as indicated by RPV level less than {site-specific level}. (low-low ECCS actuation setpoint) (BWR) (bottom ID of the RCS loop) (PWR)	CA1.1	 Loss of RCS inventory as indicated by one or more of the following: Wide Range Refueling Water Level LESS THAN 8% RVLIS at 0% Sightglass water level LESS THAN 252 in
Site specific	 8% Wide Range Refueling Water Le specific indications that water level i the Reactor Coolant System 	evel, RVLIS is at the botto	0% and Sightglass at 252 inches are the site om of the RCS hot leg. per N-RC-36E, Draining
Difference	None		
Deviation	None		

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
2	 a. Loss of RCS inventory as indicated by unexplained {site-specific} sump and tank level increase <u>AND</u> b. RCS level cannot be monitored for > 15 minutes 	CA1.2	Loss of RCS inventory as indicated by unexplained level rise in any of the following: Containment Sump A Containment Sump C Liquid Waste Disposal System AND RCS level cannot be monitored for GREATER THAN 15 min.
Site specific	 "Containment Sump A, Containment specific indications for loss of reactor 	it Sump C, a or vessel leve	nd Liquid Waste Disposal System" are the site 1 inventory

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Difference	None
Deviation	None

CA1 – Basis	Justification			
KNPP	Specific Additions/Deletions	Justification		
Added site spec level monitorin elevations, and	cific information on Reactor water g indications, corresponding applicable sumps and tanks.	This information was a of site specifics.	dded for explanation and cla	rification
Difference	Added KNPP site specific informat	tion.		
Deviations	None			

NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording
CA2	Loss of RPV Inventory with Irradiated Fuel in the RPV	CA2	Loss of Reactor Vessel Inventory with Irradiated Fuel in the Reactor Vessel
Mode App.	Refueling		Refueling
Site specific	None		
Difference	None		
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
1	Loss of RPV inventory as indicated by RPV level less than {site-specific level}. (bottom ID of the RCS Loop)	CA2.1	Loss of Reactor Vessel inventory as indicated by Wide Range Refueling Water Level LESS THAN 8% (0% RVLIS, 252 in. sightglass)
Site specific	 8% is the site specific value from the L9054A) at the bottom of the RCS h 	wide range ot leg. per N	refueling water level indicators (L9053A and -RC-36E, Draining the Reactor Coolant System
Difference	None		
Deviation	None		

NEI EAL#	NEI EAL Wording KNF EAL#	P KNPP EAL Wording (s)
2	 a. Loss of RPV inventory as indicated by unexplained {site-specific} sump and tank level increase <u>AND</u> b. RPV level cannot be monitored for > 15 minutes 	Loss of Reactor Vessel inventory as indicated by unexplained level rise in any of the following: Containment Sump A Containment Sump C 2 Liquid Waste Disposal System <u>AND</u> Reactor Vessel level cannot be monitored for GREATER THAN 15 minutes.
Site specific	 "Containment Sump A, Containment Sump specific indications for loss of reactor vessel 	C, and Liquid Waste Disposal System" are the site level inventory
Difference	None	
Deviation	None	

CA2 – Basis Justification			
KNPI	P Specific Additions/Deletions	Justification	
Added site sp level monitori elevations, an	ecific information on Reactor water ing indications, corresponding d applicable sumps and tanks.	This information was added for explanation and clarification of site specifics.	
Difference	Added KNPP site specific information.		
Deviations	None		

NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording
CA3	Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses	CA3	Loss of All Offsite Power and Loss of All Onsite AC Power to Essential Busses
Mode App.	Cold Shutdown, Refueling, Defueled		Cold Shutdown, Refueling, Defueled
Site specific	None		
Difference	None		
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
	a. Loss of power to (site-specific) transformers.		Loss of ALL power to Bus 5 AND Bus 6 for GREATER THAN 15 minutes
1	b. Failure of (site-specific) emergency generators to supply power to emergency busses.	CA3.1	
	AND c. Failure to restore power to at least one emergency bus within 15 minutes from the time of loss of both offsite and onsite AC power.		
Site specific	 "all offsite power to Bus 5 and Bus 6 classification on the loss of offsite po transformers that may or may not be and Bus 6 identifies the site specific 	5" – has beer ower capabil capable of p ESF buses.	used in place of "transformers" to focus the ity rather than the status of one or more owering the essential buses. Safety related Bus 5
	 Emergency diesel generators A and I 	B are site spe	cific generators that would supply the ESF buses.

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Difference	 The NEI example EAL condition "Loss of power to (site-specific) transformers" has been changed to "Loss of offsite power to Bus 5 and Bus 6." The KNPP wording focuses the classification on the loss of offsite power capability rather than the status of one or more transformers that may or may not be capable of powering the essential buses. This simplifies the EAL wording and concisely meets the intent of the NEI IC.
	 KNPP EAL was reformatted from three NEI conditions to an encompassing one condition. This was done to simplify the classification and the economy of words. Stating that "ALL power" is lost to Bus 5 and Bus 6 covers the first two NEI conditions (loss of power to the transformers and failure of the emergency diesel generators). "For GREATER THAN 15 minutes" is equivalent to the third NEI condition (time to restore power to at least one emergency bus).
	 These changes are not deviations because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL
Deviation	None

CA3 – Basis Justification			
KNPP S	Specific Additions/Deletions	Justification	
Added site specific information on KNPP offsite and onsite AC power to the 4160 VAC ESF buses.		This information was added for explanation and clarification of site specifics.	
Difference	Added KNPP site specific information.		
Deviations	None.		

NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording
CA4	Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the RPV	CA4	Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the Reactor Vessel
Mode App.	Cold Shutdown, Refueling		Cold Shutdown, Refueling
Site specific	None.		
Difference	None		
Deviation	None		

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
1	With CONTAINMENT CLOSURE and RCS integrity <u>not</u> established an UNPLANNED event results in RCS temperature exceeding the Technical Specification cold shutdown temperature limit.	CA4.1	With CONTAINMENT CLOSURE NOT established <u>AND</u> RCS integrity NOT established An UNPLANNED event results in RCS temperature GREATER THAN 200°F
Site specific	 "GREATER THAN 200°F" - represents the Tech Spec cold shutdown temperature limit (Less than or equal to 200°F). 		
Difference	 Added, "NOT established" for containment closure for human factors considerations. This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL 		
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
2	With CONTAINMENT CLOSURE established <u>and</u> RCS integrity <u>not</u> established <u>or</u> RCS inventory reduced an UNPLANNED event results in RCS temperature exceeding the Technical Specification cold shutdown temperature limit for greater than 20 minutes ¹ . ¹ Note: If RHR system is in operation within this time frame and RCS temperature is being reduced then this EAL is not applicable.	CA4.2	With CONTAINMENT CLOSURE established <u>AND</u> RCS integrity NOT established <u>OR</u> Wide Range Refueling Water Level LESS THAN OR EQUAL TO 17.0% An UNPLANNED event results in RCS temperature GREATER THAN 200°F for GREATER THAN 20 minutes* *NOTE: If RHR system is in operation within this time frame and RCS temperature is being reduced then this EAL is not applicable.
Site specific	 "GREATER THAN 200°F" - represents the Tech Spec cold shutdown temperature limit (Less than or equal to 200°F). RHR is the KNPP RCS heat removal system below 200°F. 		
Difference	 Inserted 17.0% Wide Range Refueling Water Level for the KNPP setpoint for reduced inventory Inserted note contained in NEI document for human factors consideration. This change is not a deviation because it dose not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL 		
Deviation	None		

NEI **NEI EAL Wording** KNPP KNPP EAL Wording EAL# EAL#(s) An UNPLANNED event results in RCS An UNPLANNED event results in RCS temperature GREATER THAN 200°F for temperature exceeding the Technical **GREATER THAN 60 minutes*** Specification cold shutdown temperature limit for greater than 60 <u>OR</u> minutes¹ or results in an RCS pressure increase of greater than {site-specific} 3 CA4.3 Results in an RCS pressure increase of psig. GREATER THAN 10 psig. ¹Note: If RHR system is in operation within this time frame and RCS *NOTE: If RHR system is in operation within temperature is being reduced then this this time frame and RCS temperature is being EAL is not applicable. reduced then this EAL is not applicable. Site . "GREATER THAN 200°F" - represents the Tech Spec cold shutdown temperature limit (Less than specific or equal to 200°F). 10 psig - KNPP pressure instrumentation can read less than 10 psig. Difference Inserted note contained in NEI document for human factors consideration. This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL Deviation None

CA4 – Basis	s Justification			
KNPP S	Specific Additions/Deletions	Justification		
Added KNPP site specific information on pressure, level and temperature indication. Unnecessary NEI EAL development information was deleted.		This information was added for explanation and clarification of site specifics. Also, removed unnecessary information the end user would not need.		
Difference	Added KNPP site specific information.			
Deviations	None			
NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording	
------------------	-----------------------------------------------------------------------	----------------	----------------------------------------------------------------------------------	
CS1	Loss of RPV Inventory Affecting Core Decay Heat Removal Capability	CS1	Loss of Reactor Vessel Inventory Affecting Core Decay Heat Removal Capability	
Mode App.	Cold Shutdown,		Cold Shutdown	
Site specific	None			
Difference	None			
Deviation	None			

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NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording	
1	 With CONTAINMENT CLOSURE not established: a. RPV inventory as indicated by RPV level less than {site-specific level} (6" below the low-low ECCS actuation setpoint) (BWR) (6" below the bottom ID of the RCS loop) (PWR) OR b. RPV level cannot be monitored for > 30 minutes with a loss of RPV inventory as indicated by unexplained {site-specific} sump and tank level increase 	CS1.1	 With CONTAINMENT CLOSURE NOT established: a. Reactor Vessel inventory as indicated by Wide Range Refueling Water Level LESS THAN 7% OR b. Reactor Vessel level cannot be monitored for GREATER THAN 30 minutes with a loss of Reactor Vessel inventory as indicated by unexplained level rise in any of the following: Containment Sump A Containment Sump C Liquid Waste Disposal System 	
Site specific	 Wide Range Refueling Water Level Leg "Containment Sump A, Containment specific indications for loss of reactor 	LESS THAN t Sump C, an or vessel leve	N 7% is KNPP setpoint for 6" below ID of Hot ad Liquid Waste Disposal System" are the site al inventory	
Difference	None			
Deviation	None.			

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording	
2	 With CONTAINMENT CLOSURE established a. RPV inventory as indicated by RPV level less than TOAF OR b. RPV level cannot be monitored for > 30 minutes with a loss of RPV inventory as indicated by either: Unexplained {site-specific} sump and tank level increase Erratic Source Range Monitor Indication 	CS1.2	 With CONTAINMENT CLOSURE established: a. Reactor Vessel inventory as indicated by Wide Range Refueling Water Level EQUAL TO 0% <u>OR</u> b. Reactor Vessel level cannot be monitored for GREATER THAN 30 minutes with a loss of Reactor Vessel inventory as indicated by either: Unexplained Containment Sump A, Containment Sump C, <u>OR</u> Liquid Waste Disposal System level rise Erratic Source Range Monitor Indication 	
Site specific	 Wide Range Refueling Water Level EQUAL TO 0% Refueling Level is KNPP's setpoint for top of active fuel. "Containment Sump A, Containment Sump C, and Liquid Waste Disposal System" are the site specific indications for loss of reactor vessel level inventory 			
Difference	None			
Deviation	None			

CS1 – Basi	CS1 – Basis Justification			
KNPP	Specific Additions/Deletions	Justification		
Added KNPP explanations of levels and low EAL develops	site specific information and of actions required for raising sump tering RCS levels. Unnecessary NEI nent information was deleted.	This information was added for explanation and clarification of site specifics. Also, removed unnecessary information the end user would not need.		
Difference	Added KNPP site specific information.			
Deviations	None			

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NEI IC#	NEI IC Wording	KNPP IC#(s)	KNPP IC Wording
CS2	Loss of RPV Inventory Affecting Core Decay Heat Removal Capability with Irradiated Fuel in the RPV	CS2	Loss of Reactor Vessel Inventory Affecting Core Decay Heat Removal Capability with Irradiated Fuel in the Reactor Vessel
Mode App.	Refueling		Refueling
Site specific	None		
Difference	None		
Deviation	None		

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
1	 With CONTAINMENT CLOSURE not established: a. RPV inventory as indicated by RPV level less than {site-specific level} (6" below the low-low ECCS actuation setpoint) (BWR) (6" below the bottom ID of the RCS loop) (PWR) OR b. RPV level cannot be monitored with Indication of core uncovery as evidenced by one or more of the following: Containment High Range Radiation Monitor reading > {site-specific} setpoint Erratic Source Range Monitor Indication Other {site-specific} indications 	CS2.1	 With CONTAINMENT CLOSURE NOT established: a. Reactor Vessel inventory as indicated by Wide Range Refueling Water Level LESS THAN 7% OR b. Reactor Vessel level cannot be monitored with Indication of core uncovery as evidenced by one or more of the following: Containment Area Radiation Monitor (R-2) reading GREATER THAN 100 mRem/hr Erratic Source Range Monitor Indication
Site specific	 100 mRem/hr is the alarm setpoint for Wide Range Refueling Water Level Leg R-2 is the Containment Area Radiation 	or R-2. LESS THAN	N 7% is KNPP setpoint for 6" below ID of Hot
Difference	• R-2 is used instead of the high range uncovered, the location of the high range Therefore the alarm setpoint of R-2 v	containmen ange monito was selected	t monitors because if a small amount of fuel was rs would preclude them reading on scale. to indicate a rise in containment radiation

	resulting from the conditions of this EAL.	
	• This change is not a deviation because it dose not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL	
Deviation	None	

NEI EAL#	NEI EAL Wording	KNPP EAL#(s)	KNPP EAL Wording
2	 With CONTAINMENT CLOSURE established: a. RPV inventory as indicated by RPV level less than TOAF OR b. RPV level cannot be monitored with Indication of core uncovery as evidenced by one or more of the following: Containment High Range Radiation Monitor reading > {site-specific} setpoint Erratic Source Range Monitor Indication Other {site-specific} indications 	CS2.2	 With CONTAINMENT CLOSURE established a. Reactor Vessel inventory as indicated by Wide Range Refueling Water Level EQUAL TO 0% OR b. Reactor Vessel level cannot be monitored with Indication of core uncovery as evidenced by one or more of the following: Containment Area Radiation Monitor (R-2) reading GREATER THAN 100 mRem/hr Erratic Source Range Monitor Indication
Site specific	 100 mRem/hr is the alarm setpoint fo R-2 is the Containment Area Radiati 	or R-2. on Monitor	
Difference	 Wide Range Refueling Water Level EQUAL TO 0% Refueling Level is KNPP's setpoint for top of active fuel (TOAF). R-2 is used instead of the high range containment monitors because if a small amount of fuel was uncovered, the location of the high range monitors would preclude them reading on scale. Therefore the alarm setpoint of R-2 was selected to indicate a rise in containment radiation resulting from the conditions of this EAL. This change is not a deviation because it dose not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL. 		
Deviation	None		

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| CS   | CS2 – Basis Justification                                                                                                                                                                                                                                                                                                                                                 |                                                                                                           |                                                                                                                                                       |  |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|      | KNPP                                                                                                                                                                                                                                                                                                                                                                      | Specific Additions/Deletions                                                                              | Justification                                                                                                                                         |  |
| 1.   | Deleted th                                                                                                                                                                                                                                                                                                                                                                | he reference to a 30 minute time limit.                                                                   | 1. The 30 minute time limit is not used in the any of the NEI CS2 EAL statements.                                                                     |  |
| 2.   | Added site<br>instrumen<br>Unnecessa<br>informatio                                                                                                                                                                                                                                                                                                                        | e specific information on<br>tation and elevations at KNPP.<br>ary NEI EAL development<br>on was deleted. | 2. This information was added for explanation and clarification of site specifics. Also, removed unnecessary information the end user would not need. |  |
| Diff | <ul> <li>Deleted reference to a 30 minute time limit and added KNPP site specific information.</li> <li>Changed the water level effect on containment radiation to R-2 being used instead of the high range containment monitors because if a small amount of fuel was uncovered, the location of th high range monitors would preclude them reading on scale.</li> </ul> |                                                                                                           |                                                                                                                                                       |  |
| Dev  | iations None.                                                                                                                                                                                                                                                                                                                                                             |                                                                                                           |                                                                                                                                                       |  |

| NEI IC#          | NEI IC Wording                                                                                                           | KNPP<br>IC#(s) | KNPP IC Wording                                                                                                                            |
|------------------|--------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| CG1              | Loss of RPV Inventory Affecting Fuel<br>Clad Integrity with Containment<br>Challenged with Irradiated Fuel in the<br>RPV | CG1            | Loss of Reactor Vessel Inventory Affecting Fuel<br>Clad Integrity with Containment Challenged and<br>Irradiated Fuel in the Reactor Vessel |
| Mode<br>App.     | Cold Shutdown, Refueling                                                                                                 |                | Cold Shutdown, Refueling                                                                                                                   |
| Site<br>specific | None.                                                                                                                    |                |                                                                                                                                            |
| Difference       | None                                                                                                                     |                |                                                                                                                                            |
| Deviation        | None                                                                                                                     |                |                                                                                                                                            |

| NEI<br>EAL# | NEI EAL Wording                                                                                                                                                                                                       | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                         |  |  |                                                                                                                                                                          |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | <ol> <li>Loss of RPV inventory as indicated<br/>by unexplained {site-specific} sump<br/>and tank level increase</li> <li>RPV Level:         <ul> <li>a. less than TOAF for &gt; 30<br/>minutes</li> </ul> </li> </ol> |                 |                                                                                                          |  |  | Loss of Reactor Vessel inventory as indicated<br>by unexplained level rise in Containment Sump<br>A, Containment Sump C <u>OR</u> Liquid Waste<br>Disposal System<br>AND |
|             | OR                                                                                                                                                                                                                    |                 | Reactor Vessel Level (a or b):                                                                           |  |  |                                                                                                                                                                          |
| 1           | <ul> <li>b. cannot be monitored with<br/>Indication of core uncovery for &gt;<br/>30 minutes as evidenced by one<br/>or more of the following:</li> </ul>                                                             |                 | a. EQUAL TO 0% Wide Range Refueling<br>Water Level for GREATER THAN 30<br>minutes                        |  |  |                                                                                                                                                                          |
|             | <ul> <li>Containment High Range<br/>Radiation Monitor reading &gt;<br/>{site-specific} setpoint</li> </ul>                                                                                                            | CG1.1           | <ul><li>OR</li><li>b. Cannot be monitored with Indication of core uncovery for GREATER THAN 30</li></ul> |  |  |                                                                                                                                                                          |
|             | <ul> <li>Erratic Source Range Monitor<br/>Indication</li> </ul>                                                                                                                                                       |                 | minutes as evidenced by one or more of the following:                                                    |  |  |                                                                                                                                                                          |
|             | <ul> <li>Other {site-specific}<br/>indications</li> </ul>                                                                                                                                                             |                 | Containment Area Radiation     Monitor (R-2) reading GREATER                                             |  |  |                                                                                                                                                                          |
|             | <ol> <li>{Site-specific} indication of<br/>CONTAINMENT challenged as<br/>indicated by one or more of the</li> </ol>                                                                                                   |                 | • Erratic Source Range Monitor                                                                           |  |  |                                                                                                                                                                          |
|             | following:                                                                                                                                                                                                            |                 | Indication                                                                                               |  |  |                                                                                                                                                                          |
|             | • Explosive mixture inside containment                                                                                                                                                                                |                 | AND                                                                                                      |  |  |                                                                                                                                                                          |
|             | <ul> <li>Pressure above {site-specific}<br/>value</li> </ul>                                                                                                                                                          |                 | Indication of CONTAINMENT challenged                                                                     |  |  |                                                                                                                                                                          |
|             | CONTAINMENT CLOSURE                                                                                                                                                                                                   |                 | <ul> <li>GREATER THAN OR EQUAL TO 6%</li> </ul>                                                          |  |  |                                                                                                                                                                          |

|                  | not established hydrogen in containment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | <ul> <li>Secondary Containment<br/>radiation monitors above {site-<br/>specific} value (BWR only)</li> <li>CONTAINMENT CLOSURE <u>NOT</u><br/>established</li> <li>CONTAINMENT pressure above:</li> <li>46 psig <u>IF</u> Containment Integrity or<br/>Reduced Inventory Containment<br/>Integrity is established</li> <li><u>OR</u></li> <li>46 psig if Refueling Containment<br/>Integrity is established at<br/>Penetrations installed at<br/>Penetration 42N or 43N.</li> <li><u>OR</u></li> <li>0.6 psig if Refueling Containment<br/>Integrity is established with loop seal<br/>penetration installed at either<br/>Penetration 42N or 43N.</li> </ul> |
| Site<br>specific | <ul> <li>"Containment Sump A, Containment Sump C and Liquid Waste Disposal System are the site specific indications for loss of reactor vessel level inventory at 0%</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| -                | <ul> <li>"EQUAL TO 0% Wide Range Refueling Water Level" is equal to TOAF</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                  | <ul> <li>100 mRem/hr is the alarm setpoint for R-2.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                  | <ul> <li>R-2 is the Containment Area Radiation Monitor</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                  | <ul> <li>Containment pressure ≥ 46 psig <u>IF</u> Containment Integrity or Reduced Inventory Containment<br/>Integrity is established</li> <li>Containment pressure 46 psig if Refueling Containment Integrity is established with no loop seal<br/>penetrations installed</li> <li>Containment pressure 0.6 psig if Refueling Containment Integrity is established with loop seal<br/>penetrations installed</li> </ul>                                                                                                                                                                                                                                      |
|                  | = Hvdrogen concentration in containment > 6%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                  | <ul> <li>"Secondary Containment radiation monitors above {site-specific} value (BWR only)" is applicable only to BWRs</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Difference       | • Due to NEI Examples EAL 1, 2 & 3 being "and" logic, combined into a single EAL.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                  | • R-2 is used instead of the high range containment monitors because if a small amount of fuel was uncovered, the location of the high range monitors would preclude them reading on scale. Therefore the alarm setpoint of R-2 was selected to indicate a rise in containment radiation resulting from the conditions of this EAL.                                                                                                                                                                                                                                                                                                                           |
|                  | • These change is not a deviation because it dose not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL.                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Deviation        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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#### Cold Shutdown / Refueling System Malfunction

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| CG1 – Basis Justification                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                        |                                                                                 |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--|--|
| KNPP S                                                                                                                                                                                                      | Specific Additions/Deletions                                                                                                                                                                                                                                                                                                                           | Justification                                                                   |  |  |
| Deleted the two paragraphs referring to evaluating<br>sump and tank levels against other potential sources<br>of leakage and replaced with KNPP specific<br>information on evaluating sump and tank levels. |                                                                                                                                                                                                                                                                                                                                                        | This information was added for explanation and clarification of site specifics. |  |  |
| Difference                                                                                                                                                                                                  | <ul> <li>Replaced NEI generic wording with KNPP site specific information.</li> <li>Changed the water level effect on containment radiation to R-2 being used instead of the high range containment monitors because if a small amount of fuel was uncovered, the location of the high range monitors would preclude them reading on scale.</li> </ul> |                                                                                 |  |  |
| Deviations                                                                                                                                                                                                  | None                                                                                                                                                                                                                                                                                                                                                   |                                                                                 |  |  |

#### General Difference for section:

BWR Fission Product Barrier is not applicable to KNPP and was deleted.

Format change to Emergency Action Levels on the top of the tables, EALs were reordered so from left to right the EALs are listed GE, SAE, Alert and UE. This corresponds to the KNPP wallchart.

| NEI IC#          | NEI IC Wording                                         | KNPP<br>IC#(s) | KNPP IC Wording                                                |
|------------------|--------------------------------------------------------|----------------|----------------------------------------------------------------|
| FU1              | ANY Loss or ANY Potential Loss of<br>Containment       | FU1            | ANY Loss or ANY Potential Loss of<br>Containment               |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown |                | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown |
| Site<br>specific | None                                                   |                |                                                                |
| Difference       | None.                                                  |                |                                                                |
| Deviation        | None                                                   |                |                                                                |

| NEI<br>EAL#      | NEI EAL Wording                                                                        | KNPP<br>EAL#(s) | KNPP EAL Wording                                             |
|------------------|----------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------------|
| 1                | ANY Loss or ANY Potential Loss of<br>Containment                                       | FU1.1           | ANY Loss or ANY Potential Loss of<br>Containment (Table F-1) |
| Site<br>specific | Table F-1 added, KNPP designation in EALs for Fission Product Barrier Reference Table. |                 |                                                              |
| Difference       | None                                                                                   |                 |                                                              |
| Deviation        | None                                                                                   |                 |                                                              |

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| NEI IC#          | NEI IC Wording                                               | KNPP<br>IC#(s) | KNPP IC Wording                                                |
|------------------|--------------------------------------------------------------|----------------|----------------------------------------------------------------|
| FA1              | ANY Loss or ANY Potential Loss of<br>EITHER Fuel Clad OR RCS | FA1            | ANY Loss or ANY Potential Loss of EITHER<br>Fuel Clad OR RCS   |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown       |                | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown |
| Site<br>specific | None                                                         |                |                                                                |
| Difference       | None                                                         |                |                                                                |
| Deviation        | None                                                         |                |                                                                |

| NEI<br>EAL#      | NEI EAL Wording                                              | KNPP<br>EAL#(s) | KNPP EAL Wording                                                         |
|------------------|--------------------------------------------------------------|-----------------|--------------------------------------------------------------------------|
| FA1              | ANY Loss or ANY Potential Loss of<br>EITHER Fuel Clad OR RCS | FA1.1           | ANY loss or ANY Potential Loss of EITHER<br>Fuel Clad OR RCS (Table F-1) |
| Site<br>specific | Table F-1 added, KNPP designation in E                       | ALs for Fiss    | ion Product Barrier Reference Table.                                     |
| Difference       | None                                                         |                 |                                                                          |
| Deviation        | None                                                         |                 |                                                                          |

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| NEI IC#          | NEI IC Wording                                         | KNPP<br>IC#(s) | KNPP IC Wording                                                |
|------------------|--------------------------------------------------------|----------------|----------------------------------------------------------------|
| FS1              | Loss or Potential Loss of ANY Two<br>Barriers          | FS1            | Loss or Potential Loss of ANY Two barriers                     |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown |                | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown |
| Site<br>specific | None                                                   |                |                                                                |
| Difference       | Non                                                    |                |                                                                |
| Deviation        | None                                                   |                |                                                                |

| NEI<br>EAL#      | NEI EAL Wording                                                                        | KNPP<br>EAL#(s) | KNPP EAL Wording                                          |
|------------------|----------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------|
| 1                | Loss or Potential Loss of ANY Two<br>Barriers                                          | FS1.1           | Loss or Potential Loss of ANY two barriers<br>(Table F-1) |
| Site<br>specific | Table F-1 added, KNPP designation in EALs for Fission Product Barrier Reference Table. |                 |                                                           |
| Difference       | None                                                                                   |                 |                                                           |
| Deviation        | None                                                                                   |                 |                                                           |

| NEI IC#          | NEI IC Wording                                                          | KNPP<br>IC#(s) | KNPP IC Wording                                                         |
|------------------|-------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------|
| FG1              | Loss of ANY Two Barriers AND Loss<br>or Potential Loss of Third Barrier | FG1            | Loss of ANY Two Barriers AND Loss or<br>Potential Loss of Third Barrier |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                  |                | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown          |
| Site<br>specific | None                                                                    |                |                                                                         |
| Difference       | None                                                                    |                |                                                                         |
| Deviation        | None .                                                                  |                |                                                                         |

| NEI<br>EAL#      | NEI EAL Wording                                                         | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                    |
|------------------|-------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------|
| 1                | Loss of ANY Two Barriers AND Loss<br>or Potential Loss of Third Barrier | FG1.1           | Loss of ANY two barriers AND Loss or<br>Potential Loss of third barrier (Table F-1) |
| Site<br>specific | Table F-1 added, KNPP designation in E.                                 | ALs for Fiss    | ion Product Barrier Reference Table.                                                |
| Difference       | None                                                                    |                 |                                                                                     |
| Deviation        | None                                                                    |                 |                                                                                     |

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| NEI IC#          | NEI IC Wording                                             | KNPP<br>IC#(s) | KNPP IC Wording                                                |
|------------------|------------------------------------------------------------|----------------|----------------------------------------------------------------|
| FC Loss          | <u>Critical Safety Function Status</u><br>Core-Cooling Red | FC Loss<br>1   | <u>Critical Safety Function Status</u><br>Core-Cooling Red     |
| Mode<br>App.     | Power Operation, Hot Standby,<br>Startup, Hot Shutdown     |                | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown |
| Site<br>specific | None                                                       |                |                                                                |
| Difference       | None                                                       |                |                                                                |
| Deviation        | None                                                       |                |                                                                |

| NEI IC#          | NEI IC Wording                                                                           | KNPP<br>IC#(s) | KNPP IC Wording                                                                                       |
|------------------|------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------|
| FC Loss<br>2     | Primary Coolant Activity Level<br>Coolant Activity GREATER THAN<br>(site-specific) Value | FC Loss<br>2   | <u>Primary Coolant Activity Level</u><br>Coolant Activity GREATER THAN 300<br>μCi/gm I-131 equivalent |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                   |                | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                        |
| Site<br>specific | 300 μCi/gm I-131 equivalent: This value primary coolant activity (pg 5-F-14).            | was taken fr   | om NEI 99-01 Rev. 4 basis for fuel clad barrier                                                       |
| Difference       | None                                                                                     |                | · · · · · · · · · · · · · · · · · · ·                                                                 |
| Deviation        | None                                                                                     |                |                                                                                                       |

| NEI IC#          | NEI IC Wording                                                                                                                                                                                                                                                                                                                                                                                   | KNPP<br>IC#(s) | KNPP IC Wording                                                           |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------|
| FC Loss<br>3     | <u>Core Exit Thermocouple Readings</u><br>GREATER THAN (site-specific)<br>degree F                                                                                                                                                                                                                                                                                                               | FC Loss<br>3   | <u>Core Exit Thermocouple Readings</u><br>GREATER THAN OR EQUAL TO 1200°F |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                                                                                                                                                                                                                                                           |                | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown            |
| Site<br>specific | 1200°F: This temperature is given in Critical Safety Function Status Trees.                                                                                                                                                                                                                                                                                                                      |                |                                                                           |
| Difference       | None                                                                                                                                                                                                                                                                                                                                                                                             |                |                                                                           |
| Deviation        | The NEI phrase "greater than" has been changed to "GREATER THAN OR EQUAL TO" so that the EAL threshold agrees with the level specified in CSF-ST Critical Safety Function Status Trees. Using "greater than or equal to" is conservative deviation. Therefore, this deviation does not decrease the effectiveness of the NEI EAL and does not adversely effects the health/safety of the public. |                |                                                                           |

| NEI IC#          | NEI IC Wording                                         | KNPP<br>IC#(s) | KNPP IC Wording                                                               |
|------------------|--------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| FC Loss<br>4     | <u>Reactor Vessel Water Level</u><br>Not Applicable    | N/A            | <u>Reactor Vessel Water Level</u><br>Not applicable per NEI 99-01 Revision 4. |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown |                | N/A                                                                           |
| Site<br>specific | None                                                   |                |                                                                               |
| Difference       | None                                                   |                |                                                                               |
| Deviation        | None                                                   |                |                                                                               |

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| NEI IC#          | NEI IC Wording                                                                                                                                                                                                                                                                                                                 | KNPP<br>IC#(s) | KNPP IC Wording                                                                                                |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------------------------------------------------------------------|
| FC Loss<br>5     | <u>Containment Radiation Monitoring</u><br>Containment rad monitor reading<br>GREATER THAN (site-specific) R/hr                                                                                                                                                                                                                | FC Loss<br>5   | <u>Containment Radiation Monitoring</u><br>Containment rad monitor (R-40/41) reading<br>GREATER THAN 1000 R/hr |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                                                                                                                                                                                         |                | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                 |
| Site<br>specific | 1000 R/hr is the site-specific containment rad monitor reading that has been calculated assuming the instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with a concentration of 300 $\mu$ Ci/gm dose equivalent I-131 into the containment atmosphere. Refer to Calc. C11617 |                |                                                                                                                |
|                  | The high range containment radiation mo                                                                                                                                                                                                                                                                                        | nitors are R-  | 40 and R-41 at KNPP.                                                                                           |
| Difference       | None                                                                                                                                                                                                                                                                                                                           |                |                                                                                                                |
| Deviation        | None                                                                                                                                                                                                                                                                                                                           |                |                                                                                                                |

| NEI IC#          | NEI IC Wording                                                     | KNPP<br>IC#(s) | KNPP IC Wording                                           |
|------------------|--------------------------------------------------------------------|----------------|-----------------------------------------------------------|
| FC Loss<br>6     | Other (Site-Specific) Indications<br>(Site-specific) as applicable | N/A            | No other applicable site-specific indications identified. |
| Mode<br>App.     | Power Operation, Hot Standby,<br>Startup, Hot Shutdown             |                | N/A                                                       |
| Site<br>specific | None                                                               |                |                                                           |
| Difference       | None                                                               |                |                                                           |
| Deviation        | None                                                               |                |                                                           |

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| NEI IC#          | NEI IC Wording                                                                                                                                                | KNPP<br>IC#(s) | KNPP IC Wording                                                                                                                                            |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FC Loss<br>7     | Emergency Director Judgment<br>Any condition in the opinion of the<br>Emergency Director that indicates Loss<br>or Potential Loss of the Fuel Clad<br>Barrier | FC Loss<br>6   | Emergency Director Judgment<br>Any condition in the opinion of the Emergency<br>Director that indicates Loss or Potential Loss of<br>the Fuel Clad Barrier |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                        |                | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                                             |
| Site<br>specific | None                                                                                                                                                          |                |                                                                                                                                                            |
| Difference       | None                                                                                                                                                          |                | · ·                                                                                                                                                        |
| Deviation        | None                                                                                                                                                          |                |                                                                                                                                                            |

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| NEI IC#          | NEI IC Wording                                                                     | KNPP<br>IC#(s)     | KNPP IC Wording                                                                             |
|------------------|------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------|
| FC P-Loss        | <u>Critical Safety Function Status</u><br>Core Cooling-Orange OR Heat Sink-<br>Red | FC P-<br>Loss<br>1 | <u>Critical Safety Function Status</u><br>Core Cooling-ORANGE<br><u>OR</u><br>Heat Sink-RED |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                             |                    | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                              |
| Site<br>specific | None                                                                               |                    |                                                                                             |
| Difference       | None                                                                               |                    |                                                                                             |
| Deviation        | None                                                                               |                    |                                                                                             |

| NEI IC#          | NEI IC Wording                                          | KNPP<br>IC#(s) | KNPP IC Wording                                                                   |
|------------------|---------------------------------------------------------|----------------|-----------------------------------------------------------------------------------|
| FC P-Loss<br>2   | <u>Primary Coolant Activity Level</u><br>Not Applicable | N/A            | <u>Primary Coolant Activity Level</u><br>Not applicable per NEI 99-01 Revision 4. |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown  |                | N/A                                                                               |
| Site<br>specific | None                                                    |                |                                                                                   |
| Difference       | None                                                    |                |                                                                                   |
| Deviation        | None                                                    |                |                                                                                   |

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| NEI IC#           | NEI IC Wording                                                                                                                                                                                                                                                                                                                                                                                         | KNPP<br>IC#(s)    | KNPP IC Wording                                                          |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------|
| FC<br>P-Loss<br>3 | Core Exit Thermocouple Readings<br>GREATER THAN (site-specific)<br>degree F                                                                                                                                                                                                                                                                                                                            | FC<br>P-Loss<br>3 | <u>Core Exit Thermocouple Readings</u><br>GREATER THAN OR EQUAL TO 700°F |
| Mode<br>App.      | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                                                                                                                                                                                                                                                                 |                   | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown           |
| Site<br>specific  | 700°F - KNPP Core Cooling-Orange path, which is entered if CET readings are equal to or greater than 700°F                                                                                                                                                                                                                                                                                             |                   |                                                                          |
| Difference        | None                                                                                                                                                                                                                                                                                                                                                                                                   |                   |                                                                          |
| Deviation         | Used "GREATER THAN OR EQUAL TO" wording to be consistent with the CSFST definition of the KNPP Core Cooling-Orange path, which is entered if CET readings are equal to or greater than 700°F. Using "greater than or equal to" is conservative deviation. Therefore, this deviation does not decrease the effectiveness of the NEI EAL and does not adversely effects the health/safety of the public. |                   |                                                                          |

| NEI IC#           | NEI IC Wording                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | KNPP<br>IC#(s)    | KNPP IC Wording                                                                                                          |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------|
| FC<br>P-Loss<br>4 | <u>Reactor Vessel Water Level</u><br>Level LESS than (site-specific) value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | FC<br>P-Loss<br>4 | Reactor Vessel Water LevelRVLIS void fraction risingANDAt least one RCP runningANDRCS Subcooling LESS THAN 30 °F [65°F]. |
| Mode<br>App.      | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                   | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                           |
| Site<br>specific  | <ul> <li>RVLIS void fraction rising and at least one RCP running and RCS Subcooling less than 30 °F [65°F] indicates a potential loss of the fuel clad barrier. This combination is an indication of inadequate coolant inventory and is used in the Core Cooling-ORANGE path and indicates subcooling has been lost and that some fuel cladding damage may occur. The value in brackets is for adverse containment conditions.</li> </ul>                                                                                                                                                                                                                                                                                                                                 |                   |                                                                                                                          |
| Difference        | <ul> <li>KNPP RVLIS does not extend down to the top of active fuel. It only measures as low as the bottom of the hot legs. The NEI methodology states that the Core Cooling orange path should define the potential loss EAL. This is defined in two ways. If RCS subcooling is less than 30°F with one or more reactor coolant pumps running, then RVLIS void fraction rising defines the Core Cooling orange path. If RCS subcooling is less than 30°F with no reactor coolant pumps running, then core exit thermocouples above 700°F defines the Core Cooling orange path. Since the fuel clad potential loss for core exit thermocouples uses 700°F for its potential loss, the latter path is not used for the reactor vessel water level potential loss.</li> </ul> |                   |                                                                                                                          |
| Deviation         | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   |                                                                                                                          |

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| NEI IC#           | NEI IC Wording                                            | KNPP<br>IC#(s) | KNPP IC Wording                                                                     |
|-------------------|-----------------------------------------------------------|----------------|-------------------------------------------------------------------------------------|
| FC<br>P-Loss<br>5 | <u>Containment Radiation Monitoring</u><br>Not Applicable | N/A            | <u>Containment Radiation Monitoring</u><br>Not applicable per NEI 99-01 Revision 4. |
| Mode<br>App.      | Power Operation, Hot Standby, Startup,<br>Hot Shutdown    |                | N/A                                                                                 |
| Site<br>specific  | None                                                      |                |                                                                                     |
| Difference        | None                                                      |                |                                                                                     |
| Deviation         | None                                                      |                |                                                                                     |

| NEI IC#          | NEI IC Wording                                                     | KNPP<br>IC#(s) | KNPP IC Wording                                           |
|------------------|--------------------------------------------------------------------|----------------|-----------------------------------------------------------|
| FC P-Loss<br>6   | Other (Site-Specific) Indications<br>(Site-specific) as applicable | N/A            | No other applicable site-specific indications identified. |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown             |                | N/A                                                       |
| Site<br>specific | Not Applicable                                                     |                |                                                           |
| Difference       | None                                                               |                |                                                           |
| Deviation        | None                                                               |                |                                                           |

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| NEI IC#           | NEI IC Wording                                                                                                                                                | KNPP<br>IC#(s)    | KNPP IC Wording                                                                                                                                            |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FC<br>P-Loss<br>7 | Emergency Director Judgment<br>Any condition in the opinion of the<br>Emergency Director that indicates Loss<br>or Potential Loss of the Fuel Clad<br>Barrier | FC<br>P-Loss<br>6 | Emergency Director Judgment<br>Any condition in the opinion of the Emergency<br>Director that indicates Loss or Potential Loss of<br>the Fuel Clad Barrier |
| Mode<br>App.      | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                        |                   | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                                             |
| Site<br>specific  | None                                                                                                                                                          |                   |                                                                                                                                                            |
| Difference        | None                                                                                                                                                          |                   |                                                                                                                                                            |
| Deviation         | None                                                                                                                                                          |                   |                                                                                                                                                            |

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| NEI IC#          | NEI IC Wording                                           | KNPP<br>IC#(s) | KNPP IC Wording                                                                    |
|------------------|----------------------------------------------------------|----------------|------------------------------------------------------------------------------------|
| RCS Loss         | <u>Critical Safety Function Status</u><br>Not Applicable | N/A            | <u>Critical Safety Function Status</u><br>Not applicable per NEI 99-01 Revision 4. |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown   |                | N/A                                                                                |
| Site<br>specific | None                                                     |                |                                                                                    |
| Difference       | None                                                     |                |                                                                                    |
| Deviation        | None                                                     |                |                                                                                    |

| NEI IC#          | NEI IC Wording                                                                                                                                                                                  | KNPP<br>IC#(s)                                             | KNPP IC Wording                                                                                                                                                                                                                             |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RCS Loss<br>2    | <b>RCS Leak Rate</b><br>GREATER THAN available makeup<br>capacity as indicated by a loss of RCS<br>subcooling                                                                                   | RCS<br>Loss<br>2                                           | <ul> <li><u>RCS Leak Rate</u></li> <li>GREATER THAN available makeup capacity as indicated by a loss of RCS subcooling:</li> <li>LESS THAN 20°F if the reactor is critical</li> <li>LESS THAN 30°F if the reactor is subcritical</li> </ul> |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                                                          |                                                            | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                                                                                                                              |
| Site<br>specific | <ul> <li>Core exit thermocouples LESS THA<br/>based on the minimum subcooling al<br/>RC-36-D.</li> <li>Core exit thermocouples LESS THA<br/>the level specified in Critical Safety I</li> </ul> | N 20°F: The<br>lowed for no<br>N 30°F: The<br>Function Sta | e subcooling margin threshold while critical is<br>ormal operation defined in Operating Procedure A-<br>e subcooling margin threshold while subcritical is<br>itus Trees. EOPs define this value as a loss of                               |
|                  | RCS subcooling.                                                                                                                                                                                 |                                                            |                                                                                                                                                                                                                                             |
| Difference       | None                                                                                                                                                                                            |                                                            |                                                                                                                                                                                                                                             |
| Deviation        | None                                                                                                                                                                                            |                                                            |                                                                                                                                                                                                                                             |

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| NEI IC#          | NEI IC Wording                                                    | KNPP<br>IC#(s)   | KNPP IC Wording                                                |
|------------------|-------------------------------------------------------------------|------------------|----------------------------------------------------------------|
| RCS Loss<br>3    | SG Tube Rupture<br>SGTR that results in an ECCS (SI)<br>Actuation | RCS<br>Loss<br>3 | SG Tube Rupture<br>SGTR that results in an ECCS (SI) Actuation |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown            |                  | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown |
| Site<br>specific | None                                                              |                  |                                                                |
| Difference       | None                                                              |                  |                                                                |
| Deviation        | None                                                              |                  |                                                                |

| NEI IC#          | NEI IC Wording                                                                                                                                                                                                                                                                                                         | KNPP<br>IC#(s)   | KNPP IC Wording                                                                                              |  |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------|--|
| RCS Loss<br>4    | <u>Containment Radiation Monitoring</u><br>Containment rad monitor reading<br>GREATER THAN (site-specific) R/hr                                                                                                                                                                                                        | RCS<br>Loss<br>4 | <u>Containment Radiation Monitoring</u><br>Containment rad monitor (R-40/41) reading<br>GREATER THAN 30 R/hr |  |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                                                                                                                                                                                 |                  | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                               |  |
| Site<br>specific | 30 R/hr is the site-specific containment rad monitor reading that has been calculated assuming the instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with normal operating concentrations (i.e., within T/S) into the containment atmosphere. Refer to Calc. C11617 |                  |                                                                                                              |  |
| Difference       | None                                                                                                                                                                                                                                                                                                                   |                  |                                                                                                              |  |
| Deviation        | None                                                                                                                                                                                                                                                                                                                   |                  |                                                                                                              |  |

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| NEI IC#          | NEI IC Wording                                                     | KNPP<br>IC#(s) | KNPP IC Wording                                           |
|------------------|--------------------------------------------------------------------|----------------|-----------------------------------------------------------|
| RCS Loss<br>5    | Other (Site-Specific) Indications<br>(Site-specific) as applicable | N/A            | No other applicable site-specific indications identified. |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown             |                | N/A                                                       |
| Site<br>specific | N/A                                                                |                |                                                           |
| Difference       | None                                                               |                |                                                           |
| Deviation        | None                                                               |                |                                                           |

| NEI IC#          | NEI IC Wording                                                                                                                                      | KNPP<br>IC#(s)   | KNPP IC Wording                                                                                                                                     |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| RCS Loss<br>6    | Emergency Director Judgment<br>Any condition in the opinion of the<br>Emergency Director that indicate Loss<br>or Potential Loss of the RCS Barrier | RCS<br>Loss<br>5 | Emergency Director Judgment<br>Any condition in the opinion of the Emergency<br>Director that indicate Loss or Potential Loss of<br>the RCS Barrier |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                              |                  | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                                      |
| Site<br>specific | None                                                                                                                                                |                  |                                                                                                                                                     |
| Difference       | None                                                                                                                                                |                  |                                                                                                                                                     |
| Deviation        | None                                                                                                                                                |                  |                                                                                                                                                     |

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| NEI IC#          | NEI IC Wording                                                               | KNPP<br>IC#(s)  | KNPP IC Wording                                                                           |
|------------------|------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------|
| RCS<br>P-Loss 1  | <u>Critical Safety Function Status</u><br>RCS Integrity-Red OR Heat Sink-Red | RCS<br>P-Loss 1 | <u>Critical Safety Function Status</u><br>RCS Integrity-RED<br><u>OR</u><br>Heat Sink-RED |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                       |                 | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                            |
| Site<br>specific | None                                                                         |                 | · · · · · · · · · · · · · · · · · · ·                                                     |
| Difference       | None                                                                         |                 |                                                                                           |
| Deviation        | None                                                                         |                 |                                                                                           |

| NEI IC#          | NEI IC Wording                                                                                                                                                                                                                                                                                                                     | KNPP<br>IC#(s)  | KNPP IC Wording                                                                                                                          |  |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------|--|
| RCS<br>P-Loss 2  | <b><u>RCS Leak Rate</u></b><br>Unisolable leak exceeding the capacity<br>of one charging pump in the normal<br>charging mode                                                                                                                                                                                                       | RCS<br>P-Loss 2 | <b><u>RCS Leak Rate</u></b><br>Unisolable leak GREATER THAN 60 gpm, the<br>capacity of one charging pump in the normal<br>charging mode. |  |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                                                                                                                                                                                             |                 | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                           |  |
| Site<br>specific | 60 gpm: This threshold is based on the inability to maintain normal liquid inventory within the RCS by normal operation of the Chemical and Volume Control System, which is considered as one charging pump discharging to the charging header. The need for a second charging pump would be indicative of a substantial RCS leak. |                 |                                                                                                                                          |  |
| Difference       | <ul> <li>Added "60 gpm" for clarification.</li> <li>These changes are not a deviation because they do not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL</li> </ul>                                                                              |                 |                                                                                                                                          |  |
| Deviation        | None                                                                                                                                                                                                                                                                                                                               |                 |                                                                                                                                          |  |

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| NEI<br>EAL#      | NEI EAL Wording                                        | KNPP<br>EAL#(s) | KNPP EAL Wording                                                   |
|------------------|--------------------------------------------------------|-----------------|--------------------------------------------------------------------|
| RCS<br>P-Loss 3  | SG Tube Rupture<br>Not Applicable                      | N/A             | <u>SG Tube Rupture</u><br>Not applicable per NEI 99-01 Revision 4. |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown |                 | N/A                                                                |
| Site<br>specific | N/A                                                    |                 |                                                                    |
| Difference       | None                                                   |                 |                                                                    |
| Deviation        | None                                                   |                 |                                                                    |

| NEI<br>EAL#      | NEI EAL Wording                                           | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                    |
|------------------|-----------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------|
| RCS<br>P-Loss 4  | <u>Containment Radiation Monitoring</u><br>Not Applicable | N/A             | <u>Containment Radiation Monitoring</u><br>Not applicable per NEI 99-01 Revision 4. |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown    |                 | N/A .                                                                               |
| Site<br>specific | N/A                                                       |                 |                                                                                     |
| Difference       | None                                                      | <u> </u>        |                                                                                     |
| Deviation        | None                                                      |                 |                                                                                     |

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| NEI<br>EAL#      | NEI EAL Wording                                                    | KNPP<br>EAL#(s) | KNPP EAL Wording                                          |
|------------------|--------------------------------------------------------------------|-----------------|-----------------------------------------------------------|
| RCS<br>P-Loss 5  | Other (Site-Specific) Indications<br>(Site-specific) as applicable | N/A             | No other applicable site-specific indications identified. |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown             |                 | N/A                                                       |
| Site<br>specific | N/A                                                                |                 |                                                           |
| Difference       | None                                                               |                 |                                                           |
| Deviation        | None                                                               |                 |                                                           |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                     | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                    |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| RCS<br>P-Loss 6  | Emergency Director Judgment<br>Any condition in the opinion of the<br>Emergency Director that indicate Loss<br>or Potential Loss of the RCS Barrier | RCS<br>P-Loss 5 | Emergency Director Judgment<br>Any condition in the opinion of the Emergency<br>Director that indicate Loss or Potential Loss of<br>the RCS Barrier |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                              |                 | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                                      |
| Site<br>specific | None                                                                                                                                                |                 |                                                                                                                                                     |
| Difference       | None                                                                                                                                                |                 |                                                                                                                                                     |
| Deviation        | None                                                                                                                                                |                 |                                                                                                                                                     |

| NEI<br>EAL#      | NEI EAL Wording                                          | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                   |
|------------------|----------------------------------------------------------|-----------------|------------------------------------------------------------------------------------|
| CMT<br>Loss 1    | <u>Critical Safety Function Status</u><br>Not Applicable | N/A             | <u>Critical Safety Function Status</u><br>Not applicable per NEI 99-01 Revision 4. |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown   |                 | N/A                                                                                |
| Site<br>specific | N/A                                                      |                 |                                                                                    |
| Difference       | None                                                     |                 |                                                                                    |
| Deviation        | None                                                     |                 |                                                                                    |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                     | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                                                    |  |  |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| CMT<br>Loss<br>2 | Containment PressureRapid unexplained decrease following<br>initial increaseCMT<br>LossORLossContainment pressure or sump level<br>response not consistent with LOCA<br>conditions2 |                 | <u>Containment Pressure</u><br>Rapid unexplained decrease following initial rise<br><u>OR</u><br>Containment pressure or sump level response<br>not consistent with LOCA conditions |  |  |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                                              |                 | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                                                                      |  |  |
| Site<br>specific | None                                                                                                                                                                                |                 |                                                                                                                                                                                     |  |  |
| Difference       | None                                                                                                                                                                                |                 |                                                                                                                                                                                     |  |  |
| Deviation        | None                                                                                                                                                                                |                 |                                                                                                                                                                                     |  |  |

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| NEI<br>EAL#      | NEI EAL Wording                                          | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                   |
|------------------|----------------------------------------------------------|-----------------|------------------------------------------------------------------------------------|
| CMT<br>Loss<br>3 | <u>Core Exit Thermocouple Readings</u><br>Not applicable | N/A             | <u>Core Exit Thermocouple Readings</u><br>Not applicable per NEI 99-01 Revision 4. |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown   |                 | N/A                                                                                |
| Site<br>specific | None                                                     |                 |                                                                                    |
| Difference       | None                                                     |                 |                                                                                    |
| Deviation        | None                                                     |                 |                                                                                    |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                  | KNPP<br>EAL#(s)  | KNPP EAL Wording                                                                                                                                                                                                                                               |  |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| CMT<br>Loss<br>4 | SG Secondary Side Release with<br>Primary-to-Secondary Leakage<br>RUPTURED S/G is also FAULTED<br>outside of containment<br>OR<br>Primary-to-Secondary leakrate greater<br>than 10 gpm with nonisolable steam<br>release from affected S/G to the<br>environment | CMT<br>Loss<br>4 | SG Secondary Side Release with Primary-to-<br>Secondary Leakage<br>RUPTURED S/G is also FAULTED outside of<br>containment<br>OR<br>Primary-to-Secondary leakrate GREATER<br>THAN 10 gpm with nonisolable steam release<br>from affected S/G to the environment |  |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                                                                                                                           |                  | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                                                                                                                                                 |  |
| Site<br>specific | None                                                                                                                                                                                                                                                             |                  |                                                                                                                                                                                                                                                                |  |
| Difference       | None                                                                                                                                                                                                                                                             |                  |                                                                                                                                                                                                                                                                |  |
| Deviation        | None                                                                                                                                                                                                                                                             |                  |                                                                                                                                                                                                                                                                |  |

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| NEI<br>EAL#      | NEI EAL Wording                                                                                                                               | KNPP<br>EAL#(s)  | KNPP EAL Wording                                                                                                                                                                                              |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CMT<br>Loss<br>5 | <u>CNMT Isolation Valves Status After</u><br><u>CNMT Isolation</u><br>Valve(s) not closed AND downstream<br>pathway to the environment exists | CMT<br>Loss<br>5 | <u>CNMT Isolation Valves Status After CNMT</u><br><u>Isolation</u><br>Containment isolation valve(s) not closed<br><u>AND</u><br>Downstream pathway to the environment<br>exists, after containment isolation |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                        |                  | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                                                                                                |
| Site<br>specific | None                                                                                                                                          |                  |                                                                                                                                                                                                               |
| Difference       | Additional wording added for clarity of statement.                                                                                            |                  |                                                                                                                                                                                                               |
| Deviation        | None                                                                                                                                          |                  |                                                                                                                                                                                                               |

| NEI<br>EAL#      | NEI EAL Wording                                                       | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                |
|------------------|-----------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------|
| CMT<br>Loss<br>6 | Significant Radioactive Inventory in<br>Containment<br>Not Applicable | N/A             | Significant Radioactive Inventory in<br>Containment<br>Not applicable per NEI 99-01 Revision 4. |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                |                 | N/A                                                                                             |
| Site<br>specific | N/A                                                                   |                 |                                                                                                 |
| Difference       | None                                                                  |                 |                                                                                                 |
| Deviation        | None                                                                  |                 |                                                                                                 |

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| NEI<br>EAL#      | NEI EAL Wording                                                    | KNPP<br>EAL#(s) | KNPP EAL Wording                                          |  |
|------------------|--------------------------------------------------------------------|-----------------|-----------------------------------------------------------|--|
| CMT<br>Loss<br>7 | Other (Site-Specific) Indications<br>(Site-specific) as applicable | N/A             | No other applicable site-specific indications identified. |  |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown             |                 | N/A                                                       |  |
| Site<br>specific | N/A                                                                |                 |                                                           |  |
| Difference       | None                                                               |                 |                                                           |  |
| Deviation        | None                                                               |                 |                                                           |  |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                 | KNPP<br>EAL#(s)  | KNPP EAL Wording                                                                                                                                             |  |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| CMT<br>Loss<br>8 | Emergency Director Judgment<br>Any condition in the opinion of the<br>Emergency Director that indicates Loss<br>or Potential Loss of the Containment<br>barrier | CMT<br>Loss<br>7 | Emergency Director Judgment<br>Any condition in the opinion of the Emergency<br>Director that indicates Loss or Potential Loss of<br>the Containment barrier |  |
| Mode<br>App.     | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                          |                  | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                                               |  |
| Site<br>specific | None                                                                                                                                                            |                  |                                                                                                                                                              |  |
| Difference       | None                                                                                                                                                            |                  |                                                                                                                                                              |  |
| Deviation        | None                                                                                                                                                            |                  |                                                                                                                                                              |  |

| NEI<br>EAL#         | NEI EAL Wording                                           | KNPP<br>EAL#(s)     | KNPP EAL Wording                                               |  |
|---------------------|-----------------------------------------------------------|---------------------|----------------------------------------------------------------|--|
| CMT P-<br>Loss<br>1 | <u>Critical Safety Function Status</u><br>Containment-Red | CMT P-<br>Loss<br>1 | <u>Critical Safety Function Status</u><br>Containment-Red      |  |
| Mode<br>App.        | Power Operation, Hot Standby, Startup,<br>Hot Shutdown    |                     | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown |  |
| Site<br>specific    | None                                                      |                     |                                                                |  |
| Difference          | None                                                      |                     |                                                                |  |
| Deviation           | None                                                      |                     |                                                                |  |

| NEI<br>EAL#         | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                                                                    | KNPP<br>EAL#(s)    | KNPP EAL Wording                                                                                                                                                                                                                                              |  |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| CMT P-<br>Loss<br>2 | <u>Containment Pressure</u><br>(Site-specific) PSIG and increasing<br>OR<br>Explosive mixture exists<br>OR<br>Pressure greater than containment<br>depressurization actuation setpoint<br>with less than one full train of<br>depressurization equipment operating                                                                                                                                 | CMT<br>P-Loss<br>2 | <u>Containment Pressure</u><br>46 psig and rising<br><u>OR</u><br>Hydrogen concentration GREATER THAN OR<br>EQUAL TO 6%<br><u>OR</u><br>Containment pressure GREATER THAN 23<br>psig with LESS THAN one full train of<br>depressurization equipment operating |  |
| Mode<br>App.        | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                                                                                                                                                                                                                                                             |                    | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                                                                                                                                                |  |
| Site<br>specific    | <ul> <li>46 psig is the design pressure of containment.</li> <li>Hydrogen concentration GREATER THAN OR EQUAL TO 6% - Hydrogen concentration is specified in the FR-C.1, Response to Inadequate Core Cooling, for explosive mixture.</li> <li>GREATER THAN OR EQUAL TO 23 psig - 23 psig is the pressure at which the equipment should have actuated and began performing its function.</li> </ul> |                    |                                                                                                                                                                                                                                                               |  |
| Difference          | None                                                                                                                                                                                                                                                                                                                                                                                               |                    |                                                                                                                                                                                                                                                               |  |
| Deviation           | None                                                                                                                                                                                                                                                                                                                                                                                               |                    |                                                                                                                                                                                                                                                               |  |

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| NEI<br>EAL#         | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | KNPP<br>EAL#(s)     | KNPP EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| CMT P-<br>Loss<br>3 | <u>Core Exit Thermocouple Readings</u><br>Core exit thermocouples in excess of<br>1200 degrees and restoration<br>procedures not effective within 15<br>minutes; or, core exit thermocouples in<br>excess of 700 degrees with reactor<br>vessel level below top of active fuel<br>and restoration procedures not effective<br>within 15 minutes                                                                                                                                                                                                                                                                                                                                                                                                                | CMT P-<br>Loss<br>3 | Core Exit Thermocouple Readings<br>Core exit thermocouples GREATER THAN<br>OR EQUAL TO 1200°F and restoration<br>procedures not effective<br>within 15 minutes<br>OR<br>Core exit thermocouples GREATER THAN<br>OR EQUAL TO 700°F with RCPs <u>NOT</u><br>running AND restoration procedures not<br>effective within 15 minutes<br>OR<br>RVLIS void fraction rising with at least one<br>RCP running and RCS Subcooling LESS<br>THAN 30 °F [65°F] and restoration procedures<br>not effective within 15 minutes |  |
| Mode<br>App.        | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                     | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
| specific            | <ul> <li>"GREATER THAN OR EQUAL TO 1200°F" - site specific value from Core Cooling CSF Status<br/>Tree Red Path</li> <li>"Core exit thermocouples GREATER THAN OR EQUAL TO 700°F with RCPs <u>NOT</u> running" -<br/>site specific value from Core Cooling CSF Status Tree Orange Path</li> <li>"RVLIS void fraction rising with at least one RCP running and RCS Subcooling less than 30 °F<br/>[65°F]" - site specific value from Core Cooling CSF Status Tree Orange Path</li> </ul>                                                                                                                                                                                                                                                                        |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| Difference          | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
| Deviation           | <ul> <li>The NEI phrase "in excess of" has been changed to "GREATER THAN OR EQUAL TO" so that the EAL threshold agrees with the level specified in CSF-ST Critical Safety Function Status Trees. Using "greater than or equal to" is conservative deviation. Therefore, this deviation does not decrease the effectiveness of the NEI EAL and does not adversely effects the health/safety of the public.</li> <li>KNPP RVLIS does not have the capability to measure the top of active fuel. There are two separate conditions at KNPP for determining reactor water level less than the top of active fuel based on if the RCP(s) are running. These two conditions are covered by two separate orange paths in the Core Cooling CSE Status Tree.</li> </ul> |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
|                     | The first condition, Core exit thermocouples GREATER THAN OR EQUAL TO 700°F with<br>RCPs <u>NOT</u> running indicates degraded core cooling per BKG FR-C.2, Response to Degraded<br>Core Cooling. 700°F indicates a superheated condition, which supports the basis for reactor<br>vessel level below the top of the active fuel per EOP Setpoints.                                                                                                                                                                                                                                                                                                                                                                                                            |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
|                     | The second condition, RVLIS void fraction rising with at least one RCP running and RCS<br>Subcooling less than 30 °F [65°F], is based on limitations of the KNPP RVLIS indication. The<br>vessel level indication is only valid with the RCPs not running and is only capable of<br>measuring down to the bottom of the RCS hot legs.                                                                                                                                                                                                                                                                                                                                                                                                                          |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
|                     | This EAL uses alternate indication to detect water at top of active fuel and does not change the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |

| $\cup$ | emergency classification. Therefore, this deviation does not decrease the effectiveness of the NEI EAL and does not adversely effects the health/safety of the public. |
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| NEI<br>EAL#         | NEI EAL Wording                                                     | KNPP<br>EAL#(s) | KNPP EAL Wording |  |
|---------------------|---------------------------------------------------------------------|-----------------|------------------|--|
| CMT P-<br>Loss<br>4 | SG Secondary Side Release With P-<br>to-S Leakage<br>Not Applicable | N/A             | N/A              |  |
| Mode<br>App.        | Power Operation, Hot Standby, Startup,<br>Hot Shutdown              |                 | N/A              |  |
| Site<br>specific    | N/A                                                                 |                 |                  |  |
| Difference          | None                                                                |                 |                  |  |
| Deviation           | None .                                                              |                 |                  |  |

| NEI<br>EAL#         | NEI EAL Wording                                                                      | KNPP<br>EAL#(s) | KNPP EAL Wording |  |
|---------------------|--------------------------------------------------------------------------------------|-----------------|------------------|--|
| CMT P-<br>Loss<br>5 | <u>CNMT Isolation Valves Status After</u><br><u>CNMT Isolation</u><br>Not Applicable | N/A             | N/A              |  |
| Mode<br>App.        | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                               |                 | N/A              |  |
| Site<br>specific    | N/A                                                                                  |                 |                  |  |
| Difference          | None                                                                                 |                 |                  |  |
| Deviation           | None                                                                                 |                 |                  |  |

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| NEI<br>EAL#         | NEI EAL Wording                                                                                                                                                           | KNPP<br>EAL#(s)    | KNPP EAL Wording                                                                                                           |  |  |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------|--|--|
| CMT P-<br>Loss<br>6 | Significant Radioactive Inventory in<br>Containment<br>Containment rad monitor reading<br>GREATER THAN (site-specific) R/hr                                               | CMT<br>P-Loss<br>6 | Significant Radioactive Inventory in<br>Containment<br>Containment rad monitor (R-40/41) reading<br>GREATER THAN 4000 R/hr |  |  |
| Mode<br>App.        | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                                    |                    | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                             |  |  |
| Site<br>specific    | <ul> <li>4000 R/hr is the site value for 20% clad damage. Refer to Calc. C11617</li> <li>R-40 and R-41 are the KNPP containment high range radiation monitors.</li> </ul> |                    |                                                                                                                            |  |  |
| Difference          | None                                                                                                                                                                      |                    |                                                                                                                            |  |  |
| Deviation           | None                                                                                                                                                                      |                    |                                                                                                                            |  |  |

| NEI<br>EAL#         | NEI EAL Wording                                                    | KNPP<br>EAL#(s) | KNPP EAL Wording |  |
|---------------------|--------------------------------------------------------------------|-----------------|------------------|--|
| CMT P-<br>Loss<br>7 | Other (Site-Specific) Indications<br>(Site-specific) as applicable | N/A             | N/A              |  |
| Mode<br>App.        | Power Operation, Hot Standby, Startup,<br>Hot Shutdown             |                 | N/A              |  |
| Site<br>specific    | N/A                                                                |                 |                  |  |
| Difference          | None                                                               |                 |                  |  |
| Deviation           | None                                                               |                 |                  |  |
# Fission Product Barrier Degradation

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| NEI<br>EAL#         | NEI EAL Wording                                                                                                                                                 | KNPP<br>EAL#(s)    | KNPP EAL Wording                                                                                                                                             |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CMT P-<br>Loss<br>8 | Emergency Director Judgment<br>Any condition in the opinion of the<br>Emergency Director that indicates Loss<br>or Potential Loss of the Containment<br>barrier | CMT<br>P-Loss<br>7 | Emergency Director Judgment<br>Any condition in the opinion of the Emergency<br>Director that indicates Loss or Potential Loss of<br>the Containment barrier |
| Mode<br>App.        | Power Operation, Hot Standby, Startup,<br>Hot Shutdown                                                                                                          |                    | Operating, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                                               |
| Site<br>specific    | None                                                                                                                                                            |                    |                                                                                                                                                              |
| Difference          | None                                                                                                                                                            |                    |                                                                                                                                                              |
| Deviation           | None                                                                                                                                                            |                    |                                                                                                                                                              |

| FPB – Basis                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | FPB – Basis Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| KNPP S                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | pecific Additions/Deletions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |  |
| 1. In general<br>added or re<br>information<br>developme                                                                                                                                                                                                                                                                                                                                                                                                                     | KNPP plant specific information was<br>eplaced non-specific NEI<br>n. Un-necessary NEI EAL<br>ent information was deleted.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <ol> <li>Convert NEI basis to KNPP specific basis. Also,<br/>remove unnecessary information the end user would not<br/>need.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |
| 2. Other (Site deleted for                                                                                                                                                                                                                                                                                                                                                                                                                                                   | e-Specific) Indication sections were<br>Fuel Clad, RCS and Containment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2. None identified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |
| <ul> <li>3. Emergency<br/>and Contai<br/>guidance h</li> <li>Such a detern<br/>barrier degrada<br/>and dominant a</li> <li><u>Imminent</u><br/>degradatio<br/>based on a<br/>performand<br/>recognition<br/>acceptance<br/>checks.</li> <li><u>Barrier may</u><br/>there is a la<br/>assessment<br/>operability<br/>instrument<br/>monitoring</li> <li><u>Dominant</u><br/>degradatio<br/>likely entr<br/>Director sl<br/>power (Sta<br/>assure t<br/>declaration</li> </ul> | y Director Judgment (Fuel Clad, RCS<br>inment) – the following addition<br>as been included in the basis section.<br>mination should include imminent<br>ation, barrier monitoring capability<br>accident sequences.<br><u>barrier degradation</u> exists if the<br>n will likely occur within two hours<br>a projection of current safety system<br>ce. The term "imminent" refers to<br>n of the inability to reach safety<br>e criteria before completion of all<br><u>onitoring</u> capability is decreased if<br>oss or lack of reliable indicators. This<br>t should include instrumentation<br>r concerns, readings from portable<br>ation and consideration of offsite<br>gresults.<br><u>accident sequences</u> lead to<br>n of all fission product barriers and<br>ry to the CSFSTs. The Emergency<br>hould be mindful of the Loss of AC<br>ation Blackout) and ATWS EALs to<br>imely emergency classification<br>ns. | <ul> <li>3. The bulleted items in the bases for ED judgment are an amalgam of bases information from NEI 99-01.</li> <li>The first bulleted item comes from the notes on Table 5-<br/>F-1 as well as sections 3.9 and 3.10 of the NEI document regarding "imminent" barrier loss .</li> <li>The second from the bases of IC HG1 loss of all AC regarding degraded barrier monitoring capability that appears appropriate here.</li> <li>The third bulleted item also comes from IC HG1 as well as SG2 (ATWS) regarding the importance of the use of ED judgment to make anticipatory declarations based on FPB monitoring.</li> </ul> |  |  |  |
| Difference                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Addition of site specific information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | and clarifying information.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |
| Deviations None                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  |

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| NEI IC#          | NEI IC Wording                                                    | KNPP<br>IC#(s) | KNPP IC Wording                                                |
|------------------|-------------------------------------------------------------------|----------------|----------------------------------------------------------------|
| HUI              | Natural and Destructive Phenomena<br>Affecting the PROTECTED AREA | HU1            | Natural and Destructive Phenomena Affecting the PROTECTED AREA |
| Mode<br>App.     | All                                                               |                | All                                                            |
| Site<br>specific | None                                                              |                |                                                                |
| Difference       | None                                                              |                |                                                                |
| Deviation        | None                                                              |                |                                                                |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                              | KNPP<br>EAL#(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | KNPP EAL Wording                                                                                                                                                                                                                                     |  |  |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| 1                | (Site-Specific) method indicates felt<br>earthquake                                                                                                                                                                                          | HU1.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <ul> <li>Earthquake felt in plant as indicated by:</li> <li>Consensus of Control Room operators on duty</li> <li>AND</li> <li>Activation of seismic monitor with Trigger light lit in Relay Room on RR159 (SER 330 Seismic Monitor Event)</li> </ul> |  |  |
| Site<br>specific | <ul> <li>"Consensus of Control Room operate<br/>single monitor reading which may be<br/>event.</li> <li>"Activation of seismic monitor with<br/>Monitor Event)" describes the KNPF</li> <li>This EAL reflects the site-specific m</li> </ul> | <ul> <li>"Consensus of Control Room operators on duty" is used to eliminate classification based on a single monitor reading which may be the result of actions in the area other than an actual seismic event.</li> <li>"Activation of seismic monitor with Trigger light lit in Relay Room on RR159 (SER 330 Seismic Monitor Event)" describes the KNPP site specific seismic monitor.</li> <li>This EAL reflects the site-specific method of indicating a felt earthquake.</li> </ul> |                                                                                                                                                                                                                                                      |  |  |
| Difference       | <ul> <li>Reworded EAL for readability.</li> <li>This change is not a deviation because it meets the intent of NEI 99-01.</li> </ul>                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                      |  |  |
| Deviation        | None                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                      |  |  |

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| NEI<br>EAL#      | NEI EAL Wording                                                                                                                      | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                       |  |  |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------|--|--|
| 2                | Report by plant personnel of tornado or<br>high winds greater than (site-specific)<br>mph striking within PROTECTED<br>AREA boundary | HU1.2           | Report by plant personnel of tornado or high<br>winds GREATER THAN 100 mph striking<br>within PROTECTED AREA boundary. |  |  |
| Site<br>specific | <ul> <li>100 mph winds are the KNPP USAR basis.</li> </ul>                                                                           |                 |                                                                                                                        |  |  |
| Difference       | None                                                                                                                                 |                 |                                                                                                                        |  |  |
| Deviation        | None                                                                                                                                 |                 |                                                                                                                        |  |  |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                  | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                          |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3                | Vehicle crash into plant structures or<br>systems within PROTECTED AREA<br>boundary                                                                              | HU1.3           | Vehicle crash into plant structures containing<br>functions and systems required for safe<br>shutdown of the plant within the PROTECTED<br>AREA boundary. |
| Site<br>specific | None                                                                                                                                                             |                 |                                                                                                                                                           |
| Difference       | "containing functions and systems required for safe shutdown of the plant" was added to the EAL to clarify the EAL with information from the NEI basis document. |                 |                                                                                                                                                           |
| Deviation        | None                                                                                                                                                             |                 |                                                                                                                                                           |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                    | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                                 |  |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 4                | Report by plant personnel of an<br>unanticipated EXPLOSION within<br>PROTECTED AREA boundary<br>resulting in VISIBLE DAMAGE to<br>permanent structure or equipment | HU1.4           | Report by plant personnel of an unanticipated<br>EXPLOSION within PROTECTED AREA<br>boundary resulting in VISIBLE DAMAGE to<br>permanent structure or equipment. |  |
| Site<br>specific | None                                                                                                                                                               |                 |                                                                                                                                                                  |  |
| Difference       | None                                                                                                                                                               |                 |                                                                                                                                                                  |  |
| Deviation        | None                                                                                                                                                               |                 |                                                                                                                                                                  |  |

| NEI<br>EAL#      | NEI EAL Wording                                                                                    | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                |  |
|------------------|----------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------|--|
| 5                | Report of turbine failure resulting in casing penetration or damage to turbine or generator seals. | HU1.5           | Report of turbine failure resulting in casing penetration or damage to turbine-generator seals. |  |
| Site<br>specific | None                                                                                               |                 |                                                                                                 |  |
| Difference       | None                                                                                               |                 |                                                                                                 |  |
| Deviation        | None                                                                                               |                 |                                                                                                 |  |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                             | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                          |  |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 6                | Uncontrolled flooding in (site-specific)<br>areas of the plant that has the potential<br>to affect safety related equipment<br>needed for the current operating mode                                                                        | HU1.6           | <ul> <li>Uncontrolled flooding in the following areas of<br/>the plant that has the potential to affect safety<br/>related equipment needed for the current<br/>operating mode:</li> <li>Diesel Generator A Room</li> <li>Diesel Generator B Room</li> <li>Safeguards Alley</li> <li>Relay Room</li> <li>CRDM Equipment Room</li> <li>RHR Pump Pits</li> <li>Auxiliary Building Basement</li> <li>Screen House</li> </ul> |  |
| Site<br>specific | <ul> <li>List of areas is KNPP areas that coul<br/>equipment.</li> </ul>                                                                                                                                                                    | d be suscept    | ible to flooding damage to safety related                                                                                                                                                                                                                                                                                                                                                                                 |  |
| Difference       | • The words "the following" were added for readability. This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL |                 |                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
| Deviation        | None                                                                                                                                                                                                                                        |                 |                                                                                                                                                                                                                                                                                                                                                                                                                           |  |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                         | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                           |  |  |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| 7                | (Site Specific) occurrences affecting<br>the PROTECTED AREA                                                                                                                             | HU1.7           | High or low lake level in excess of column<br>"Unusual Event", Lake-Forebay Level<br>Thresholds, Table H-2 for GREATER<br>THAN 15 minutes. |  |  |
| Site<br>specific | • Table H-2 contains the KNPP high and low lake water limits for an Unusual Event.                                                                                                      |                 |                                                                                                                                            |  |  |
| Difference       | <ul> <li>EAL HU1.7 was added to address site specific high and low water level conditions.</li> <li>This change is not a deviation because it meets the intent of NEI 99-01.</li> </ul> |                 |                                                                                                                                            |  |  |
| Deviation        | None                                                                                                                                                                                    |                 |                                                                                                                                            |  |  |

| н   | HU1 – Basis Justification                                                                                                   |                                                                                                                                |    |                                                                                                                    |  |
|-----|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|----|--------------------------------------------------------------------------------------------------------------------|--|
|     | KNPP                                                                                                                        | Specific Additions/Deletions                                                                                                   |    | Justification                                                                                                      |  |
| 1.  | In general<br>added or r<br>informatic<br>developm                                                                          | I KNPP plant specific information was<br>replaced non-specific NEI<br>on. Unnecessary NEI EAL<br>lent information was deleted. | 1. | Convert NEI basis to KNPP specific basis. Also,<br>removed unnecessary information the end user would not<br>need. |  |
| 2.  | Added pla<br>low Lake                                                                                                       | ant specific HU1.7 to address high and<br>Michigan water levels.                                                               | 2. | High or low water level conditions may threaten operability of plant cooling systems.                              |  |
| Dif | <ul> <li>Basis was made plant specific.</li> <li>HU1.7 was added to address abnormal Lake Michigan water levels.</li> </ul> |                                                                                                                                |    | nal Lake Michigan water levels.                                                                                    |  |
| Dev | viations                                                                                                                    | None                                                                                                                           |    |                                                                                                                    |  |

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| NEI IC#          | NEI IC Wording                                                                            | KNPP<br>IC#(s) | KNPP IC Wording                                                                           |  |
|------------------|-------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------|--|
| HU2              | FIRE Within PROTECTED AREA<br>Boundary Not Extinguished Within 15<br>Minutes of Detection | HU2            | FIRE Within PROTECTED AREA Boundary<br>Not Extinguished Within 15 Minutes of<br>Detection |  |
| Mode<br>App.     | All                                                                                       |                | All                                                                                       |  |
| Site<br>specific | None                                                                                      |                |                                                                                           |  |
| Difference       | None                                                                                      |                |                                                                                           |  |
| Deviation        | None                                                                                      |                |                                                                                           |  |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                                                                | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                             |  |  |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| 1                | FIRE in buildings or areas contiguous<br>to any of the following (site-specific)<br>areas not extinguished within 15<br>minutes of control room notification or<br>verification of a control room alarm:<br>(Site-specific) list                                                                                                                                                               | HU2.1           | FIRE in the PROTECTED AREA not<br>extinguished within 15 minutes of control room<br>notification or verification of a control room<br>alarm. |  |  |
| Site<br>specific | <ul> <li>"PROTECTED AREA" was utilized to denote "buildings or areas contiguous to" because all<br/>buildings in the Protected Area are contiguous to Vital Areas as described in the basis section of<br/>the NEI document. This wording also meets the intent as stated in the NEI IC.</li> </ul>                                                                                            |                 |                                                                                                                                              |  |  |
| Difference       | <ul> <li>"PROTECTED AREA" was utilized to denote "buildings or areas contiguous to" because all buildings in the Protected Area are contiguous to Vital Areas as described in the basis section of the NEI document. This wording also meets the intent as stated in the NEI IC.</li> <li>This change is not a deviation because it does not alter the meaning or intent, such that</li> </ul> |                 |                                                                                                                                              |  |  |
|                  | classification of the event could be different between the NEI guidance and the plant EAL.                                                                                                                                                                                                                                                                                                     |                 |                                                                                                                                              |  |  |
| Deviation        | None                                                                                                                                                                                                                                                                                                                                                                                           |                 |                                                                                                                                              |  |  |

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| н                                                                                  | HU2 – Basis Justification                                                                                                                                           |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                        |  |  |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
|                                                                                    | KNPP S                                                                                                                                                              | pecific Additions/Deletions                                                                                                                                                                                                                                                                      | Justification                                                                                                                                                          |  |  |
| 1.                                                                                 | 1. In general KNPP plant specific information was<br>added or replaced non-specific NEI<br>information. Unnecessary NEI EAL<br>development information was deleted. |                                                                                                                                                                                                                                                                                                  | <ol> <li>Convert NEI basis to KNPP specific basis. Also, remove<br/>unnecessary information the end user would not need.</li> </ol>                                    |  |  |
| 2.                                                                                 | Delete "Ve<br>alarm inclu<br>the control<br>location to                                                                                                             | erification of a fire detection system<br>ades actions that can be taken with<br>room or other nearby site-specific<br>ensure the alarm is not spurious".                                                                                                                                        | 2. This statement was not applicable to KNPP and therefore deleted.                                                                                                    |  |  |
| 3. Delete "The intent of this IC is not to include<br>buildings (i.e., warehouses) |                                                                                                                                                                     | e intent of this IC is not to include i.e., warehouses)                                                                                                                                                                                                                                          | 3. Due to the size of KNPP's protected area, buildings in<br>the Protected Area are contiguous to Vital Areas as<br>described in the basis section of the NEI document |  |  |
| Dif                                                                                | ference                                                                                                                                                             | • Basis was made plant specific du                                                                                                                                                                                                                                                               | e it plant equipment and indications.                                                                                                                                  |  |  |
|                                                                                    |                                                                                                                                                                     | • Because all buildings in the Protected Area are contiguous to Vital Areas as described in the basis section of the NEI document, HU2.1 was changed to Protected Area to include all areas contiguous to Vital Areas. The Protected Area includes office / administrative areas and warehouses. |                                                                                                                                                                        |  |  |
|                                                                                    |                                                                                                                                                                     | • This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL.                                                                                                           |                                                                                                                                                                        |  |  |
| De                                                                                 | viations                                                                                                                                                            | None                                                                                                                                                                                                                                                                                             |                                                                                                                                                                        |  |  |

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| NEI IC#          | NEI IC Wording                                                                                | KNPP<br>IC#(s) | KNPP IC Wording                                                                            |
|------------------|-----------------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------------|
| HU3              | Release of Toxic or Flammable Gases<br>Deemed Detrimental to Normal<br>Operation of the Plant | HU3            | Release of Toxic or Flammable Gases Deemed<br>Detrimental to Normal Operation of the Plant |
| Mode<br>App.     | All                                                                                           |                | All                                                                                        |
| Site<br>specific | None                                                                                          |                |                                                                                            |
| Difference       | None                                                                                          |                | · · · · ·                                                                                  |
| Deviation        | None                                                                                          |                |                                                                                            |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                               | KNPP<br>EAL#(s)    | KNPP EAL Wording                                                                                                                                           |  |  |  |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| 1                | Report or detection of toxic or<br>flammable gases that has or could enter<br>the site area boundary in amounts that<br>can affect NORMAL PLANT<br>OPERATIONS | <sup>-</sup> HU3.1 | Report or detection of toxic or flammable gases<br>that has or could enter the site area boundary in<br>amounts that can affect NORMAL PLANT<br>OPERATIONS |  |  |  |
| Site<br>specific | None                                                                                                                                                          |                    |                                                                                                                                                            |  |  |  |
| Difference       | None                                                                                                                                                          |                    |                                                                                                                                                            |  |  |  |
| Deviation        | None                                                                                                                                                          |                    |                                                                                                                                                            |  |  |  |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                           | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                           |
|------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------|
| 2                | Report by Local, County or State<br>Officials for evacuation or sheltering of<br>site personnel based on an offsite event | HU3.2           | Report by Local, County or State Officials for<br>evacuation or sheltering of site personnel based<br>on an offsite event. |
| Site<br>specific | None                                                                                                                      |                 |                                                                                                                            |
| Difference       | None                                                                                                                      |                 |                                                                                                                            |
| Deviation        | None                                                                                                                      | _               |                                                                                                                            |

| HU3 – Bas         | HU3 – Basis Justification    |     |               |  |  |  |
|-------------------|------------------------------|-----|---------------|--|--|--|
| KNPP              | Specific Additions/Deletions |     | Justification |  |  |  |
| None              |                              | N/A | ····          |  |  |  |
| Difference        | N/A                          |     | <u></u>       |  |  |  |
| <b>Deviations</b> | N/A                          |     |               |  |  |  |

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| NEI IC#          | NEI IC Wording                                                                                             | KNPP<br>IC#(s) | KNPP IC Wording                                                                                            |  |  |
|------------------|------------------------------------------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------------------------------------|--|--|
| HU4              | Confirmed Security Event Which<br>Indicates a Potential Degradation in the<br>Level of Safety of the Plant | HU4            | Confirmed Security Event Which Indicates a<br>Potential Degradation in the Level of Safety of<br>the Plant |  |  |
| Mode<br>App.     | All                                                                                                        |                | All                                                                                                        |  |  |
| Site<br>specific | None                                                                                                       |                |                                                                                                            |  |  |
| Difference       | None                                                                                                       |                |                                                                                                            |  |  |
| Deviation        | None                                                                                                       |                |                                                                                                            |  |  |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1                | Security events as determined from<br>(site-specific) Safeguards Contingency<br>Plan and reported by the (site-specific)<br>security shift supervision                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | HU4.1           | <ul> <li>Security Shift Supervisor reports ANY of the following:</li> <li>Suspected sabotage device discovered within the plant PROTECTED AREA</li> <li>Suspected sabotage device discovered outside the PROTECTED AREA or in the plant switchyard</li> <li>Confirmed tampering with safety related equipment</li> <li>A hostage or extortion situation that disrupts NORMAL PLANT OPERATIONS</li> <li>Civil disturbance or strike which disrupts NORMAL PLANT OPERATIONS</li> <li>Internal disturbance that is not a short lived or that is not a harmless outburst involving ANY individuals within the PROTECTED AREA</li> <li>Malevolent use of a vehicle outside the PROTECTED AREA which disrupts NORMAL PLANT OPERATIONS.</li> </ul> |  |
| Site<br>specific | • "Suspected sabotage device discovered within the plant Protected Area. Suspected sabotage device discovered outside the Protected Area or in the plant switchyard, Confirmed tampering with safety related equipment, A hostage situation that disrupts normal plant operations, Civil disturbance or strike which disrupts normal plant operations, Internal disturbance that is not short lived or that is not a harmless outburst involving ANY individuals within the Protected Area, and Malevolent use of a vehicle outside the Protected Area which disrupts normal plant operations" comes from the list of site specific areas from the Physical Security Plan |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |

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|            | •  | "Security Shift Supervisor " is the KNPP position for Security Shift Supervision.                                                                                                   |  |
|------------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Difference | •  | The NEI words were rearranged for readability when incorporating the bullet list.                                                                                                   |  |
|            | •  | This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL |  |
| Deviation  | No | one                                                                                                                                                                                 |  |

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| NEI<br>EAL#      | NEI EAL Wording                                       | KNPP<br>EAL#(s) | KNPP EAL Wording                                       |  |  |  |
|------------------|-------------------------------------------------------|-----------------|--------------------------------------------------------|--|--|--|
| 2                | A credible site specific security threat notification | HU4.2           | A credible site specific security threat notification. |  |  |  |
| Site<br>specific | None                                                  |                 |                                                        |  |  |  |
| Difference       | None                                                  |                 |                                                        |  |  |  |
| Deviation        | None                                                  |                 |                                                        |  |  |  |

| H  | HU4 – Basis Justification                                                                          |                                                                                                                            |    |                                                                                                                |  |  |
|----|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----|----------------------------------------------------------------------------------------------------------------|--|--|
|    | KNPP                                                                                               | Specific Additions/Deletions                                                                                               |    | Justification                                                                                                  |  |  |
| 1. | In general<br>added or r<br>informatic<br>developm                                                 | KNPP plant specific information was<br>eplaced non-specific NEI<br>on. Unnecessary NEI EAL<br>ent information was deleted. | 1. | Convert NEI basis to KNPP specific basis. Also, remove<br>unnecessary information the end user would not need. |  |  |
| 2. | 2. "A credible site-specific security threat" was added to define what kinds of threats are meant. |                                                                                                                            | 2. | Additional information for clarification.                                                                      |  |  |
| Di | lfe <u>rence</u>                                                                                   | Basis was made plant specific.                                                                                             | L  |                                                                                                                |  |  |
| De | viations                                                                                           | N/A                                                                                                                        |    |                                                                                                                |  |  |

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| NEI IC#          | NEI IC Wording                                                                                                | KNPP<br>IC#(s) | KNPP IC Wording                                                                                             |
|------------------|---------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------|
| HU5              | Other Conditions Existing Which in the<br>Judgment of the Emergency Director<br>Warrant Declaration of a NOUE | HU5            | Other Conditions Existing Which in the<br>Judgment of the Emergency Director Warrant<br>Declaration of a UE |
| Mode<br>App.     | All                                                                                                           |                | All                                                                                                         |
| Site<br>specific | None                                                                                                          |                |                                                                                                             |
| Difference       | None                                                                                                          |                |                                                                                                             |
| Deviation        | None                                                                                                          |                |                                                                                                             |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                                                   | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                                                                                                                                                                                                                                            |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                | Other conditions exist which in the<br>judgment of the Emergency Director<br>indicate that events are in process or<br>have occurred which indicate a<br>potential degradation of the level of<br>safety of the plant. No releases of<br>radioactive material requiring offsite<br>response or monitoring are expected<br>unless further degradation of safety<br>systems occurs. | HU5.1           | Other conditions exist which in the judgment of<br>the Emergency Director indicate that events are<br>in process or have occurred which indicate a<br>potential degradation of the level of safety of the<br>plant. No releases of radioactive material<br>requiring offsite response or monitoring are<br>expected unless further degradation of safety<br>systems occurs. |
| Site<br>specific | None                                                                                                                                                                                                                                                                                                                                                                              |                 |                                                                                                                                                                                                                                                                                                                                                                             |
| Difference       | None                                                                                                                                                                                                                                                                                                                                                                              |                 |                                                                                                                                                                                                                                                                                                                                                                             |
| Deviation        | None                                                                                                                                                                                                                                                                                                                                                                              |                 |                                                                                                                                                                                                                                                                                                                                                                             |

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| HU5 – Basis Justification |                                |               |  |  |
|---------------------------|--------------------------------|---------------|--|--|
| KNPP                      | Specific Additions/Deletions   | Justification |  |  |
| 1. None                   |                                | 1. N/A        |  |  |
| Difference                | Basis was made plant specific. | <b>1</b>      |  |  |
| Deviations                | N/A                            |               |  |  |

| NEI IC#          | NEI IC Wording                                                      | KNPP<br>IC#(s) | KNPP IC Wording                                                  |
|------------------|---------------------------------------------------------------------|----------------|------------------------------------------------------------------|
| HA1              | Natural and Destructive Phenomena<br>Affecting the Plant VITAL AREA | HA1            | Natural and Destructive Phenomena Affecting the Plant VITAL AREA |
| Mode<br>App.     | All                                                                 |                | All                                                              |
| Site<br>specific | None                                                                |                |                                                                  |
| Difference       | None                                                                |                |                                                                  |
| Deviation        | None                                                                |                |                                                                  |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                      | KNPP KNPP EAL Wording<br>EAL#(s)                                                                                                                                                                                                                  |  |  |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| 1                | (Site-Specific) method indicates<br>Seismic Event greater than Operating<br>Basis Earthquake (OBE)                                                                                                                                   | HA1.1<br>Seismic event GREATER THAN Operating<br>Basis Earthquake (OBE) as indicated by<br>activation of seismic monitor with OBE Limit<br>Exceeded light lit in Relay Room on RR159<br>(SER 331 Seismic Monitor Operational Basis<br>Earthquake) |  |  |
| Site<br>specific | <ul> <li>"activation of seismic monitor with OBE Limit Exceeded light lit in Relay Room on RR159 (SER<br/>331 Seismic Monitor Operational Basis Earthquake)" is the KNPP indication of an Operating Basis<br/>Earthquake.</li> </ul> |                                                                                                                                                                                                                                                   |  |  |
| Difference       | <ul> <li>Reworded EAL for readability.</li> <li>This change is not a deviation because it meets the intent of NEI 99-01.</li> </ul>                                                                                                  |                                                                                                                                                                                                                                                   |  |  |
| Deviation        | None                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                   |  |  |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                      | KNPP<br>EAL#(s)         | KNPP EAL Wording                                                                                                                                                                                                                                                                                |  |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 2                | Tornado or high winds greater than<br>(site-specific) mph within<br>PROTECTED AREA boundary and<br>resulting in VISIBLE DAMAGE to any<br>of the following plant structures /<br>equipment or Control Room indication<br>of degraded performance of those<br>systems. | HA1.2                   | Tornado or high winds GREATER THAN 100<br>mph within PROTECTED AREA boundary and<br>resulting in VISIBLE DAMAGE to any plant<br>structures or equipment located in Table H-1<br>areas or Control Room indication of degraded<br>performance of those systems located within<br>Table H-1 areas. |  |
| Site<br>specific | <ul> <li>Table H-1 provides the plant-specific</li> <li>100 mph winds are the KNPP USAR</li> </ul>                                                                                                                                                                   | list of struc<br>basis. | tures, which encompass plant vital areas.                                                                                                                                                                                                                                                       |  |
| Difference       | None                                                                                                                                                                                                                                                                 |                         |                                                                                                                                                                                                                                                                                                 |  |
| Deviation        | None                                                                                                                                                                                                                                                                 |                         |                                                                                                                                                                                                                                                                                                 |  |

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| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                                                                                                                                |  |  |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| . 3              | <ul> <li>Vehicle crash within PROTECTED<br/>AREA boundary and resulting in<br/>VISIBLE DAMAGE to any of the<br/>following plant structures or equipment<br/>therein or control indication of<br/>degraded performance of those<br/>systems:</li> <li>Reactor Building</li> <li>Intake Building</li> <li>Ultimate Heat Sink</li> <li>Refueling Water Storage<br/>Tank</li> <li>Diesel Generator Building</li> <li>Turbine Building</li> <li>Condensate Storage Tank</li> <li>Control Room</li> <li>Other (Site-Specific)<br/>Structures.</li> </ul> | HA1.3           | Vehicle crash within PROTECTED AREA<br>boundary and resulting in VISIBLE DAMAGE<br>to any plant structures or equipment located in<br>Table H-1 areas or Control Room indication of<br>degraded performance of those systems located<br>within Table H-1 areas. |  |  |
| Site<br>specific | • Table H-1 provides the plant-specific                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | e list of struc | tures which encompass plant vital areas                                                                                                                                                                                                                         |  |  |
| Difference       | <ul> <li>Changed "control" to "Control Room" to be consistent with other EALs in this subgroup.</li> <li>This change is not a deviation because it meets the intent of NEI 99-01.</li> </ul>                                                                                                                                                                                                                                                                                                                                                       |                 |                                                                                                                                                                                                                                                                 |  |  |
| Deviation        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                                                                                                                                                                                                                                                                 |  |  |

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| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                       | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------|
| 4                | Turbine failure-generated missiles<br>result in any VISIBLE DAMAGE to or<br>penetration of any of the following<br>plant areas: (site-specific) list. | HA1.4           | Turbine failure-generated missiles result in any<br>VISIBLE DAMAGE to or penetration of any<br>plant areas listed in Table H-1. |
| Site<br>specific | • Table H-1 provides the plant-specific                                                                                                               | e list of struc | tures which encompass plant vital areas.                                                                                        |
| Difference       | None                                                                                                                                                  |                 |                                                                                                                                 |
| Deviation        | None                                                                                                                                                  |                 |                                                                                                                                 |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                              | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 5                | Uncontrolled flooding in (site-specific)<br>areas of the plant that results in<br>degraded safety system performance as<br>indicated in the control room or that<br>creates industrial safety hazards (e.g.,<br>electric shock) that precludes access<br>necessary to operate or monitor safety<br>equipment | HA1.5           | <ul> <li>Uncontrolled flooding in the following areas of<br/>the plant that results in degraded safety system<br/>performance as indicated in the control room or<br/>that creates industrial safety hazards (e.g.,<br/>electric shock) that precludes access necessary to<br/>operate or monitor safety equipment:</li> <li>Diesel Generator A Room</li> <li>Diesel Generator B Room</li> <li>Safeguards Alley</li> <li>Relay Room</li> <li>CRDM Equipment Room</li> <li>RHR Pump Pits</li> <li>Auxiliary Building Basement</li> <li>Screen House</li> </ul> |  |
| Site<br>specific | • List of areas is KNPP areas that could be susceptible to flooding damage to safety related equipment.                                                                                                                                                                                                      |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| Difference       | • The words "the following" were added for readability. This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL.                                                                 |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
| Deviation        | None                                                                                                                                                                                                                                                                                                         |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |

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| NEI<br>EAL#       | NEI EAL Wording                                                                                                                                                                                                                                                                             | (NPP KNPP EAL Wording AL#(s)                                                                                                    |  |  |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--|--|
| 6                 | (Site-Specific) occurrences within<br>PROTECTED AREA boundary and<br>resulting in VISIBLE DAMAGE to<br>plant structures containing equipment<br>necessary for safe shutdown, or has<br>caused damage as evidenced by control<br>room indication of degraded<br>performance of those systems | High or low lake level in excess of column<br>"Alert", Lake-Forebay Level Thresholds, Table<br>H-2 for GREATER THAN 15 minutes. |  |  |
| Site<br>specific. | • Table H-2 contains the KNPP high and low lake water limits for an Alert.                                                                                                                                                                                                                  |                                                                                                                                 |  |  |
| Difference        | <ul> <li>EAL HA1.6 was added to address site specific high and low water level conditions.</li> <li>This change is not a deviation because it meets the intent of NEI 99-01.</li> </ul>                                                                                                     |                                                                                                                                 |  |  |
| Deviation         | None                                                                                                                                                                                                                                                                                        |                                                                                                                                 |  |  |

| HA1 – Basis Justification                         |                                                                                                                                |    |                                                                                                                |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|----|----------------------------------------------------------------------------------------------------------------|
| KNPP                                              | Specific Additions/Deletions                                                                                                   |    | Justification                                                                                                  |
| 1. In genera<br>added or<br>informati<br>developm | l KNPP plant specific information was<br>replaced non-specific NEI<br>on. Unnecessary NEI EAL<br>tent information was deleted. | 1. | Convert NEI basis to KNPP specific basis. Also, remove<br>unnecessary information the end used would not need. |
| 2. Added pl<br>low Lake                           | ant specific HA1.6 to address high and<br>Michigan water levels.                                                               | 2. | High or low water level conditions may threaten operability of plant cooling systems.                          |
| Difference                                        | <ul> <li>Basis was made plant specific.</li> <li>HA1.6 was added to address abnormal Lake Michigan water levels.</li> </ul>    |    |                                                                                                                |
| Deviations                                        | None                                                                                                                           |    |                                                                                                                |

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| NEI IC#          | NEI IC Wording                                                                                                               | KNPP<br>IC#(s) | KNPP IC Wording                                                                                                           |  |  |
|------------------|------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------|--|--|
| HA2              | FIRE or EXPLOSION Affecting the<br>Operability of Plant Safety Systems<br>Required to Establish or Maintain Safe<br>Shutdown | HA2            | FIRE or EXPLOSION Affecting the Operability<br>of Plant Safety Systems Required to Establish or<br>Maintain Safe Shutdown |  |  |
| Mode<br>App.     | All                                                                                                                          |                | All                                                                                                                       |  |  |
| Site<br>specific | None                                                                                                                         |                |                                                                                                                           |  |  |
| Difference       | None                                                                                                                         |                |                                                                                                                           |  |  |
| Deviation        | None                                                                                                                         |                |                                                                                                                           |  |  |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                       | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                          |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------|
|                  | FIRE or EXPLOSION in any of the following (site-specific) areas:                                                                                                                      |                 | FIRE or EXPLOSION in any of the following areas (Table H-1)                                                                               |
|                  | (Site-specific) list                                                                                                                                                                  | }               | AND                                                                                                                                       |
|                  | AND                                                                                                                                                                                   |                 | Affected safety system parameter indications                                                                                              |
|                  | Affected system parameter indications<br>show degraded performance or plant<br>personnel report VISIBLE DAMAGE<br>to permanent structures or equipment<br>within the specified area   | HA2.1           | show degraded performance OF plant personnel<br>report VISIBLE DAMAGE to permanent<br>structures or equipment needed for safe<br>shutdown |
| Site<br>specific | <ul> <li>Table H-1 provides the plant-specific list of structures, which encompass plant vital areas.</li> </ul>                                                                      |                 |                                                                                                                                           |
| Difference       | • "needed for safe shutdown" replaced within the specified area to be consistent with wording in the basis document.                                                                  |                 |                                                                                                                                           |
|                  | • This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL |                 |                                                                                                                                           |
| Deviation        | None                                                                                                                                                                                  |                 |                                                                                                                                           |

| HA2 – Basis Justification                                                                                                 |     |                                                            |  |
|---------------------------------------------------------------------------------------------------------------------------|-----|------------------------------------------------------------|--|
| KNPP Specific Additions/Deletions<br>In general KNPP plant specific information replaced<br>non-specific NEI information. |     | Justification<br>Convert NEI basis to KNPP specific basis. |  |
|                                                                                                                           |     |                                                            |  |
| Deviations                                                                                                                | N/A |                                                            |  |

| NEI IC#          | NEI IC Wording                                                                                                                                                                                             | KNPP<br>IC#(s) | KNPP IC Wording                                                                                                                                                                                         |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| НАЗ              | Release of Toxic or Flammable Gases<br>Within or Contiguous to a VITAL<br>AREA Which Jeopardizes Operation of<br>Systems Required to Maintain Safe<br>Operations or Establish or Maintain<br>Safe Shutdown | НАЗ            | Release of Toxic or Flammable Gases Within or<br>Contiguous to a VITAL AREA Which<br>Jeopardizes Operation of Systems Required to<br>Maintain Safe Operations or Establish or<br>Maintain Safe Shutdown |
| Mode<br>App.     | All                                                                                                                                                                                                        |                | All                                                                                                                                                                                                     |
| Site<br>specific | None                                                                                                                                                                                                       |                |                                                                                                                                                                                                         |
| Difference       | None                                                                                                                                                                                                       |                |                                                                                                                                                                                                         |
| Deviation        | None                                                                                                                                                                                                       |                |                                                                                                                                                                                                         |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                           | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                                                                                 |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                | Report or detection of toxic gases<br>within or contiguous to a VITAL<br>AREA in concentrations that may result<br>in an atmosphere IMMEDIATELY<br>DANGEROUS TO LIFE AND<br>HEALTH (IDLH) | HA3.1           | Report or detection of toxic gases within or<br>contiguous to a Safe Shutdown/VITAL AREA<br>(Table H-1) in concentrations that may result in<br>an atmosphere IMMEDIATELY DANGEROUS<br>TO LIFE AND HEALTH (IDLH) |
| Site<br>specific | • Table H-1 provides the plant-specific                                                                                                                                                   | e list of struc | ctures which encompass plant vital areas.                                                                                                                                                                        |
| Difference       | • Added "Safe Shutdown" to be consistent with the title of Table H-1.                                                                                                                     |                 | e title of Table H-1.                                                                                                                                                                                            |
|                  | • This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL     |                 |                                                                                                                                                                                                                  |
| Deviation        | None                                                                                                                                                                                      |                 |                                                                                                                                                                                                                  |

| NEI<br>EAL#       | NEI EAL Wording                                                                                                                                                                                                                                                                      | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2                 | Report or detection of gases in<br>concentration greater than the LOWER<br>FLAMMABILITY LIMIT within or<br>contiguous to a VITAL AREA                                                                                                                                                | HA3.2           | Report or detection of gases in<br>concentrations GREATER THAN the<br>LOWER FLAMMABILITY LIMIT within<br>or contiguous to a Safe Shutdown/VITAL<br>AREA (Table H-1) |
| Site<br>specific` | • Table H-1 provides the plant-specific list of structures which encompass plant vital areas and areas contiguous to plant vital areas.                                                                                                                                              |                 |                                                                                                                                                                     |
| Difference        | <ul> <li>Added "Safe Shutdown" to be consistent with the title of Table H-1.</li> <li>This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL</li> </ul> |                 |                                                                                                                                                                     |
| Deviation         | None                                                                                                                                                                                                                                                                                 |                 |                                                                                                                                                                     |

| HA3 – Basi                | HA3 – Basis Justification                                             |                                              |  |  |  |
|---------------------------|-----------------------------------------------------------------------|----------------------------------------------|--|--|--|
| KNPP S                    | Specific Additions/Deletions                                          | Justification                                |  |  |  |
| 1. In general<br>added.   | KNPP plant specific information was                                   | 1. Convert NEI basis to KNPP specific basis. |  |  |  |
| 2. Added "(i<br>adjacent) | n actual contact with or immediately<br>'after the word "contiguous". | 2. Added clarifying information.             |  |  |  |
| Difference                | Basis was made plant specific and clarifying information was added.   |                                              |  |  |  |
| Deviations                | N/A                                                                   |                                              |  |  |  |

| NEI IC#          | NEI IC Wording                                        | KNPP<br>IC#(s) | KNPP IC Wording                                       |
|------------------|-------------------------------------------------------|----------------|-------------------------------------------------------|
| HA4              | Confirmed Security Event in a Plant<br>PROTECTED AREA | HA4            | Confirmed Security Event in a Plant<br>PROTECTED AREA |
| Mode<br>App.     | All                                                   |                | All                                                   |
| Site<br>specific | None                                                  | •              |                                                       |
| Difference       | None.                                                 |                |                                                       |
| Deviation        | None                                                  |                | ····                                                  |

| NEI<br>EAL#      | NEI EAL Wording                                                  | KNPP<br>EAL#(s) | KNPP EAL Wording                                              |
|------------------|------------------------------------------------------------------|-----------------|---------------------------------------------------------------|
| 1                | INTRUSION into the plant<br>PROTECTED AREA by a HOSTILE<br>FORCE | HA4.1           | INTRUSION into the plant PROTECTED<br>AREA by a HOSTILE FORCE |
| Site<br>specific | None                                                             |                 |                                                               |
| Difference       | None                                                             |                 |                                                               |
| Deviation        | None                                                             |                 |                                                               |

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| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                               | KNPP<br>EAL#(s)                                                                   | KNPP EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2                | Other security events as determined<br>from (site-specific) Safeguards<br>Contingency Plan and reported by the<br>(site-specific) security shift supervision                                                                  | HA4.2                                                                             | <ul> <li>Security Shift Supervisor reports any of the following:</li> <li>Sabotage device discovered in the plant PROTECTED AREA</li> <li>Standoff attack on the protected area by a HOSTILE FORCE (i.e., Sniper)</li> <li>ANY Security event of increasing severity that persists for GREATER THAN 30 minutes: <ul> <li>Credible bomb threats</li> <li>Hostage / Extortion</li> <li>Suspicious Fire or Explosion</li> <li>Significant Security System Hardware Failure</li> <li>Loss of contact with Security Officers</li> </ul> </li> </ul> |
| Site<br>specific | <ul> <li>Sabotage device discovered in the Pr<br/>hostile force (i.e., Sniper), ANY second<br/>THAN 30 minutes, Credible bomb th<br/>Security System Hardware Failure, I<br/>site specific areas from the Physical</li> </ul> | rotected Area<br>urity event o<br>hreats, Extor<br>Loss of conta<br>Security Play | a, Standoff attack on the Protected Area by a<br>f increasing severity that persists for GREATER<br>tion, Suspicious fire or explosion, Significant<br>act with Security Officers" comes from the list of<br>n                                                                                                                                                                                                                                                                                                                                 |
| Difference       | <ul> <li>Reworded EAL for readability.</li> <li>This change is not a deviation because it meets the intent of NEI 99-01.</li> </ul>                                                                                           |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Deviation        | None                                                                                                                                                                                                                          |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

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| HA4 – Basis                                                                                                                                                      | HA4 – Basis Justification      |                                                                                                                |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------|--|--|
| KNPP S                                                                                                                                                           | pecific Additions/Deletions    | Justification                                                                                                  |  |  |
| In general KNPP plant specific information was<br>added or replaced non-specific NEI information.<br>Unnecessary NEI EAL development information<br>was deleted. |                                | Convert NEI basis to KNPP specific basis. Also, remove<br>unnecessary information the end used would not need. |  |  |
| Difference                                                                                                                                                       | Basis was made plant specific. |                                                                                                                |  |  |
| Deviations                                                                                                                                                       | N/A                            |                                                                                                                |  |  |

| NEI IC#          | NEI IC Wording                                | KNPP<br>IC#(s) | KNPP IC Wording                            |
|------------------|-----------------------------------------------|----------------|--------------------------------------------|
| HA5              | Control Room Evacuation Has Been<br>Initiated | HA5            | Control Room Evacuation Has Been Initiated |
| Mode<br>App.     | All                                           |                | All                                        |
| Site<br>specific | None                                          |                |                                            |
| Difference       | None                                          |                |                                            |
| Deviation        | None                                          |                |                                            |

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| NEI<br>EAL#      | NEI EAL Wording                                                                                     | KNPP<br>EAL#(s) | KNPP EAL Wording                                                              |
|------------------|-----------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------|
| 1                | Entry into (site-specific) procedure for control room evacuation                                    | HA5.1           | Entry into E-O-06, Fire in Alternate Fire Zone<br>for Control Room Evacuation |
| Site<br>specific | • "E-O-06, Fire in Alternate Fire Zone" is the site-specific procedure for control room evacuation. |                 |                                                                               |
| Difference       | None                                                                                                |                 |                                                                               |
| Deviation        | None                                                                                                |                 |                                                                               |

| HA5 – Basis Justification |                                           |                                                                                                     |  |  |
|---------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------|--|--|
| KNPF                      | Specific Additions/Deletions              | Justification                                                                                       |  |  |
| KNPP plant sp<br>added.   | pecific information (E-O-06) was          | Plant specific reference to E-O-06 procedure was added to convert NEI basis to KNPP specific basis. |  |  |
| Difference                | Difference Basis was made plant specific. |                                                                                                     |  |  |
| Deviations                | N/A                                       |                                                                                                     |  |  |

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| NEI IC#          | NEI IC Wording                                                                                                  | KNPP<br>IC#(s) | KNPP IC Wording                                                                                                 |
|------------------|-----------------------------------------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------|
| HA6              | Other Conditions Existing Which in the<br>Judgment of the Emergency Director<br>Warrant Declaration of an Alert | HA6            | Other Conditions Existing Which in the<br>Judgment of the Emergency Director Warrant<br>Declaration of an Alert |
| Mode<br>App.     | All                                                                                                             |                | All                                                                                                             |
| Site<br>specific | None                                                                                                            |                |                                                                                                                 |
| Difference       | None                                                                                                            |                |                                                                                                                 |
| Deviation        | None                                                                                                            |                |                                                                                                                 |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                                             | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                                                                                                                                                                                                                                          |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                | Other conditions exist which in the<br>judgment of the Emergency Director<br>indicate that events are in process or<br>have occurred which involve actual or<br>likely potential substantial degradation<br>of the level of safety of the plant. Any<br>releases are expected to be limited to<br>small fractions of the EPA Protective<br>Action Guideline exposure levels | <u>HA6.1</u>    | Other conditions exist which in the judgment of<br>the Emergency Director indicate that events are<br>in process or have occurred which involve actual<br>or likely potential substantial degradation of the<br>level of safety of the plant. Any releases are<br>expected to be limited to small fractions of the<br>EPA Protective Action Guideline exposure<br>levels. |
| Site<br>specific | None.                                                                                                                                                                                                                                                                                                                                                                       |                 |                                                                                                                                                                                                                                                                                                                                                                           |
| Difference       | None                                                                                                                                                                                                                                                                                                                                                                        |                 |                                                                                                                                                                                                                                                                                                                                                                           |
| Deviation        | None                                                                                                                                                                                                                                                                                                                                                                        |                 |                                                                                                                                                                                                                                                                                                                                                                           |

| HA6 – Basis Justification                       |                                                                             |                                              |  |  |  |
|-------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------|--|--|--|
| KNPP                                            | Specific Additions/Deletions                                                | Justification                                |  |  |  |
| Added the fol<br>AD-19 for EP<br>exposure level | lowing to the basis: Refer to EPIP-<br>A Protective Action Guideline<br>ls. | Information added on location of EPA limits. |  |  |  |
| Difference                                      | N/A                                                                         |                                              |  |  |  |
| Deviations                                      | N/A                                                                         |                                              |  |  |  |

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NEI IC# KNPP IC Wording NEI IC Wording KNPP IC#(s) Confirmed Security Event in a Plant Confirmed Security Event in a Plant VITAL HS1 HS1 VITAL AREA AREA Mode All All App. Site None specific Difference None Deviation None

| NEI<br>EAL#      | NEI EAL Wording                                           | KNPP<br>EAL#(s) | KNPP EAL Wording                                          |
|------------------|-----------------------------------------------------------|-----------------|-----------------------------------------------------------|
| 1                | INTRUSION into the plant VITAL<br>AREA by a HOSTILE FORCE | HS1.1           | INTRUSION into the plant VITAL AREA by a<br>HOSTILE FORCE |
| Site<br>specific | None                                                      |                 |                                                           |
| Difference       | None                                                      |                 |                                                           |
| Deviation        | None                                                      |                 |                                                           |

Hazards and Other Conditions Affecting Plant Safety

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#### NEI KNPP KNPP EAL Wording **NEI EAL Wording** EAL# EAL#(s) Security Supervision reports ANY of the Other security events as determined following: from (site-specific) Safeguards • A security event that results in the loss of Contingency Plan and reported by the control of ANY VITAL AREAS (other than (site-specific) security shift supervision Control Room) • Imminent loss of physical control of the HS1.2 2 facility (remote shutdown capability) due to a security event A confirmed sabotage discovered in a ٠ VITAL AREA Site . The "Security Shift Supervisor" is the title of the site-specific security supervision specific . Addition of security events to cover the following: loss of control of any vital area, imminent lose of physical control and sabotage in vital area. Difference Reworded EAL for readability. • This change is not a deviation because it meets the intent of NEI 99-01. . Deviation None

#### Hazards and Other Conditions Affecting Plant Safety

| HS1 – Basis                                                        | HS1 – Basis Justification                                                                              |                                                                                                                |  |  |  |  |
|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--|--|--|--|
| KNPP S                                                             | pecific Additions/Deletions                                                                            | Justification                                                                                                  |  |  |  |  |
| In general KNP<br>added or replac<br>Unnecessary N<br>was deleted. | P plant specific information was<br>ed non-specific NEI information.<br>EI EAL development information | Convert NEI basis to KNPP specific basis. Also, remove<br>unnecessary information the end user would not need. |  |  |  |  |
| Difference                                                         | Basis was made plant specific.                                                                         |                                                                                                                |  |  |  |  |
| Deviations                                                         | N/A                                                                                                    |                                                                                                                |  |  |  |  |

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| NEI IC#          | NEI IC Wording                                                                           | KNPP<br>IC#(s) | KNPP IC Wording                                                                       |
|------------------|------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------|
| HS2              | Control Room Evacuation Has Been<br>Initiated and Plant Control Cannot Be<br>Established | HS2            | Control Room Evacuation Has Been Initiated<br>and Plant Control Cannot Be Established |
| Mode<br>App.     | All                                                                                      |                | All                                                                                   |
| Site<br>specific | None                                                                                     |                |                                                                                       |
| Difference       | None                                                                                     |                |                                                                                       |
| Deviation        | None                                                                                     |                |                                                                                       |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                      | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                            |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------------------------------------------------------------------------------|
| 1                | Control room evacuation has been<br>initiated.                                                                                                                                                       | HS2.1           | Control room evacuation has been initiated<br><u>AND</u>                                                    |
|                  | Control of the plant cannot be<br>established per (site-specific) procedure<br>within (site-specific) minutes                                                                                        |                 | Control of the plant cannot be established per E-<br>O-06, Fire in Alternate Fire Zone within 15<br>minutes |
| Site<br>specific | <ul> <li>"E-O-06, Fire in Alternate Fire Zone" is the site-specific procedure for control room evacuation.</li> <li>Fifteen minutes is the NEI standard without additional justification.</li> </ul> |                 |                                                                                                             |
| Difference       | None                                                                                                                                                                                                 |                 |                                                                                                             |
| Deviation        | None                                                                                                                                                                                                 |                 |                                                                                                             |

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| HS2 – Basis Justification                                        |                                                                                                             |                                                                                                                |  |  |
|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--|--|
| KNPP                                                             | Specific Additions/Deletions                                                                                | Justification                                                                                                  |  |  |
| In general KN<br>added or repla<br>Unnecessary I<br>was deleted. | IPP plant specific information was<br>aced non-specific NEI information.<br>NEI EAL development information | Convert NEI basis to KNPP specific basis. Also, remove<br>unnecessary information the end used would not need. |  |  |
| Difference                                                       | Basis was made plant specific.                                                                              |                                                                                                                |  |  |
| Deviations                                                       | N/A                                                                                                         |                                                                                                                |  |  |

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| NEI IC#          | NEI IC Wording                                                                                                                | KNPP<br>IC#(s) | KNPP IC Wording                                                                                                            |
|------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------|
| HS3              | Other Conditions Existing Which in the<br>Judgment of the Emergency Director<br>Warrant Declaration of Site Area<br>Emergency | HS3            | Other Conditions Existing Which in the<br>Judgment of the Emergency Director Warrant<br>Declaration of Site Area Emergency |
| Mode<br>App.     | All                                                                                                                           |                | All                                                                                                                        |
| Site<br>specific | None                                                                                                                          |                |                                                                                                                            |
| Difference       | None                                                                                                                          |                |                                                                                                                            |
| Deviation        | None                                                                                                                          |                |                                                                                                                            |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                                                                               | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                | Other conditions exist which in the<br>judgment of the Emergency Director<br>indicate that events are in process or<br>have occurred which involve actual or<br>likely major failures of plant functions<br>needed for protection of the public.<br>Any releases are not expected to result<br>in exposure levels which exceed EPA<br>Protective Action Guideline exposure<br>levels beyond the site boundary | HS3.1           | Other conditions exist which in the judgment of<br>the Emergency Director indicate that events are<br>in process or have occurred which involve actual<br>or likely major failures of plant functions needed<br>for protection of the public. Any releases are not<br>expected to result in exposure levels which<br>exceed EPA Protective Action Guideline<br>exposure levels beyond the site boundary. |
| Site<br>specific | None                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                                                                                                                                                                                                                                                                                                                                                                                                          |
| Difference       | None                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                                                                                                                                                                                                                                                                                                                                                                                                          |
| Deviation        | None                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                                                                                                                                                                                                                                                                                                                                                                                                          |

| HS3 – Basis Justification                        |                                                                           |                                              |  |
|--------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------|--|
| KNPP S                                           | Specific Additions/Deletions                                              | Justification                                |  |
| Added the foll<br>AD-19 for EP<br>exposure level | owing to the basis: Refer to EPIP-<br>A Protective Action Guideline<br>s. | Added information on location of EPA Limits. |  |
| Difference                                       | N/A                                                                       |                                              |  |
| Deviations                                       | N/A                                                                       |                                              |  |

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| NEI IC#          | NEI IC Wording                                                          | KNPP<br>IC#(s) | KNPP IC Wording                                                         |
|------------------|-------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------|
| HG1              | Security Event Resulting in Loss Of<br>Physical Control of the Facility | HG1            | Security Event Resulting in Loss Of Physical<br>Control of the Facility |
| Mode<br>App.     | A11                                                                     |                | All                                                                     |
| Site<br>specific | None                                                                    |                |                                                                         |
| Difference       | None                                                                    |                |                                                                         |
| Deviation        | None                                                                    |                |                                                                         |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                                                 | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                                                                                     |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | A HOSTILE FORCE has taken control<br>of plant equipment such that plant<br>personnel are unable to operate<br>equipment required to maintain safety<br>functions                                                                                                                                                                                                                                                                                |                 | A HOSTILE FORCE has taken control of plant<br>equipment such that plant personnel are unable<br>to operate equipment required to maintain safety<br>functions as indicated by loss of physical control<br>of EITHER: |
| 1                |                                                                                                                                                                                                                                                                                                                                                                                                                                                 | HG1.1           | A VITAL AREA (including the Control Room)<br>such that operation of equipment required for<br>safe shutdown is lost                                                                                                  |
|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                 | OR                                                                                                                                                                                                                   |
| }                |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                 | Spent fuel pool cooling systems if imminent fuel damage is likely                                                                                                                                                    |
| Site<br>specific | None                                                                                                                                                                                                                                                                                                                                                                                                                                            |                 | <b>k</b>                                                                                                                                                                                                             |
| Difference       | • "A VITAL AREA (including the Control Room) such that operation of equipment required for safe<br>shutdown is lost OR Spent fuel pool cooling systems if imminent fuel damage is likely" is KNPP<br>site specific description of equipment required to maintain safety functions. The Control Room is<br>included because there is a sufficient loss of control even if operators have established control at<br>the Dedicated Shutdown Panel. |                 |                                                                                                                                                                                                                      |
| Deviation        | None                                                                                                                                                                                                                                                                                                                                                                                                                                            |                 |                                                                                                                                                                                                                      |

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| HG1 – Basis Justification                                          |                                                                                                           |                                                                                                                |  |  |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--|--|
| KNPP Specific Additions/Deletions                                  |                                                                                                           | Justification                                                                                                  |  |  |
| In general KNI<br>added or replac<br>Unnecessary N<br>was deleted. | PP plant specific information was<br>ced non-specific NEI information.<br>IEI EAL development information | Convert NEI basis to KNPP specific basis. Also, remove<br>unnecessary information the end user would not need. |  |  |
| Difference                                                         | Basis was made plant specific.                                                                            |                                                                                                                |  |  |
| Deviations                                                         | N/A                                                                                                       |                                                                                                                |  |  |

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| NEI IC#          | NEI IC Wording                                                                                                              | KNPP<br>IC#(s) | KNPP IC Wording                                                                                                          |
|------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------|
| HG2              | Other Conditions Existing Which in the<br>Judgment of the Emergency Director<br>Warrant Declaration of General<br>Emergency | HG2            | Other Conditions Existing Which in the<br>Judgment of the Emergency Director Warrant<br>Declaration of General Emergency |
| Mode<br>App.     | A11                                                                                                                         |                | All                                                                                                                      |
| Site<br>specific | None                                                                                                                        |                |                                                                                                                          |
| Difference       | None                                                                                                                        |                |                                                                                                                          |
| Deviation        | None                                                                                                                        |                |                                                                                                                          |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                                  | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                            |  |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1                | Other conditions exist which in the<br>judgment of the Emergency Director<br>indicate that events are in process or<br>have occurred which involve actual or<br>imminent substantial core degradation<br>or melting with potential for loss of<br>containment integrity. Releases can be<br>reasonably expected to exceed EPA<br>Protective Action Guideline exposure<br>levels offsite for more than the<br>immediate site area | HG2.1           | Other conditions exist which in the judgment of<br>the Emergency Director indicate that events are<br>in process or have occurred which involve actual<br>or imminent substantial core degradation or<br>melting with potential for loss of containment<br>integrity. Releases can be reasonably expected to<br>exceed EPA Protective Action Guideline<br>exposure levels offsite for more than the<br>immediate site area. |  |
| Site<br>specific | None                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
| Difference       | None                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
| Deviation        | None                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |                                                                                                                                                                                                                                                                                                                                                                                                                             |  |

| HG2 – Basis Justification                                                                                         |                              |                                              |  |  |
|-------------------------------------------------------------------------------------------------------------------|------------------------------|----------------------------------------------|--|--|
| KNPP                                                                                                              | Specific Additions/Deletions | Justification                                |  |  |
| Added the following to the basis: Refer to EPIP-<br>AD-19 for EPA Protective Action Guideline<br>exposure levels. |                              | Added information on location of EPA Limits. |  |  |
| Difference                                                                                                        | N/A                          |                                              |  |  |
| Deviations                                                                                                        | N/A                          |                                              |  |  |

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## System Malfunction

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| NEI IC#          | NEI IC Wording                                                               | KNPP<br>IC#(s) | KNPP IC Wording                                                              |
|------------------|------------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------|
| SUI              | Loss of All Offsite Power to Essential<br>Busses for Greater Than 15 Minutes | SU1            | Loss of All Offsite Power To Essential Busses<br>for GREATER THAN 15 minutes |
| Mode<br>App.     | Power Operation, Startup, Hot Standby,<br>Hot Shutdown                       |                | Power Operation, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown         |
| Site<br>specific | None                                                                         |                |                                                                              |
| Difference       | None                                                                         |                | ······································                                       |
| Deviation        | None                                                                         |                |                                                                              |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                                                 |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                | Loss of power to (site specific)<br>transformers for greater than 15<br>minutes<br>AND<br>At least (site specific) emergency<br>generators are supplying power to<br>emergency busses.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SU1.1           | Loss of all offsite power to Bus 5 <u>AND</u> Bus 6<br>for GREATER THAN 15 minutes<br><u>AND</u><br>Emergency diesel generators are supplying<br>power to Bus 5 <u>AND</u> Bus 6 |
| Site<br>specific | <ul> <li>"Loss of all offsite power to Bus 5 <u>AND</u> Bus 6" has been used in place of "Loss of power to (site specific) transformers" to focus the classification on the loss of offsite power capability rather than the status of one or more transformers that may or may not be capable of powering the essential buses</li> <li>Bus 5 and Bus 6 are the KNPP emergency safeguards buses.</li> <li>"Emergency diesel generators are supplying power to Bus 5 <u>AND</u> Bus 6" was added to describe the emergency diesel generator configuration at KNPP.</li> </ul>                                                                                                                                          |                 |                                                                                                                                                                                  |
| Difference       | <ul> <li>The NEI example EAL condition "Loss of power to (site-specific) transformers for greater than 15 minutes" has been changed to "Loss of all offsite power to Bus 5 <u>AND</u> Bus 6 for GREATER THAN 15 minutes." The KNPP wording focuses the classification on the loss of offsite power capability rather than the status of one or more transformers that may or may not be capable of powering the essential buses. This simplifies the EAL wording and concisely meets the intent of the NEI IC</li> <li>This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL</li> </ul> |                 |                                                                                                                                                                                  |
| Deviation        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                                                                                                                                                                                  |

# System Malfunction

| KNPP S                     | pecific Additions/Deletions                                                  |                                     | <b>Justification</b>                                                                                                                                                                                                   |  |
|----------------------------|------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1. Descr<br>distrib<br>EAL | iption of the KNPP ESF power<br>ution system was included into the<br>pasis. | 1.                                  | This information was added for explanation and clarification of site specifics.                                                                                                                                        |  |
| 2. Devel<br>NEI E          | opment information contained in the<br>asis was deleted.                     | 2.                                  | Development information is not necessary after the<br>site specific information has been developed. The<br>basis would be very confusing if these statements<br>were left in along with the site specific information. |  |
| Difference                 | Added KNPP site specific informatic                                          | led KNPP site specific information. |                                                                                                                                                                                                                        |  |
| <br>Deviations             | None                                                                         |                                     |                                                                                                                                                                                                                        |  |

## System Malfunction

| NEI IC#          | NEI IC Wording                                                                | KNPP<br>IC#(s) | KNPP IC Wording                                                               |
|------------------|-------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| SU2              | Inability to Reach Required Shutdown<br>Within Technical Specification Limits | SU2            | Inability to Reach Required Shutdown Within<br>Technical Specification limits |
| Mode<br>App.     | Power Operation, Startup, Hot Standby,<br>Hot Shutdown                        |                | Power Operation, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown          |
| Site<br>specific | None                                                                          |                |                                                                               |
| Difference       | None                                                                          |                |                                                                               |
| Deviation        | None                                                                          |                |                                                                               |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                                       | KNPP KNPP EAL Wording<br>EAL#(s)                                                                                 |  |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|--|
| 1                | Plant is not brought to required<br>operating mode within (site-specific)<br>Technical Specifications LCO Action<br>Statement Time                                                                                                                                                                                                                                    | SU2.1 Plant is not brought to required operating mode within Technical Specifications LCO Action Statement Time. |  |
| Site<br>specific | • None                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                  |  |
| Difference       | <ul> <li>Site specific times are not included due to the varied length of time associated with individual LCOs. Therefore, EAL is generic to cover all LCO's.</li> <li>This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL</li> </ul> |                                                                                                                  |  |
| Deviation        | None                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                  |  |

| SU2 – Basis Justification |                                                                                        |    |                                                                                                                                                                                                                        |  |
|---------------------------|----------------------------------------------------------------------------------------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| KNP                       | Specific Additions/Deletions                                                           |    | Justification                                                                                                                                                                                                          |  |
| 1. Gen<br>was<br>info     | eral KNPP plant specific information<br>added or replaced non-specific NEI<br>rmation. | 1. | This information was added for explanation and clarification of site specifics.                                                                                                                                        |  |
| 2. De<br>NE               | elopment information contained in the<br>Basis was deleted.                            | 2. | Development information is not necessary after the<br>site specific information has been developed. The<br>basis would be very confusing if these statements<br>were left in along with the site specific information. |  |
| Difference                | Added KNPP site specific information.                                                  |    |                                                                                                                                                                                                                        |  |
| Deviations                | None                                                                                   |    |                                                                                                                                                                                                                        |  |

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| NEI IC#          | NEI IC Wording                                                                                                                  | KNPP<br>IC#(s) | KNPP IC Wording                                                                                                                 |
|------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------|
| SU3              | UNPLANNED Loss of Most or All<br>Safety System Annunciation or<br>Indication in The Control Room for<br>Greater Than 15 Minutes | SU3            | UNPLANNED Loss of Most or All Safety<br>System Annunciation or Indication in The<br>Control Room for GREATER THAN 15<br>minutes |
| Mode<br>App.     | Power Operation, Startup, Hot Standby,<br>Hot Shutdown                                                                          |                | Power Operation, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                            |
| Site<br>specific | None                                                                                                                            |                |                                                                                                                                 |
| Difference       | None                                                                                                                            |                |                                                                                                                                 |
| Deviation        | None                                                                                                                            |                |                                                                                                                                 |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                               | KNPP<br>EAL#(s)            | KNPP EAL Wording                                                                                                                                                                                                                                                              |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                | UNPLANNED loss of most or all (site-<br>specific) annunciators or indicators<br>associated with safety systems for<br>greater than 15 minutes | SU3.1                      | UNPLANNED loss of most or all annunciators<br>or indicators associated with safety systems for<br>GREATER THAN 15 minutes on Mechanical<br>Vertical Panels A, B and C, Mechanical Control<br>Consoles A, B and C, Electrical Vertical Panel<br>and Electrical Control Console |
| Site<br>specific | <ul> <li>"Mechanical Vertical Panels A, B an<br/>Vertical Panel and Electrical Control<br/>associated with safety systems</li> </ul>          | d C, Mechar<br>Console" co | nical Control Consoles A, B and C, Electrical ontain the site-specific annunciators or indicators                                                                                                                                                                             |
| Difference       | None                                                                                                                                          |                            |                                                                                                                                                                                                                                                                               |
| Deviation        | None                                                                                                                                          |                            |                                                                                                                                                                                                                                                                               |

| SU3-1                                                              | Basis .                    | Justification                                                                      |                                                                                                                                                                                                                        | · · ·                                                                           |
|--------------------------------------------------------------------|----------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| K                                                                  | NPP S                      | pecific Additions/Deletions                                                        |                                                                                                                                                                                                                        | Justification                                                                   |
| 1.                                                                 | Genera<br>was ad<br>inform | al KNPP plant specific information<br>Ided or replaced non-specific NEI<br>nation. | 1.                                                                                                                                                                                                                     | This information was added for explanation and clarification of site specifics. |
| 2. Development information contained in the NEI Basis was deleted. |                            | 2.                                                                                 | Development information is not necessary after the<br>site specific information has been developed. The<br>basis would be very confusing if these statements<br>were left in along with the site specific information. |                                                                                 |
| Differer                                                           | nce                        | Added KNPP site specific information.                                              |                                                                                                                                                                                                                        |                                                                                 |
| Deviatio                                                           | ons                        | None                                                                               | ne                                                                                                                                                                                                                     |                                                                                 |

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| NEI IC#          | NEI IC Wording                                         | KNPP<br>IC#(s) | KNPP IC Wording                                                      |
|------------------|--------------------------------------------------------|----------------|----------------------------------------------------------------------|
| SU4              | Fuel Clad Degradation                                  | SU4            | Fuel Cladding Degradation                                            |
| Mode<br>App.     | Power Operation, Startup, Hot Standby,<br>Hot Shutdown |                | Power Operation, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown |
| Site<br>specific | None                                                   |                |                                                                      |
| Difference       | None                                                   |                |                                                                      |
| Deviation        | None                                                   |                |                                                                      |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                   | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                   |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------|
| 1                | (Site-specific) radiation monitor<br>readings indicating fuel clad<br>degradation greater than Technical<br>Specification allowable limits                                                                                                        | SU4.1           | RCS Letdown Line (R-9) radiation monitor<br>GREATER 2000 mR/hr indicating fuel clad<br>degradation |
| Site<br>specific | <ul> <li>RCS Letdown Line (R-9) is the site specific monitor designated to indicate fuel clad failure.</li> <li>2000 mR/hr is equal to the Technical Specification allowable limits.</li> </ul>                                                   |                 |                                                                                                    |
| Difference       | <ul> <li>Reworded NEI EAL for readability</li> <li>This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL</li> </ul> |                 |                                                                                                    |
| Deviation        | None                                                                                                                                                                                                                                              |                 |                                                                                                    |

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| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                          | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                                                                                                                                                                                                                         |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2                | (Site-specific) coolant sample activity<br>value indicating fuel clad degradation<br>greater than Technical Specification<br>allowable limits                                                                                                                                                            | SU4.2           | <ul> <li>Coolant sample activity GREATER THAN <u>ANY</u> of the following indicating fuel clad degradation:</li> <li>1.0 μCi/gram dose equivalent Iodine-131 for more than 48 hours in one continuous time interval</li> <li>60 μCi/gram dose equivalent Iodine-131.</li> <li>91/E μCi/cc gross radioactivity</li> </ul> |
| Site<br>specific | <ul> <li>The following are KNPP Technical Specification Limits for coolant sample activity:</li> <li>1.0 μCi/gram dose equivalent Iodine-131 for more than 48 hours in one continuous time interval</li> <li>60 μCi/gram dose equivalent Iodine-131.</li> <li>91/Ē μCi/cc gross radioactivity</li> </ul> |                 |                                                                                                                                                                                                                                                                                                                          |
| Difference       | • "technical specification allowable limits" – was deleted as it duplicates the site specific tech spec<br>value already listed in the EAL                                                                                                                                                               |                 |                                                                                                                                                                                                                                                                                                                          |
|                  | • This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL                                                                                                                    |                 |                                                                                                                                                                                                                                                                                                                          |
| Deviation        | None                                                                                                                                                                                                                                                                                                     |                 | :                                                                                                                                                                                                                                                                                                                        |

| SU4 – Basis Justification |                                                     |                                                                                             |  |  |
|---------------------------|-----------------------------------------------------|---------------------------------------------------------------------------------------------|--|--|
| KNPP S                    | pecific Additions/Deletions                         | Justification                                                                               |  |  |
| 1. Adde<br>setpoi         | d site-specific information on R-9<br>int for SU4.1 | 1. This information was added to clarify the information used to determine the R-9 setpoint |  |  |
| Difference                | Added KNPP site specific information                |                                                                                             |  |  |
| Deviations                | None                                                |                                                                                             |  |  |

| NEI IC#          | NEI IC Wording                                         | KNPP<br>IC#(s) | KNPP IC Wording                                                      |
|------------------|--------------------------------------------------------|----------------|----------------------------------------------------------------------|
| SU5              | RCS Leakage                                            | SU5            | RCS Leakage                                                          |
| Mode<br>App.     | Power Operation, Startup, Hot Standby,<br>Hot Shutdown |                | Power Operation, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown |
| Site<br>specific | None                                                   |                |                                                                      |
| Difference       | None                                                   |                |                                                                      |
| Deviation        | None                                                   |                | ·····                                                                |

| NEI<br>EAL#      | NEI EAL Wording                                                  | KNPP<br>EAL#(s) | KNPP EAL Wording                                                 |
|------------------|------------------------------------------------------------------|-----------------|------------------------------------------------------------------|
| 1                | Unidentified or pressure boundary<br>leakage greater than 10 gpm | SU5.1           | Unidentified or pressure boundary leakage<br>GREATER THAN 10 gpm |
| Site<br>specific | None                                                             |                 | <u> </u>                                                         |
| Difference       | None                                                             |                 |                                                                  |
| Deviation        | None                                                             |                 |                                                                  |

| NEI<br>EAL#      | NEI EAL Wording                        | KNPP<br>EAL#(s) | KNPP EAL Wording                       |
|------------------|----------------------------------------|-----------------|----------------------------------------|
| 2                | Identified leakage greater than 25 gpm | SU5.2           | Identified leakage GREATER THAN 25 gpm |
| Site<br>specific | None                                   | <b>.</b>        | <b>.</b>                               |
| Difference       | None                                   |                 |                                        |
| Deviation        | None                                   |                 |                                        |

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| SU5 – Basis Justification                                                                   |                                       |                                                                                 |  |
|---------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------|--|
| KNPP S                                                                                      | Specific Additions/Deletions          | Justification                                                                   |  |
| General KNPP plant specific information was added or replaced non-specific NEI information. |                                       | This information was added for explanation and clarification of site specifics. |  |
| Difference                                                                                  | Added KNPP site specific information. |                                                                                 |  |
| Deviations                                                                                  | None                                  |                                                                                 |  |

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| NEI IC#          | NEI IC Wording                                                         | KNPP<br>IC#(s) | KNPP IC Wording                                                        |
|------------------|------------------------------------------------------------------------|----------------|------------------------------------------------------------------------|
| SU6              | UNPLANNED Loss of All Onsite or<br>Offsite Communications Capabilities | SU6.           | UNPLANNED Loss of All Onsite or Offsite<br>Communications Capabilities |
| Mode<br>App.     | Power Operation, Startup, Hot Standby,<br>Hot Shutdown                 |                | Power Operation, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown   |
| Site<br>specific | None                                                                   | ·              |                                                                        |
| Difference       | None                                                                   |                |                                                                        |
| Deviation        | None                                                                   |                |                                                                        |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                             | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                                                 |
|------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------|
| 1                | Loss of all (site-specific list) onsite<br>communications capability affecting<br>the ability to perform routine operations | SU6.1           | Loss of all Table C-1 onsite communications<br>capability affecting the ability to perform routine<br>operations |
| Site<br>specific | <ul> <li>Table C-1 lists onsite communication</li> </ul>                                                                    | ns systems.     | · · · · · · · · · · · · · · · · · · ·                                                                            |
| Difference       | None                                                                                                                        |                 |                                                                                                                  |
| Deviation        | None                                                                                                                        |                 |                                                                                                                  |

| NEI<br>EAL#      | NEI EAL Wording                                                     | KNPP<br>EAL#(s) | KNPP EAL Wording                                         |
|------------------|---------------------------------------------------------------------|-----------------|----------------------------------------------------------|
| 2                | Loss of all (site-specific list) offsite communications capability. | SU6.2           | Loss of all Table C-2 offsite communications capability. |
| Site<br>specific | Table C-2 lists offsite communications sy                           | rstems          |                                                          |
| Difference       | None                                                                |                 |                                                          |
| Deviation        | None                                                                |                 |                                                          |

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| SU6 – Basis Justification       |                                              |                                                                                 |  |  |
|---------------------------------|----------------------------------------------|---------------------------------------------------------------------------------|--|--|
| KNPP S                          | pecific Additions/Deletions                  | Justification                                                                   |  |  |
| General KNPP<br>in Tables C-1 a | plant specific information was added nd C-2. | This information was added for explanation and clarification of site specifics. |  |  |
| Difference                      | Added KNPP site specific information.        |                                                                                 |  |  |
| Deviations                      | None                                         |                                                                                 |  |  |

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| NEI IC#          | NEI IC Wording                                           | KNPP<br>IC#(s)   | KNPP IC Wording                           |
|------------------|----------------------------------------------------------|------------------|-------------------------------------------|
| SU8              | Inadvertent Criticality                                  | SU8              | Inadvertent Criticality                   |
| Mode<br>App.     | Hot Standby, Hot Shutdown                                |                  | Hot Shutdown, Intermediate Shutdown       |
| Site<br>specific | KNPP Modes Hot Shutdown and In Standby and Hot Shutdown. | termediate Shutd | own are equivalent to NEI 99-01 modes Hot |
| Difference       | None                                                     |                  |                                           |
| Deviation        | None                                                     |                  |                                           |

| NEI<br>EAL#      | NEI EAL Wording                                                                 | KNPP<br>EAL#(s) | KNPP EAL Wording |
|------------------|---------------------------------------------------------------------------------|-----------------|------------------|
| 1                | An UNPLANNED extended positive<br>period observed on nuclear<br>instrumentation | N/A             | N/A.             |
| Site<br>specific | N/A                                                                             |                 |                  |
| Difference       | Not applicable, BWR NEI EAL.                                                    |                 |                  |
| Deviation        | N/A                                                                             |                 |                  |

| NEI<br>EAL#      | NEI EAL Wording                                                                        | KNPP<br>EAL#(s) | KNPP EAL Wording                                                                  |
|------------------|----------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------|
| 2                | An UNPLANNED sustained positive<br>startup rate observed on nuclear<br>instrumentation | SU8.1           | An UNPLANNED sustained positive startup rate observed on nuclear instrumentation. |
| Site<br>specific | None                                                                                   |                 |                                                                                   |
| Difference       | N/A                                                                                    |                 |                                                                                   |
| Deviation        | None                                                                                   |                 |                                                                                   |

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| SU8 – Basis Justification       |                                                                    |                                                                                 |  |  |  |
|---------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------|--|--|--|
| KNPP S                          | pecific Additions/Deletions                                        | Justification                                                                   |  |  |  |
| General KNPP<br>or replaced non | plant specific information was added<br>-specific NEI information. | This information was added for explanation and clarification of site specifics. |  |  |  |
| Difference                      | Added KNPP site specific information                               | on.                                                                             |  |  |  |
| Deviations                      | None                                                               |                                                                                 |  |  |  |

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| NEI IC#          | NEI IC Wording                                                                                                                                                                                                     | KNPP<br>IC#(s) | KNPP IC Wording                                                                                                                                                                                                       |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SA2              | Failure of Reactor Protection System<br>Instrumentation to Complete or Initiate<br>an Automatic Reactor Scram Once a<br>Reactor Protection System Setpoint Has<br>Been Exceeded and Manual Scram Was<br>Successful | SA2            | Failure of Reactor Protection System<br>Instrumentation to Complete or Initiate an<br>Automatic Reactor Trip Once a Reactor<br>Protection System Setpoint Has Been Exceeded<br>and Manual Reactor Trip Was Successful |
| Mode<br>App.     | Power Operation, Startup, Hot Standby,<br>Hot Shutdown                                                                                                                                                             |                | Power Operation, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                                                                                                  |
| Site<br>specific | None                                                                                                                                                                                                               |                |                                                                                                                                                                                                                       |
| Difference       | None                                                                                                                                                                                                               |                |                                                                                                                                                                                                                       |
| Deviation        | None                                                                                                                                                                                                               |                |                                                                                                                                                                                                                       |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                                              | KNPP<br>EAL#(s)                                                                                                    | KNPP EAL Wording                                                                                                                                                                                                                                                                                                                                    |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                | Indication(s) exist that indicate that<br>reactor protection system setpoint was<br>exceeded and automatic scram did not<br>occur, and a successful manual scram<br>occurred                                                                                                                                                 | SA2.1                                                                                                              | Indication(s) exist that a Reactor Protection<br>System setpoint was exceeded<br><u>AND</u><br>RPS automatic trip did not reduce power to<br>LESS THAN 5%:<br><u>AND</u><br>Any of the following actions <u>are</u> successful in<br>reducing power to LESS THAN 5%<br>• Use of Manual Reactor Trip push buttons<br>• De-energizing Buses 33 AND 43 |
| Site<br>specific | <ul> <li>In response to industry questions corn NRC agreed in System Malfunction Action Levels NUMARC/NESP-007 considered unsuccessful when enoug fall below that percent power associat continue to decrease." To implement the phrase "power range ≤5%."</li> <li>Use of Reactor Trip buttons / De-eneutometers</li> </ul> | A cerning the<br>Question #7<br>V Rev. 2 Que<br>the control root<br>ted with the<br>the intent of<br>ergizing Buse | definition of a successful reactor trip, NEI and the<br>of "Methodology for Development of Emergency<br>stions and Answers" that "the scram is<br>ds have not inserted to cause the reactor power to<br>ability of the safety systems to remove heat and<br>f this position, the KNPP EAL wording includes<br>es 33 AND 43                          |
| Difference       | None                                                                                                                                                                                                                                                                                                                         |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                     |
| Deviation        | None                                                                                                                                                                                                                                                                                                                         |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                     |

| SA2 – Basis Justification      |                                                                    |                                                                                 |  |  |
|--------------------------------|--------------------------------------------------------------------|---------------------------------------------------------------------------------|--|--|
| KNPP                           | Specific Additions/Deletions                                       | Justification                                                                   |  |  |
| General KNPI<br>or replaced no | P plant specific information was added n-specific NEI information. | This information was added for explanation and clarification of site specifics. |  |  |
| Difference                     | Added KNPP site specific information.                              |                                                                                 |  |  |
| Deviations                     | None                                                               |                                                                                 |  |  |

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| NEI IC#          | NEI IC Wording                                                                                                                                                                                                          | KNPP<br>IC#(s) | KNPP IC Wording                                                                                                                                                                                                     |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SA4              | UNPLANNED Loss of Most or All<br>Safety System Annunciation or<br>Indication in Control Room With Either<br>(1) a SIGNIFICANT TRANSIENT in<br>Progress, or (2) Compensatory Non-<br>Alarming Indicators are Unavailable | SA4            | UNPLANNED Loss of Most or All Safety<br>System Annunciation or Indication in Control<br>Room With Either (1) a SIGNIFICANT<br>TRANSIENT in Progress, or (2) Compensatory<br>Non-Alarming Indicators are Unavailable |
| Mode<br>App.     | Power Operation, Startup, Hot Standby,<br>Hot Shutdown                                                                                                                                                                  |                | Power Operation, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                                                                                                |
| Site<br>specific | None                                                                                                                                                                                                                    |                |                                                                                                                                                                                                                     |
| Difference       | None                                                                                                                                                                                                                    |                |                                                                                                                                                                                                                     |
| Deviation        | None                                                                                                                                                                                                                    |                |                                                                                                                                                                                                                     |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                                   | KNPP<br>EAL#(s)                           | KNPP EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                | UNPLANNED loss of most or all (site-<br>specific) annunciators or indicators<br>associated with safety systems for<br>greater than 15 minutes.<br>AND<br>Either of the following: (a or b)<br>a. A SIGNIFICANT TRANSIENT<br>is in progress.<br>OR<br>b. Compensatory non-alarming<br>indications are unavailable. | SA4.1                                     | <ul> <li>UNPLANNED loss of most or all annunciators or indicators associated with safety systems for GREATER THAN 15 minutes on Mechanical Vertical Panels A, B and C, Mechanical Control Consoles A, B and C, Electrical Vertical Panel and Electrical Control Console</li> <li><u>AND</u></li> <li>Either of the following: (a or b): <ul> <li>a. A SIGNIFICANT TRANSIENT is in progress.</li> <li><u>OR</u></li> <li>b. COMPENSATORY NON-ALARMING INDICATIONS are unavailable.</li> </ul> </li> </ul> |
| Site<br>specific | <ul> <li>"Mechanical Vertical Panels A,<br/>Vertical Panel and Electrical Co<br/>indicators associated with safety</li> </ul>                                                                                                                                                                                     | B and C, Me<br>ntrol Consol<br>v systems. | echanical Control Consoles A, B and C, Electrical<br>e" contain the site-specific annunciators or                                                                                                                                                                                                                                                                                                                                                                                                        |
| Difference       | <ul> <li>COMPENSATORY NON-ALA<br/>definition in the basis document</li> </ul>                                                                                                                                                                                                                                     | RMING INI                                 | DICATIONS was capitalized because it is a                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Deviation        | None                                                                                                                                                                                                                                                                                                              |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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| SA4 – Basis Justification    |                                                                                    |       |                                                                                                                                                                                                                        |
|------------------------------|------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>KNPP S</u>                | pecific Additions/Deletions                                                        | · · · | Justification                                                                                                                                                                                                          |
| 1. Gener<br>was ac<br>inform | al KNPP plant specific information<br>dded or replaced non-specific NEI<br>nation. | 1.    | This information was added for explanation and clarification of site specifics.                                                                                                                                        |
| 2. Devel<br>NEI B            | opment information contained in the<br>asis was deleted.                           | 2.    | Development information is not necessary after the<br>site specific information has been developed. The<br>basis would be very confusing if these statements<br>were left in along with the site specific information. |
| 3. Addec<br>and co           | definition for significant transient ompensatory non-alarming indication.          | 3.    | Clarifying information to assist in classification.<br>Definitions consistent with NEI 99-01.                                                                                                                          |
| Difference                   | Added KNPP site specific information.                                              |       |                                                                                                                                                                                                                        |
| <u>Deviations</u>            | None                                                                               |       |                                                                                                                                                                                                                        |

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| NEI IC#          | NEI IC Wording                                                                                                                                                                            | KNPP<br>IC#(s) | KNPP IC Wording                                                                                                                                                                        |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SA5              | AC power capability to essential busses<br>reduced to a single power source for<br>greater than 15 minutes such that any<br>additional single failure would result in<br>station blackout | SA5            | AC power capability to essential busses reduced<br>to a single power source for GREATER THAN<br>15 minutes such that any additional single failure<br>would result in station blackout |
| Mode<br>App.     | Power Operation, Startup, Hot Standby,<br>Hot Shutdown                                                                                                                                    |                | Power Operation, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                                                                                                   |
| Site<br>specific | None                                                                                                                                                                                      |                |                                                                                                                                                                                        |
| Difference       | None                                                                                                                                                                                      |                |                                                                                                                                                                                        |
| Deviation        | None                                                                                                                                                                                      |                |                                                                                                                                                                                        |

| NEI<br>EAL# | NEI EAL Wording                                                                                                                                                                                        | KNPP<br>EAL#(s)                              | KNPP EAL Wording                                                                                                                                                                                                                                                                                                                         |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1           | AC power capability to site-specific<br>essential busses reduced to a single<br>power source for greater than 15<br>minutes<br>AND<br>Any additional single failure will result<br>in station blackout | SA5.1                                        | <ul> <li>AC power capability to Bus 5 AND Bus 6<br/>reduced to only one of the following sources for<br/>GREATER THAN 15 minutes</li> <li>One emergency diesel generator (A or B)</li> <li>TAT</li> <li>RAT</li> <li>MAT on backfeed</li> <li>AND</li> <li>Any additional single failure will result in station<br/>blackout.</li> </ul> |
| Site        | <ul> <li>Bus 5 and Bus 6 are the KNPP emerged</li> </ul>                                                                                                                                               | gency safegu                                 | uards buses.                                                                                                                                                                                                                                                                                                                             |
| specific    | <ul> <li>"only one of the following sources for blackout): for readability.</li> </ul>                                                                                                                 | or GREATE                                    | R THAN 15 min. (one source away from station                                                                                                                                                                                                                                                                                             |
|             | <ul> <li>KNPP Site Specific power sources at</li> </ul>                                                                                                                                                | re:                                          |                                                                                                                                                                                                                                                                                                                                          |
|             | <ul> <li>One emergency diesel generator</li> <li>TAT (Tertiary Auxiliary Transfor</li> <li>RAT (Reserve Auxiliary Transfor</li> <li>MAT (Main Auxiliary Transform)</li> </ul>                          | (A or B)<br>ormer)<br>ormer)<br>ner)on back: | feed                                                                                                                                                                                                                                                                                                                                     |
|             | This provides a plant-specific list of AC power sources and clearly implements the intent of the generic EAL.                                                                                          |                                              |                                                                                                                                                                                                                                                                                                                                          |
| Difference  | None                                                                                                                                                                                                   |                                              |                                                                                                                                                                                                                                                                                                                                          |
| Deviation   | None                                                                                                                                                                                                   |                                              |                                                                                                                                                                                                                                                                                                                                          |

| SA5 – Bas             | is Justification                                                                       | . <i>.</i> |                                                                                                                                                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KNPP                  | Specific Additions/Deletions                                                           | - • •      | Justification                                                                                                                                                                                                          |
| 1. Gen<br>was<br>info | eral KNPP plant specific information<br>added or replaced non-specific NEI<br>rmation. | 1.         | This information was added for explanation and clarification of site specifics.                                                                                                                                        |
| 2. Dev<br>NEI         | elopment information contained in the<br>Basis was deleted.                            | 2.         | Development information is not necessary after the<br>site specific information has been developed. The<br>basis would be very confusing if these statements<br>were left in along with the site specific information. |
| Difference            | Added KNPP site specific information                                                   | on.        |                                                                                                                                                                                                                        |
| Deviations            | None                                                                                   |            |                                                                                                                                                                                                                        |

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| NEI IC#          | NEI IC Wording                                                                      | KNPP<br>IC#(s) | KNPP IC Wording                                                                  |
|------------------|-------------------------------------------------------------------------------------|----------------|----------------------------------------------------------------------------------|
| SS1              | Loss of All Offsite Power and Loss of<br>All Onsite AC Power to Essential<br>Busses | SS1            | Loss of All Offsite Power and Loss of All Onsite<br>AC Power to Essential Busses |
| Mode<br>App.     | Power Operation, Startup, Hot Standby,<br>Hot Shutdown                              | •              | Power Operation, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown             |
| Site<br>specific | None                                                                                |                |                                                                                  |
| Difference       | None                                                                                |                |                                                                                  |
| Deviation        | None                                                                                |                |                                                                                  |

| NEI<br>EAL# | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | KNPP<br>EAL#(s)               | KNPP EAL Wording                                                                         |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------|
|             | Loss of power to (site-specific)<br>transformers.                                                                                                                                                                                                                                                                                                                                                                                                                                         |                               | Loss of ALL power to Bus 5 AND Bus 6 for<br>GREATER THAN 15 minutes                      |
|             | AND                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                               |                                                                                          |
| 1           | Failure of (site-specific) emergency<br>generators to supply power to<br>emergency busses.                                                                                                                                                                                                                                                                                                                                                                                                | SS1.1                         |                                                                                          |
|             | AND                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                               |                                                                                          |
|             | Failure to restore power to at least one<br>emergency bus within (site-specific)<br>minutes from the time of loss of both<br>offsite and onsite AC power                                                                                                                                                                                                                                                                                                                                  |                               |                                                                                          |
| Site        | Bus 5 and Bus 6 are the KNPP eme                                                                                                                                                                                                                                                                                                                                                                                                                                                          | rgency safeg                  | guards buses.                                                                            |
| specific    | GREATER THAN 15 minutes was                                                                                                                                                                                                                                                                                                                                                                                                                                                               | inserted as t                 | ime to restore Bus 5 and Bus 6                                                           |
| Difference  | <ul> <li>The NEI example EAL condition "Loss of power to (site-specific) transformers" has been<br/>changed to "Loss of ALL power to Bus 5 <u>AND</u> Bus 6" The plant EAL wording focuses the<br/>classification on the loss of power capability rather than the status of one or more transformers that<br/>may or may not be capable powering the essential buses. This simplifies the EAL wording and<br/>concisely meets the intent of the NEI IC.</li> </ul>                        |                               |                                                                                          |
|             | <ul> <li>KNPP EAL was reformatted from three NEI conditions to an encompassing one condition. This was done to simplify the classification and the economy of words. Stating that "ALL power" is lost to Bus 5 and Bus 6 covers the first two NEI conditions (loss of power to the transformers and failure of the emergency diesel generators). "For GREATER THAN 15 minutes" is equivalent to the third NEI condition (time to restore power to at least one emergency bus).</li> </ul> |                               |                                                                                          |
|             | <ul> <li>These changes are not deviations be<br/>classification of the event could be</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                          | cause they d<br>different bet | lo not alter the meaning or intent, such that<br>ween the NEI guidance and the plant EAL |
| Deviation   | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                               |                                                                                          |

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| SS1 – Basis Justification    |                                                                                    |    |                                                                                                                                                                                                                        |
|------------------------------|------------------------------------------------------------------------------------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KNPP S                       | specific Additions/Deletions                                                       |    | Justification                                                                                                                                                                                                          |
| 1. Gener<br>was ac<br>inform | al KNPP plant specific information<br>dded or replaced non-specific NEI<br>nation. | 1. | This information was added for explanation and clarification of site specifics.                                                                                                                                        |
| 2. Devel<br>NEI B            | opment information contained in the<br>asis was deleted.                           | 2. | Development information is not necessary after the<br>site specific information has been developed. The<br>basis would be very confusing if these statements<br>were left in along with the site specific information. |
| Difference                   | Added KNPP site specific information.                                              |    |                                                                                                                                                                                                                        |
| Deviations                   | None                                                                               |    |                                                                                                                                                                                                                        |

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| NEI IC#          | NEI IC Wording                                                                                                                                                                                                         | KNPP<br>IC#(s) | KNPP IC Wording                                                                                                                                                                                                           |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SS2              | Failure of Reactor Protection System<br>Instrumentation to Complete or Initiate<br>an Automatic Reactor Scram Once a<br>Reactor Protection System Setpoint Has<br>Been Exceeded and Manual Scram Was<br>NOT Successful | SS2            | Failure of Reactor Protection System<br>Instrumentation to Complete or Initiate an<br>Automatic Reactor Trip Once a Reactor<br>Protection System Setpoint Has Been Exceeded<br>and Manual Reactor Trip Was NOT Successful |
| Mode<br>App.     | Power Operation, Startup                                                                                                                                                                                               |                | Power Operation, Hot Standby                                                                                                                                                                                              |
| Site<br>specific | None                                                                                                                                                                                                                   |                |                                                                                                                                                                                                                           |
| Difference       | None                                                                                                                                                                                                                   |                |                                                                                                                                                                                                                           |
| Deviation        | None                                                                                                                                                                                                                   |                |                                                                                                                                                                                                                           |

| NEI<br>EAL#      | NEI EAL Wording K<br>EA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | NPP KNPP EAL Wording<br>L#(s)                                                                                                                                                                                                                               |  |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1                | Indication(s) exist that automatic and<br>manual scram were not successful<br>S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <ul> <li>Indication(s) exist that automatic and manual reactor trip were NOT successful in reducing power to LESS THAN 5%. Manual Reactor</li> <li>S2.1 Trips include use of Manual Reactor Trip push buttons or De-energizing Busses 33 AND 43.</li> </ul> |  |
| Site<br>specific | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                             |  |
| Difference       | <ul> <li>"LESS THAN 5%" - In response to industry questions concerning the definition of a successful<br/>reactor trip, NEI and the NRC agreed in System Malfunction Question #7 of "Methodology for<br/>Development of Emergency Action Levels NUMARC/NESP-007 Rev. 2 Questions and Answers"<br/>that "the scram is considered unsuccessful when enough control rods have not inserted to cause<br/>the reactor power to fall below that percent power associated with the ability of the safety systems<br/>to remove heat and continue to decrease." 5% is the power level specified in Subcriticality-RED<br/>path</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                             |  |
|                  | • "Manual Reactor Trips include use of Manual Reactor Trip push buttons or De-energizing Busses<br>33 AND 43" was added to prevent from taking credit for reactor trip initiated outside of the Control<br>Room.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                             |  |
|                  | • These changes are not a deviation because classification of the event could be different could be differen | e they do not alter the meaning or intent, such that<br>ent between the NEI guidance and the plant EAL                                                                                                                                                      |  |
| Deviation        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                             |  |

| SS2 – Basis Justification                                                                      |                                       |                                                                                 |  |  |
|------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------|--|--|
| KNPP S                                                                                         | pecific Additions/Deletions           | Justification                                                                   |  |  |
| General KNPP plant specific information was added<br>or replaced non-specific NEI information. |                                       | This information was added for explanation and clarification of site specifics. |  |  |
| Difference                                                                                     | Added KNPP site specific information. |                                                                                 |  |  |
| Deviations                                                                                     | None                                  |                                                                                 |  |  |

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| NEI IC#          | NEI IC Wording                                         | KNPP<br>IC#(s) | KNPP IC Wording                                                      |
|------------------|--------------------------------------------------------|----------------|----------------------------------------------------------------------|
| SS3              | Loss of All Vital DC Power                             | SS3            | Loss of all vital DC power                                           |
| Mode<br>App.     | Power Operation, Startup, Hot Standby,<br>Hot Shutdown |                | Power Operation, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown |
| Site<br>specific | None                                                   | 1              |                                                                      |
| Difference       | None                                                   |                |                                                                      |
| Deviation        | None                                                   |                |                                                                      |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | KNPP<br>EAL#(s)                                                                                                                                             | KNPP EAL Wording                                                                                                                                             |  |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1                | Loss of All Vital DC Power based on<br>(site-specific) bus voltage indications<br>for greater than 15 minutes                                                                                                                                                                                                                                                                                                                                                                                    | SS3.1                                                                                                                                                       | Loss of All Vital DC power based on LESS<br>THAN 105 VDC on Train A <u>AND</u> Train B<br>Safeguards DC Distribution Systems for<br>GREATER THAN 15 minutes. |  |
| Site<br>specific | <ul> <li>LESS THAN 105 VDC on Train A A<br/>design voltage and specific DC buses.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                     | <ul> <li>LESS THAN 105 VDC on Train A <u>AND</u> Train B Safeguards DC Distribution System is the KNPP<br/>design voltage and specific DC buses.</li> </ul> |                                                                                                                                                              |  |
| Difference       | <ul> <li>The design of the KNPP 125v DC Distribution System is such that a loss of different combinations of distribution panels and buses could constitute a loss of DC power to a Train. These combinations that would cause a loss of DC power are covered in the basis for this EAL.</li> <li>This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL</li> </ul> |                                                                                                                                                             |                                                                                                                                                              |  |
| Deviation        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                             |                                                                                                                                                              |  |

| SS3 – Basis Justification                                                                      |                                       |                                                                                 |  |  |
|------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------|--|--|
| KNPP S                                                                                         | Specific Additions/Deletions          | Justification                                                                   |  |  |
| General KNPP plant specific information was added<br>or replaced non-specific NEI information. |                                       | This information was added for explanation and clarification of site specifics. |  |  |
| Difference                                                                                     | Added KNPP site specific information. |                                                                                 |  |  |
| Deviations                                                                                     | None                                  |                                                                                 |  |  |

| NEI IC#          | NEI IC Wording                                         | KNPP<br>IC#(s) | KNPP IC Wording                                                      |
|------------------|--------------------------------------------------------|----------------|----------------------------------------------------------------------|
| SS4              | Complete Loss of Heat Removal<br>Capability            | SS4            | Complete Loss of Heat Removal Capability                             |
| Mode<br>App.     | Power Operation, Startup, Hot Standby,<br>Hot Shutdown |                | Power Operation, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown |
| Site<br>specific | None                                                   |                | <u> </u>                                                             |
| Difference       | None                                                   |                |                                                                      |
| Deviation        | None                                                   |                |                                                                      |

| NEI<br>EAL#      | NEI EAL Wording                          | KNPP<br>EAL#(s) | KNPP EAL Wording                   |
|------------------|------------------------------------------|-----------------|------------------------------------|
| 1                | Loss of core cooling and heat sink (PWR) | SS4.1           | Loss of core cooling and heat sink |
| Site<br>specific | None                                     |                 |                                    |
| Difference       | None                                     |                 |                                    |
| Deviation        | None                                     |                 |                                    |

| SS4 – Basis Justification |                                                              |       |                                                                                                                                                                                                                        |  |
|---------------------------|--------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| KNPP S                    | pecific Additions/Deletions                                  | · , · | Justification                                                                                                                                                                                                          |  |
| 1. KNPP<br>non-sp         | plant specific terminology replaced becific NEI information. | 1.    | This information was added for explanation and clarification of site specifics.                                                                                                                                        |  |
| 2. Develo<br>NEI B        | opment information contained in the asis was deleted.        | 2.    | Development information is not necessary after the<br>site specific information has been developed. The<br>basis would be very confusing if these statements<br>were left in along with the site specific information. |  |
| Difference                | Added KNPP site specific information.                        |       |                                                                                                                                                                                                                        |  |
| Deviations                | None                                                         |       |                                                                                                                                                                                                                        |  |

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| NEI IC#          | NEI IC Wording                                              | KNPP<br>IC#(s) | KNPP IC Wording                                                      |
|------------------|-------------------------------------------------------------|----------------|----------------------------------------------------------------------|
| SS6              | Inability to Monitor a SIGNIFICANT<br>TRANSIENT in Progress | SS6            | Inability to Monitor a SIGNIFICANT<br>TRANSIENT in Progress          |
| Mode<br>App.     | Power Operation, Startup, Hot Standby,<br>Hot Shutdown      |                | Power Operation, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown |
| Site<br>specific | N/A                                                         |                | •                                                                    |
| Difference       | None                                                        |                |                                                                      |
| Deviation        | None                                                        |                | ···· ··· ··· ··· ··· ··· ··· ··· ··· ·                               |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                        | KNPP<br>EAL#(s)                       | KNPP EAL Wording                                                                                                                                                                                                        |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | <ul> <li>Loss of most or all (site-specific)<br/>annunciators associated with safety<br/>systems.</li> <li>AND</li> </ul>                                                                                              |                                       | Loss of most or all annunciators associated with<br>safety systems on Mechanical Vertical Panels A,<br>B and C, Mechanical Control Consoles A, B and<br>C, Electrical Vertical Panel and Electrical<br>Control Console. |
|                  | b. Compensatory non-alarming indications are unavailable.                                                                                                                                                              |                                       | AND                                                                                                                                                                                                                     |
|                  | AND                                                                                                                                                                                                                    |                                       | SIGNIFICANT TRANSIENT in progress.                                                                                                                                                                                      |
| 1                | <ul> <li>Indications needed to monitor (site-<br/>specific) safety functions are<br/>unavailable</li> </ul>                                                                                                            | SS6.1                                 | AND                                                                                                                                                                                                                     |
|                  | AND                                                                                                                                                                                                                    |                                       | COMPENSATORY NON-ALARMING<br>INDICATIONS are unavailable.                                                                                                                                                               |
|                  | d. SIGNIFICANT TRANSIENT in progress.                                                                                                                                                                                  |                                       | AND                                                                                                                                                                                                                     |
|                  |                                                                                                                                                                                                                        |                                       | Indications needed to monitor the ability to shut<br>down the reactor, maintain the core cooled,<br>maintain the reactor coolant system intact, and<br>maintain containment intact are unavailable.                     |
| Site<br>specific | "Mechanical Vertical Panels A, B and C, Mechanical Control Consoles A, B and C, Electrical<br>Vertical Panel and Electrical Control Console" contain the site-specific annunciators associated<br>with safety systems. |                                       |                                                                                                                                                                                                                         |
|                  | <ul> <li>"the ability to shut down the reacted<br/>and maintain containment intact" is</li> </ul>                                                                                                                      | or, maintain the site speci           | ne core cooled, maintain the reactor system intact,<br>ific list of safety functions                                                                                                                                    |
| Difference       | <ul> <li>SIGNIFICANT TRANSIENT plac<br/>between EALs (Formatting change</li> </ul>                                                                                                                                     | ed 2 <sup>nd</sup> on list t<br>only) | to provide user with clear escalation path criteria                                                                                                                                                                     |
|                  | <ul> <li>COMPENSATORY NON-ALARM<br/>in the basis document.</li> </ul>                                                                                                                                                  | AING INDICA                           | ATIONS was capitalized because it is a definition                                                                                                                                                                       |
|                  | <ul> <li>These changes are not a deviation be<br/>classification of the event could be</li> </ul>                                                                                                                      | because they d<br>different betw      | lo not alter the meaning or intent, such that<br>ween the NEI guidance and the plant EAL                                                                                                                                |
| Deviation        | None                                                                                                                                                                                                                   |                                       |                                                                                                                                                                                                                         |

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| SS6 – Basis Justification                                                               |                                                                                        |    |                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KNPI                                                                                    | Specific Additions/Deletions                                                           |    | Justification                                                                                                                                                                                                          |
| 1. Ger<br>was<br>info                                                                   | eral KNPP plant specific information<br>added or replaced non-specific NEI<br>rmation. | 1. | This information was added for explanation and clarification of site specifics.                                                                                                                                        |
| 2. Dev<br>NE                                                                            | elopment information contained in the<br>Basis was deleted.                            | 2. | Development information is not necessary after the<br>site specific information has been developed. The<br>basis would be very confusing if these statements<br>were left in along with the site specific information. |
| 3. Added definition for significant transient and compensatory non-alarming indication. |                                                                                        | 3. | Clarifying information to assist in classification.<br>Definitions consistent with NEI 99-01.                                                                                                                          |
| Difference                                                                              | Added KNPP site specific information.                                                  |    |                                                                                                                                                                                                                        |
| Deviations                                                                              | None                                                                                   |    |                                                                                                                                                                                                                        |

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| NEI IC#          | NEI IC Wording                                                                                          | KNPP<br>IC#(s) | KNPP IC Wording                                                                                         |
|------------------|---------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------|
| SG1              | Prolonged Loss of All Offsite Power<br>and Prolonged Loss of All Onsite AC<br>Power to Essential Busses | SG1            | Prolonged Loss of All Offsite Power and<br>Prolonged Loss of All Onsite AC Power to<br>Essential Busses |
| Mode<br>App.     | Power Operation, Startup, Hot Standby,<br>Hot Shutdown                                                  |                | Power Operation, Hot Standby, Hot Shutdown,<br>Intermediate Shutdown                                    |
| Site<br>specific | None                                                                                                    |                |                                                                                                         |
| Difference       | None                                                                                                    |                | ······                                                                                                  |
| Deviation        | None                                                                                                    |                | ······································                                                                  |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | KNPP<br>EAL#(s)                         | KNPP EAL Wording                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                | Loss of power to (site-specific)<br>transformers.<br>AND<br>Failure of (site-specific) emergency<br>diesel generators to supply power to<br>emergency busses.<br>AND<br>Either of the following: (a or b)<br>a. Restoration of at least one<br>emergency bus within (site-<br>specific) hours is <u>not</u> likely<br>OR<br>b. (Site-Specific) Indication of<br>continuing degradation of core<br>cooling based on Fission Product<br>Barrier monitoring.                                                                                                                 | SG1.1                                   | Loss of all offsite power to Bus 5 <u>AND</u> Bus 6<br>AND<br>Failure of all emergency diesel generators to<br>supply power to Bus 5 <u>AND</u> Bus 6<br>AND<br>Either of the following: (a or b)<br>a. Restoration of either Bus 5 <u>OR</u> Bus 6<br>within 4 hours is <u>not</u> likely<br>OR<br>b. Continuing degradation of core cooling<br>based on Fission Product Barrier<br>monitoring as indicated by a Core<br>Cooling-RED or Core Cooling-<br>ORANGE |
| Site<br>specific | <ul> <li>Bus 5 and Bus 6 are the KNPP emer</li> <li>"Core Cooling-RED or Core Cooling<br/>degradation of core cooling based on</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                 | gency safeg<br>g-ORANGE'<br>Fission Pro | uards buses.<br>' is KNPP site specific indication of continuing<br>duct Barrier monitoring.                                                                                                                                                                                                                                                                                                                                                                     |
| Difference       | <ul> <li>The NEI example EAL condition "Loss of power to (site-specific) transformers" has been changed to "Loss of all offsite power to Bus 5 <u>AND</u> Bus 6" The plant EAL wording focuses the classification on the loss of power capability rather than the status of one or more transformers that may or may not be capable powering the essential buses.</li> <li>This change is not a deviation because it does not alter the meaning or intent, such that classification of the event could be different between the NEI guidance and the plant EAL</li> </ul> |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Deviation        | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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| SG1 – Basis                                                                                 | SG1 – Basis Justification             |                                                                                 |  |  |
|---------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------------------|--|--|
| KNPP S                                                                                      | Specific Additions/Deletions          | Justification                                                                   |  |  |
| General KNPP plant specific information was added or replaced non-specific NEI information. |                                       | This information was added for explanation and clarification of site specifics. |  |  |
| Difference                                                                                  | Added KNPP site specific information. |                                                                                 |  |  |
| Deviations                                                                                  | None                                  |                                                                                 |  |  |

| NEI IC#          | NEI IC Wording                                                                                                                                                                                             | KNPP<br>IC#(s) | KNPP IC Wording                                                                                                                                                                                                       |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SG2              | Failure of the Reactor Protection<br>System to Complete an Automatic<br>Scram and Manual Scram was NOT<br>Successful and There is Indication of an<br>Extreme Challenge to the Ability to<br>Cool the Core | SG2            | Failure of the Reactor Protection System to<br>Complete an Automatic Reactor Trip and<br>Manual Reactor Trip was NOT Successful and<br>There is Indication of an Extreme Challenge to<br>the Ability to Cool the Core |
| Mode<br>App.     | Power Operation, Startup, Hot Standby,<br>Hot Shutdown                                                                                                                                                     |                | Power Operation, Hot Standby                                                                                                                                                                                          |
| Site<br>specific | None                                                                                                                                                                                                       |                |                                                                                                                                                                                                                       |
| Difference       | None                                                                                                                                                                                                       |                |                                                                                                                                                                                                                       |
| Deviation        | None                                                                                                                                                                                                       |                |                                                                                                                                                                                                                       |

| NEI<br>EAL#      | NEI EAL Wording                                                                                                                                                                                                                                                                                                                                       | KNPP<br>EAL#(s)                                                                                                                  | KNPP EAL Wording                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                | Indications exist that automatic and<br>manual scram were not successful.<br>AND<br>Either of the following: (a or b)<br>a. Indication(s) exists that the<br>core cooling is extremely<br>challenged.                                                                                                                                                 | SG2.1                                                                                                                            | <ul> <li>Indication(s) exist that automatic and manual reactor trip were NOT successful in reducing power to LESS THAN 5%.</li> <li>AND</li> <li>Either of the following: (a or b)</li> <li>a. Indication(s) exists that the core cooling is extremely challenged as indicated by Core Cooling - RED.</li> </ul>                                                                                              |
|                  | OR<br>b. Indication(s) exists that heat<br>removal is extremely<br>challenged                                                                                                                                                                                                                                                                         |                                                                                                                                  | OR<br>b. Indication(s) exists that heat removal is<br>extremely challenged as indicated by Heat<br>Sink - RED.                                                                                                                                                                                                                                                                                                |
| Site<br>specific | <ul> <li>"Core Cooling-RED" represents the challenged.</li> <li>"Heat Sink-RED" represents the site</li> <li>LESS THAN 5%- In response to ind reactor trip, NEI and the NRC agreed Development of Emergency Action I that "the scram is considered unsu the reactor power to fall below that p to remove heat and continue to decrep path.</li> </ul> | site-specific<br>-specific ind<br>ustry questic<br>1 in System I<br>Levels NUM<br>ccessful whe<br>percent powe<br>base." 5% is t | indication that core cooling is extremely<br>ication that heat removal is extremely challenged.<br>ons concerning the definition of a successful<br>Malfunction Question #7 of "Methodology for<br>IARC/NESP-007 Rev. 2 Questions and Answers"<br>en enough control rods have not inserted to cause<br>r associated with the ability of the safety systems<br>the power level specified in Subcriticality-RED |
| Difference       | None                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                               |
| Deviation        | None                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                               |

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| SG2 – Basis                                                        | Justification                                                                      |                                                                                  |                                                                                                                                                                                                                        |  |
|--------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| KNPP S                                                             | Specific Additions/Deletions                                                       |                                                                                  | Justification                                                                                                                                                                                                          |  |
| 1. Gener<br>was ac<br>inform                                       | al KNPP plant specific information<br>dded or replaced non-specific NEI<br>nation. | 1. This information was added for explanation a clarification of site specifics. |                                                                                                                                                                                                                        |  |
| 2. Development information contained in the NEI Basis was deleted. |                                                                                    | 2.                                                                               | Development information is not necessary after the<br>site specific information has been developed. The<br>basis would be very confusing if these statements<br>were left in along with the site specific information. |  |
| Difference                                                         | ence Added KNPP site specific information.                                         |                                                                                  |                                                                                                                                                                                                                        |  |
| Deviations                                                         | None                                                                               |                                                                                  |                                                                                                                                                                                                                        |  |

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**ATTACHMENT 4** 

WALL CHART

# THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE

### THAT CAN BE VIEWED AT THE RECORD TITLED:

"Kewaunee Nuclear Power Plant Emergency Action Level Matrix COLD CONDITIONS (RCS < 200 F) EPIP-AD-02, Emergency Classification"

## WITHIN THIS PACKAGE.....

**D-01** 

# THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE

### THAT CAN BE VIEWED AT THE RECORD TITLED:

"Kewaunee Nuclear Power Plant Emergency Action Level Matrix EPIP-AD-02, Emergency Classification HOT CONDITIONS (RCS > 200 F)"

## WITHIN THIS PACKAGE....

**D-02** 

#### **ATTACHMENT 5**

50.54(q)

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| _                  | 10CFR 50.54(q) Review Process<br>FP-R-EP-02, Revision 0                                                                                                                                                                |            |                |  |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------|--|
| Descri<br>KNPP     | 10CFR 50.54(q) REVIEW FORM<br>ption of Change:<br>Emergency Action Levels (EALs) are being revised to the NEI 99-01 rev                                                                                                | 4 EAL s    | cheme.         |  |
|                    | Plan Sections/Procedure(s) #: EPIP-AD-02 Revision(s) #: TBD Mod #:                                                                                                                                                     |            |                |  |
|                    | Other: KNPP Emergency Action Levels and KNPP Emergency Plan                                                                                                                                                            |            |                |  |
| ls t<br><i>rev</i> | Is the proposed change purely editorial in nature (see definition)? [If YES review process and process the procedure change.]                                                                                          |            | S, discontinue |  |
|                    |                                                                                                                                                                                                                        | ] YES      |                |  |
| Do<br>the          | es the proposed change affect any of the following: [Check 'yes' or 'ne actual standards/elements.]                                                                                                                    | o'. Refei  | rence          |  |
| <u>50.47</u>       | PARAPHRASED STANDARD                                                                                                                                                                                                   | <u>YES</u> | NO             |  |
|                    | Primary responsibilities of Site/NMC, State, County, or Tribal organizations.                                                                                                                                          |            |                |  |
| (b)(1)             | Responsibilities of supporting organizations.                                                                                                                                                                          |            |                |  |
|                    | Initial staffing or augmentation                                                                                                                                                                                       |            |                |  |
|                    | On-shift responsibilities for emergency response.                                                                                                                                                                      |            |                |  |
|                    | Staffing for initial accident response                                                                                                                                                                                 |            |                |  |
| (1)(2)             |                                                                                                                                                                                                                        |            |                |  |
| (b)(2)             | Timely augmentation                                                                                                                                                                                                    |            |                |  |
| (b)(2)             | Timely augmentation<br>Interfaces among onsite and offsite response activities.                                                                                                                                        |            |                |  |
| (b)(2)             | Timely augmentation<br>Interfaces among onsite and offsite response activities.<br>Arrangements for requesting and using assistance resources.                                                                         |            |                |  |
| (b)(2)<br>(b)(3)   | Timely augmentation         Interfaces among onsite and offsite response activities.         Arrangements for requesting and using assistance resources.         Accommodations at the EOF for state and county staff. |            |                |  |

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| <u>50.47</u>                                                                                                                                                                                                                                                                                                                                         | PARAPHRASED STANDARD                                                                                                          | YES       | <u>NO</u>    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----------|--------------|
|                                                                                                                                                                                                                                                                                                                                                      | Emergency classification and action level scheme.                                                                             | $\square$ |              |
| (b)(4)<br>RSPS                                                                                                                                                                                                                                                                                                                                       | State/county minimum response based on site information.                                                                      |           |              |
|                                                                                                                                                                                                                                                                                                                                                      | EAL Initiating Condition setpoints, or thresholds.                                                                            | $\square$ |              |
|                                                                                                                                                                                                                                                                                                                                                      | Process for notification of state/county response organizations.                                                              |           | $\mathbf{N}$ |
| (b)(5)                                                                                                                                                                                                                                                                                                                                               | Notification of emergency personnel:                                                                                          |           | $\mathbf{X}$ |
| RSPS                                                                                                                                                                                                                                                                                                                                                 | Procedure for initial and follow-up messages.                                                                                 |           |              |
| وه و از است می و به میک<br>از می از است است و به میک<br>است است است است است<br>مرابع است است است است است.                                                                                                                                                                                                                                            | ANS notification within the 10-mile EPZ                                                                                       |           |              |
| (b)(6)                                                                                                                                                                                                                                                                                                                                               | Provisions for prompt communication among principal response organizations to emergency response personnel and to the public. |           | $\boxtimes$  |
|                                                                                                                                                                                                                                                                                                                                                      | Public information distributed on a periodic basis.                                                                           |           | $\boxtimes$  |
| (b)(7)                                                                                                                                                                                                                                                                                                                                               | News media points of contact established.                                                                                     |           | $\boxtimes$  |
|                                                                                                                                                                                                                                                                                                                                                      | Procedures for coordinated dissemination of info to the public.                                                               |           | $\boxtimes$  |
| (b)(8)                                                                                                                                                                                                                                                                                                                                               | Emergency response facilities, equipment, and maintenance.                                                                    |           | $\boxtimes$  |
| (b)(9)<br>RSPS                                                                                                                                                                                                                                                                                                                                       | Methods, systems, or equipment for assessing and monitoring actual or potential offsite consequences.                         |           | $\square$    |
|                                                                                                                                                                                                                                                                                                                                                      | Range of protective actions for the Plume EPZ established.                                                                    |           | $\mathbf{X}$ |
| (b)(10)<br>RSPS                                                                                                                                                                                                                                                                                                                                      | Guidelines for choice of PARs in place.                                                                                       |           | $\mathbf{N}$ |
| المربق من من المربعة موسق المربعة المربعة المربعة المربعة المربعة المربعة الموسق المربعة المربعة المربعة المرب<br>المربعة المربعة المربعة<br>المربعة المربعة | Protective actions for Ingestion Pathway EPZ established.                                                                     |           | Ø            |
| (b)(11)                                                                                                                                                                                                                                                                                                                                              | Controlling radiological exposure for emergency workers.                                                                      |           | $\boxtimes$  |
| (b)(12)                                                                                                                                                                                                                                                                                                                                              | Arrangements for medical service for contaminated injured individuals.                                                        |           | $\boxtimes$  |
| (b)(13)                                                                                                                                                                                                                                                                                                                                              | General plans for recovery and reentry.                                                                                       |           | $\boxtimes$  |
| (b)(14)                                                                                                                                                                                                                                                                                                                                              | Exercise or drill conduct and corrective action system.                                                                       |           | $\boxtimes$  |
| (b)(15)                                                                                                                                                                                                                                                                                                                                              | Radiological emergency response training.                                                                                     |           | $\boxtimes$  |

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| <u>50.47</u> | PARAPHRASED STANDARD                                                                                                              | <u>YES</u> | <u>NO</u>   |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------|------------|-------------|
| (b)(16)      | Responsibilities for plan development, review, and distribution of emergency procedures established.                              |            | $\boxtimes$ |
|              | EP Staff is properly trained.                                                                                                     |            | $\boxtimes$ |
| EP           | Implementation of other federal regulations and requirements or formal commitments related to the Emergency Preparedness Program. |            | $\boxtimes$ |
| ERDS         | The operation, maintenance, or testing requirements of the ERDS.                                                                  |            | $\boxtimes$ |

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| App. E | PARAPHRASED ELEMENT                | <u>YES</u>  | <u>NO</u>   |
|--------|------------------------------------|-------------|-------------|
| IV. A  | Organization                       |             | $\boxtimes$ |
| IV. B  | Assessment actions                 | $\boxtimes$ |             |
| IV.C   | Activation of emergency response   | $\boxtimes$ |             |
| IV. D  | Notification procedures            |             | $\boxtimes$ |
| IVE    | Emergency facilities and equipment |             | $\boxtimes$ |
| IV. F  | Training                           |             | $\boxtimes$ |
| IV.G   | Maintaining emergency preparedness |             | $\boxtimes$ |
| IV. H  | Recovery                           |             | $\boxtimes$ |

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|                                             |                                                                                                                                                                                                                                                                       | DECR                                                                                                                                                   | EASED     |  |  |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--|--|
| STANDARDS<br>AND/OR<br>ELEMENTS<br>EFFECTED | DESCRIPTION OF EFFECT                                                                                                                                                                                                                                                 | <u>YES</u>                                                                                                                                             | <u>NO</u> |  |  |
|                                             | Background and Scope:<br>KNPP is revising from NUREG-0654 EAL scheme to<br>NEI 99-01 rev 4 EAL scheme.                                                                                                                                                                |                                                                                                                                                        |           |  |  |
|                                             | <b>Program Requirements:</b><br>It is required by the CFR sections that the plant have a<br>standard emergency classification and action level<br>scheme. The scheme is required to assess the plant<br>condition and make Emergency Classification<br>determination. | ments:<br>CFR sections that the plant have a<br>cy classification and action level<br>me is required to assess the plant<br>e Emergency Classification |           |  |  |
| 50.47(b)(4),<br>App. E IV.B and<br>IV.C     | <u>Change Comparison:</u><br>Due to improvements in the NEI 99-01 rev 4 EAL<br>scheme, implementation of the NEI 99-01 rev 4 EAL<br>scheme will enhance KNPP's ability to classification<br>emergency conditions.                                                     |                                                                                                                                                        |           |  |  |
|                                             | Change Assessment:<br>EAL scheme change requires NRC pre-approval.<br>Without pre-approval the change would be considered<br>a decrease in effectiveness.                                                                                                             |                                                                                                                                                        |           |  |  |
|                                             | <u>Justification:</u><br>NEI 99-01 rev 4 was endorsed by the NRC via Reg.<br>Guide 1.101, rev 4 July 2003. Therefore,<br>implementation of the NEI 99-01 rev 4 EAL scheme is<br>appropriate after NRC approval.                                                       |                                                                                                                                                        |           |  |  |

|                 |                        |                         | YES ** | <u>NO</u>   |
|-----------------|------------------------|-------------------------|--------|-------------|
| This procedure  | can be processed witho | out prior NRC approval. |        | $\boxtimes$ |
| This procedure  | $\boxtimes$            |                         |        |             |
| Document all r  |                        |                         |        |             |
| NEI 99-01 rev 4 | RIS 2003-18 rev 4      |                         |        |             |
|                 |                        |                         |        |             |
| L               |                        |                         |        |             |

Prepared By:

1.0Qualified Preparer Sindular ) N

14/04 Date: 10

Date: 10/14/04

**Reviewed By:** 

**2.0**Qualified Reviewer

**Reviewed By:** 

Date: 10/15-104

**3.0Regulatory Affairs** 

Approved By:

Oleman. Date: /0/15/04 4.0 Manager - EP

#### **ENCLOSURE 5**

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CD OF ENCLOSURES, REFERENCES, AND SUPPORTING DOCUMENTATION

| SED 21                                                                   | ANNING TATOP NU                          |                                               | 4705                                            | 5 N           |
|--------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------|-------------------------------------------------|---------------|
| <u> </u>                                                                 | ANNUNCIATUR NU                           |                                               | 4/05                                            | <u> </u>      |
| SER PT:<br>See Comments                                                  |                                          |                                               | SPENT FU                                        | JEL           |
| COMPUTER PT:<br>None                                                     |                                          |                                               | ABNOR                                           | MAL           |
| INSTRUMENT:<br>See Comments                                              |                                          |                                               | SETPOINT:<br>See Comments                       |               |
|                                                                          |                                          |                                               |                                                 |               |
| RECOMMENDED ACTION:                                                      |                                          |                                               |                                                 |               |
| 1. <u>GO</u> <u>TO</u> A-SFP-21.                                         |                                          |                                               |                                                 |               |
| COMMENTS:                                                                |                                          |                                               |                                                 |               |
| <u>NOTE</u> : SER 157 and SE<br>set to a highe                           | R 158 setpoint i<br>r value during r     | s normally 100<br>efueling outag              | °F but may temp<br>je.                          | oorarily be   |
| 1. SER Points:                                                           |                                          |                                               |                                                 |               |
| 155-Spent Fuel Pool A<br>Instrument - LA-16640<br>Setpoint - < 2' 2"     | Level High<br>-01<br>below floor         | 158-Spent Fue<br>Instrument: -<br>Setpoint: - | 1 Pool B Temper<br>TI-12012<br>≻100°F           | cature High   |
| 156-Spent Fuel Pool B :<br>Instrument - LA-16641<br>Setpoint - < 2' 2" : | Level High<br>-01<br>below floor         | 159-Spent Fue<br>Instrument: -<br>Setpoint -  | Pool A Level<br>LA-16640-02<br>> 3'4" below     | Low<br>floor  |
| 157–Spent 'Fuel Pool A '<br>Instrument – TI–12007<br>Setpoint – ≻100°F   | Temperature High                         | 160-Spent Fue<br>Instrument -<br>Setpoint -   | el Pool B Level<br>LA-16641-02<br>> 3' 4" below | Low<br>floor  |
| 161-Spent Fuel<br>Instruments –<br>Setpoint –                            | Pool Heat Excha<br>DPI-11055<br>< 5 psid | nger Primary t                                | co Secondary DP                                 | Low           |
| 2. High Temperature a<br>on south wall of S                              | larms must be re<br>pent Fuel Pool.      | set with local                                | push button lo                                  | ocated        |
|                                                                          |                                          |                                               |                                                 |               |
| REFERENCES:<br>FLOW: M-218<br>LOGIC: E-1617                              | · · · · · · · · · · · · · · · · · · ·    | OTHER: None                                   |                                                 |               |
| NUCLEAR YES<br>SAFETY<br>RELATED NO                                      | PORC<br>REVIEW<br>REQUIRED               | yes 🗔<br>No 🖾                                 | SRO APPROVAL OF<br>TEMPORARY CHANG<br>REQUIRED  | es no         |
| I_                                                                       | )                                        | DL:                                           | llin A Sha-t                                    | DATE 10/14/04 |
| REVIEWED BY James J 1                                                    | APPR                                     | OVED BY                                       | <u> </u>                                        | REV C         |

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| WISCONSIN PUBLIC SERVICE O                                                                                                                                                                                                                                                                                                            | ORPORATION                                                                                                               | NO. A-A                                                               | R-09                                | <b>REV</b> P                        |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------------------|-------------------------------------|--|--|
| KEWAUNEE NUCLEAR POW                                                                                                                                                                                                                                                                                                                  | VER PLANT                                                                                                                | TITLE Air Removal System Abnormal Operation                           |                                     |                                     |  |  |
| OPERATING PROCED                                                                                                                                                                                                                                                                                                                      | DURE                                                                                                                     | DATE M                                                                | IAR 28 2002                         | PAGE 1 of 2                         |  |  |
| REVIEWED BY                                                                                                                                                                                                                                                                                                                           |                                                                                                                          | APPRO                                                                 | VED BY                              |                                     |  |  |
| NUCLEAR I YES<br>SAFETY RELATED NO                                                                                                                                                                                                                                                                                                    | PORC REVIEW<br>REQUIRED                                                                                                  | 🗆 YES<br>🖾 NO                                                         | SRO APPROV<br>TEMPORARY<br>REQUIRED | AL OF XES<br>CHANGES NO             |  |  |
| <pre>1.0 INTRODUCTION<br/>1.1 Procedure describes<br/>vacuum or low turbin<br/>2.0 <u>SYMPTOMS</u><br/>2.1 GLAND STEAM CDSR VAC<br/>2.2 TURBINE OIL VAPOR VA<br/>3.0 IMMEDIATE ACTION<br/>3.1 Automatic:<br/>1. MS-302/CV-31014,<br/>open on loss of<br/>2. MS-321/CV-31169,<br/>closed on loss o<br/>3.2 Operator:<br/>1. None</pre> | actions taken<br>e oil vapor va<br>UUM HIGH/LOW (A<br>CUUM LOW (4705<br>Turbine Gland<br>air.<br>Turb Gland St<br>f air. | for abnorma<br>cuum.<br>47053-W)<br>4-W)<br>Reheat Sea<br>eam Spillov | al Gland Stea                       | m Condenser<br>ly, fails<br>. fails |  |  |
|                                                                                                                                                                                                                                                                                                                                       |                                                                                                                          |                                                                       |                                     |                                     |  |  |

| WISC            | ONSI  | N PU       | BLIC SERVICE CORPORATION                                                                 | NO.                   | A-AR-09                              |                          |      |
|-----------------|-------|------------|------------------------------------------------------------------------------------------|-----------------------|--------------------------------------|--------------------------|------|
| K               | ŒWA   | UNE        | E NUCLEAR POWER PLANT                                                                    | TITLE                 | Air Removal Sy<br>Operation          | stem Abnormal            |      |
|                 | 0     | PER/       | ATING PROCEDURE                                                                          | DATE                  | MAR 28 2002                          | PAGE 2                   | of 2 |
|                 |       |            |                                                                                          |                       |                                      |                          |      |
| 4.0 <u>SUBS</u> | SEQUE | INT A      | CTION                                                                                    |                       |                                      |                          |      |
| 4.1             | Gla   | nd S       | team CDSR Vacuum High/Low:                                                               |                       |                                      |                          |      |
|                 | 1.    | Vac        | uum High:                                                                                |                       |                                      |                          |      |
|                 |       | 1.         | Locally, ADJUST AR-301A(B)<br>to MAINTAIN Gland Steam Cd<br>of H <sub>2</sub> O.         | , Gland :<br>sr Vacuu | Steam Cdsr 1A(1B<br>m (4101001) at 1 | ) Damper,<br>0-15 inches |      |
|                 | 2.    | Cds        | r Vacuum Low:                                                                            |                       |                                      |                          |      |
|                 |       | 1.         | START standby Turbine Glan                                                               | d Steam               | Cdsr Exhaust Fan                     | •                        |      |
|                 |       | 2.         | STOP Turbine Gland Steam C                                                               | dsr Exha              | ust Fan that was                     | running.                 |      |
|                 |       | 3.         | Locally, ADJUST AR-301A(B)<br>to MAINTAIN Gland Steam Cd<br>of H <sub>2</sub> O.         | , Gland :<br>sr Vacuu | Steam Cdsr 1A(1B<br>m (4101001) at 1 | ) Damper,<br>0-15 inches |      |
| 4.2             | Tur   | bine       | e Oil Vapor Vacuum Low:                                                                  |                       |                                      |                          |      |
|                 | 1.    | VER<br>ope | RIFY Turbine Oil Loop Seal <u>A</u><br>crating.                                          | <u>ND</u> Turbi       | ne Oil Rsve Vapo                     | r Extractors             |      |
|                 |       | 1.         | <u>IF</u> tripped, RESTART extrac                                                        | tor.                  |                                      |                          |      |
| I               | 2.    | Loc        | ally, ADJUST vapor extracto                                                              | r vent d              | amper:                               |                          |      |
|                 |       | 1.         | <u>IF</u> adjusting AR-400, Turbi<br>Damper, <u>GO</u> <u>TO</u> N-GE-84.                | ne Oil L              | oop Seal Vapor E                     | xtractor                 |      |
|                 |       | 2.         | <u>IF</u> adjusting AR-450, Turb<br>Damper,or AR-440, Turb Oil<br><u>GO TO</u> N-TOP-20. | Oil Rese<br>Conditi   | rvoir Vapor Extr<br>oner Vapor Extra | actor<br>ctor Damper,    |      |
|                 |       |            |                                                                                          |                       |                                      |                          |      |
|                 |       |            |                                                                                          |                       |                                      |                          |      |
|                 |       |            |                                                                                          |                       |                                      |                          |      |
|                 |       |            |                                                                                          |                       |                                      |                          |      |
|                 |       |            |                                                                                          |                       |                                      |                          |      |
|                 |       |            |                                                                                          |                       |                                      |                          |      |
|                 |       |            |                                                                                          |                       |                                      |                          |      |

| WISC            | ONSIN PUBLI                          | C SERVICE C                            | ORPORATION                               | <b>NO.</b> A-C             | P-46                                | REV               | AR          |
|-----------------|--------------------------------------|----------------------------------------|------------------------------------------|----------------------------|-------------------------------------|-------------------|-------------|
| к               | EWAUNEE NI                           | UCLEAR POW                             | VER PLANT                                | TITLE C                    | bnormal Hone<br>Computer            | ywell Pla         | nt Proces   |
|                 | OPERATI                              | NG PROCEE                              | DURE                                     | DATE A                     | PR 08 2004                          | PAGE              | 1 <b>of</b> |
| REAIN           | WED BY                               |                                        |                                          | APPRO                      | VED BY                              |                   |             |
| NUCLE<br>SAFET  | AR<br>Y RELATED                      | ⊠ yes<br>□ NO                          | PORC REVIEW<br>REQUIRED                  | 🛛 YES                      | SRO APPROV<br>TEMPORARY<br>REQUIRED | AL OF<br>Changes  | X YES       |
| 1.0 <u>intr</u> | <u>ODUCTION</u>                      |                                        |                                          |                            |                                     |                   |             |
| 1.1             | Procedure<br>Honeywell<br>Display Sy | describes<br>Plant Proc<br>ystem (SPDS | required action<br>ess Computer (1<br>). | ns for tota<br>PPCS) and/c | l or partial<br>or Safety Par       | failure<br>ameter | of          |
| 2.0 <u>Symp</u> | TOMS                                 |                                        |                                          |                            |                                     |                   |             |
| 2.1             | PPCS CPU                             | ABNORMAL (4                            | 7024-K)                                  |                            |                                     |                   |             |
| 2.2             | TLA-17 PP(                           | CS PROGRAM                             | ABNORMAL (4703                           | 3-42)                      |                                     |                   |             |
| 2.3             | Honeywell                            | Plant Proc                             | ess Computer e                           | xhibits que                | estionable da                       | ta                |             |
| 2.4             | Device Fai                           | ilure has o                            | ccurred                                  |                            |                                     |                   |             |
| 2.5             | Data or se                           | etpoints re                            | quire changes                            |                            |                                     |                   |             |
| 2.6             | Control Ro                           | oom SPDS un                            | it(s) exhibit (                          | questionabl                | e data                              |                   |             |
| 3.0 <u>IMME</u> | DIATE ACTIO                          | <u>ons</u>                             |                                          |                            |                                     |                   |             |
| 3.1             | None                                 |                                        |                                          |                            |                                     |                   |             |
|                 |                                      |                                        |                                          |                            |                                     |                   |             |
|                 |                                      |                                        |                                          | •                          |                                     |                   |             |
|                 |                                      |                                        |                                          |                            |                                     |                   |             |
|                 |                                      |                                        |                                          |                            |                                     |                   |             |
|                 |                                      |                                        |                                          |                            |                                     |                   |             |
|                 |                                      |                                        |                                          |                            |                                     |                   |             |
|                 |                                      |                                        |                                          |                            |                                     |                   |             |
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| TITLE Abnormal Honeywell Plant Process Computer         OPERATING PROCEDURE         DATE APR 08 2004 PAGE 2 of 19         0.0 SUBSEQUENT ACTIONS         4.1 CPU Failover occurs:         1. CPU Failover indicated by the following:         a. PPCS CPU ABNORMAL (47024-K)         b. Message, "integrated values must be verified before keyboard is activated", appears on Video Trend Screen.         C. Reactor Miscellaneous Program is displayed on Operator Video Screen with cursor at Integrated Values Manual Correction.         NOTE: Plant Reactor Supervisor will update items 1 thru 5. This may be done at a later time.         2. EXECUTE Integrated Values Manual Correction and PERFORM following:         a. UPDATE items 6 thru 11 to current rod positions.         b. ABORT program to store updated values.         C. PRESS Maint Functions pushbutton and ENTER date and time.         3. RESTORE following:         a. Control Room digital displays         b. Analog trend charts         C. Group output trends | WISC            | ONSI       | N PUBLIC SERVICE CORPORATION                                          | NO. /                                              | -CP-46                             |                          |              |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------|-----------------------------------------------------------------------|----------------------------------------------------|------------------------------------|--------------------------|--------------|--|
| OPERATING PROCEDURE       DATE       APR 08 2004       PAGE 2       of 19         .0 SUBSEQUENT ACTIONS         4.1 CPU Failover occurs:         1. CPU Failover indicated by the following:         a. PPCS CPU ABNORMAL (47024-K)         b. Message, "integrated values must be verified before keyboard is activated", appears on Video Trend Screen.         c. Reactor Miscellaneous Program is displayed on Operator Video Screen with cursor at Integrated Values Manual Correction.         NOTE:       Plant Reactor Supervisor will update items 1 thru 5. This may be done at a later time.         2. EXECUTE Integrated Values Manual Correction and PERFORM following:         a. UPDATE items 6 thru 11 to current rod positions.         b. ABORT program to store updated values.         c. PRESS Maint Functions pushbutton and ENTER date and time.         3. RESTORE following:         a. Control Room digital displays         b. Analog trend charts         c. Group output trends                                    | к               | EWA        | UNEE NUCLEAR POWER PLANT                                              | TITLE Abnormal Honeywell Plant Process<br>Computer |                                    |                          |              |  |
| <ul> <li>4.0 SUBSEQUENT ACTIONS</li> <li>4.1 CPU Failover occurs: <ol> <li>CPU Failover indicated by the following: <ol> <li>PPCS CPU ABNORMAL (47024-K)</li> <li>Message, "integrated values must be verified before keyboard is activated", appears on Video Trend Screen.</li> <li>Reactor Miscellaneous Program is displayed on Operator Video Screen with cursor at Integrated Values Manual Correction.</li> </ol> </li> <li>NOTE: Plant Reactor Supervisor will update items 1 thru 5. This may be done at a later time.</li> <li>EXECUTE Integrated Values Manual Correction and PERFORM following: <ol> <li>UPDATE items 6 thru 11 to current rod positions.</li> <li>ABORT program to store updated values.</li> <li>PRESS Maint Functions pushbutton and ENTER date and time.</li> </ol> </li> <li>RESTORE following: <ol> <li>Control Room digital displays</li> <li>Analog trend charts</li> <li>Group output trends</li> </ol> </li> </ol></li></ul>                                                                               |                 | OF         | PERATING PROCEDURE                                                    | DATE                                               | APR 08 2004                        | PAGE 2                   | <b>of</b> 19 |  |
| <ul> <li>3.0 SUBSEQUENT ACTIONS</li> <li>4.1 CPU Failover occurs: <ol> <li>CPU Failover indicated by the following: <ol> <li>PPCS CPU ABNORMAL (47024-K)</li> <li>Message, "integrated values must be verified before keyboard is activated", appears on Video Trend Screen.</li> <li>Reactor Miscellaneous Program is displayed on Operator Video Screen with cursor at Integrated Values Manual Correction.</li> </ol> </li> <li>NOTE: Plant Reactor Supervisor will update items 1 thru 5. This may be done at a later time.</li> <li>EXECUTE Integrated Values Manual Correction and PERFORM following: <ol> <li>UPDATE items 6 thru 11 to current rod positions.</li> <li>ABORT program to store updated values.</li> <li>PRESS Maint Functions pushbutton and ENTER date and time.</li> </ol> </li> <li>RESTORE following: <ol> <li>Control Room digital displays</li> <li>Analog trend charts</li> <li>Group output trends</li> </ol> </li> </ol></li></ul>                                                                               |                 |            |                                                                       |                                                    |                                    |                          |              |  |
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| <ul> <li>a. PPCS CPU ABNORMAL (47024-K)</li> <li>b. Message, "integrated values must be verified before keyboard<br/>is activated", appears on Video Trend Screen.</li> <li>c. Reactor Miscellaneous Program is displayed on Operator Video<br/>Screen with cursor at Integrated Values Manual Correction.</li> <li>NOTE: Plant Reactor Supervisor will update items 1 thru 5.<br/>This may be done at a later time.</li> <li>2. EXECUTE Integrated Values Manual Correction and PERFORM following: <ul> <li>a. UPDATE items 6 thru 11 to current rod positions.</li> <li>b. ABORT program to store updated values.</li> <li>c. PRESS Maint Functions pushbutton and ENTER date and time.</li> </ul> </li> <li>3. RESTORE following: <ul> <li>a. Control Room digital displays</li> <li>b. Analog trend charts</li> <li>c. Group output trends</li> </ul> </li> </ul>                                                                                                                                                                            |                 | 1.         | CPU Failover indicated by the                                         | following                                          | 1:                                 |                          |              |  |
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| <ul> <li>NOTE: Plant Reactor Supervisor will update items 1 thru 5.<br/>This may be done at a later time.</li> <li>2. EXECUTE Integrated Values Manual Correction and PERFORM following: <ul> <li>a. UPDATE items 6 thru 11 to current rod positions.</li> <li>b. ABORT program to store updated values.</li> <li>c. PRESS Maint Functions pushbutton and ENTER date and time.</li> </ul> </li> <li>3. RESTORE following: <ul> <li>a. Control Room digital displays</li> <li>b. Analog trend charts</li> <li>c. Group output trends</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                 |            | c. Reactor Miscellaneous Prog<br>Screen with cursor at Inte           | ram is di<br>grated Va                             | splayed on Oper<br>lues Manual Cor | rator Video<br>rrection. |              |  |
| <ul> <li>2. EXECUTE Integrated Values Manual Correction and PERFORM following: <ul> <li>a. UPDATE items 6 thru 11 to current rod positions.</li> <li>b. ABORT program to store updated values.</li> <li>c. PRESS Maint Functions pushbutton and ENTER date and time.</li> </ul> </li> <li>3. RESTORE following: <ul> <li>a. Control Room digital displays</li> <li>b. Analog trend charts</li> <li>c. Group output trends</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                 | <u>NOT</u> | <u>E</u> : Plant Reactor Supervisor wi<br>This may be done at a later | ll update<br>time.                                 | e items 1 thru 5                   | 5.                       |              |  |
| <ul> <li>a. UPDATE items 6 thru 11 to current rod positions.</li> <li>b. ABORT program to store updated values.</li> <li>c. PRESS Maint Functions pushbutton and ENTER date and time.</li> <li>3. RESTORE following: <ul> <li>a. Control Room digital displays</li> <li>b. Analog trend charts</li> <li>c. Group output trends</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                 | 2.         | EXECUTE Integrated Values Manua                                       | al Correc                                          | tion and PERFOR                    | RM following:            | :            |  |
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| a. Control Room digital displays<br>b. Analog trend charts<br>c. Group output trends                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                 | 3.         | RESTORE following:                                                    |                                                    |                                    |                          |              |  |
| b. Analog trend charts<br>c. Group output trends                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                 |            | a. Control Room digital displ                                         | ays                                                |                                    |                          |              |  |
| c. Group output trends                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |            | b. Analog trend charts                                                |                                                    |                                    |                          |              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |            | c. Group output trends                                                |                                                    |                                    |                          |              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |            |                                                                       |                                                    |                                    |                          |              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |            |                                                                       |                                                    |                                    |                          |              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |            |                                                                       |                                                    |                                    |                          |              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |            |                                                                       |                                                    |                                    |                          |              |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |            |                                                                       |                                                    |                                    |                          |              |  |

| wisc | ONSI        | N PUBLI                                    | C SERVICE CORPORATION                                                                                              | NO. A                                           | -CP-46                                                                 |                                                         |              |
|------|-------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------|--------------|
| ł    | ŒWA         | UNEE NU                                    | ICLEAR POWER PLANT                                                                                                 | TITLE                                           | Abnormal Honey<br>Computer                                             | well Plant f                                            | Process      |
|      | 0]          | PERATI                                     | NG PROCEDURE                                                                                                       | DATE                                            | APR 08 2004                                                            | PAGE 3                                                  | <b>of</b> 19 |
|      |             |                                            |                                                                                                                    |                                                 |                                                                        |                                                         |              |
| 4.2  | <u>Со</u> п | <u>plete S</u>                             | <u>ystem Failure or Power F</u>                                                                                    | <u>ailure oc</u>                                | curs:                                                                  |                                                         |              |
|      | 1.          | System                                     | Failure is indicated by                                                                                            | followin                                        | ig:                                                                    |                                                         |              |
|      |             | a. PP                                      | CS CPU ABNORMAL (47024-K                                                                                           | )                                               |                                                                        |                                                         |              |
|      |             | b. Vi                                      | deo Display values and t                                                                                           | rends are                                       | NOT updating                                                           |                                                         |              |
|      | 2.          | Power                                      | Failure is indicated by                                                                                            | blank scr                                       | eens on all Vic                                                        | leo Displays.                                           |              |
|      | 3.          | <u>IF</u> BET<br>power<br>Honeyw<br>PLUG i | A Monitor is off <u>AND</u> pow<br>cord under desk cabinet<br>ell computer is restored<br>nto power outlet from Ho | er is req<br>into outl<br>, UNPLUG<br>neywell i | uired, PLUG BE<br>et RPB8-4. <u>WHM</u><br>power cord from<br>nverter. | TA Monitor<br><u>EN</u> power to<br>n RPB8-4 <u>AND</u> |              |
|      | 4.          | <u>IF</u> BET<br>power<br>Honeyw<br>PLUG i | A Printer is off <u>AND</u> pow<br>cord under desk cabinet<br>ell computer is restored<br>nto power outlet from Ho | er is req<br>into outl<br>. UNPLUG<br>neywell i | uired, PLUG BE<br>et RPB8-6. <u>WHI</u><br>power cord from<br>nverter. | TA Printer<br>EN power to<br>RPB8-6 <u>AND</u>          |              |
|      | <u>Not</u>  | <u>E: IF</u><br>Man                        | Nuclear Computer Group i<br>ager may initialize comp                                                               | s unavail<br>uter.                              | able, Shift                                                            |                                                         |              |
|      | 5.          | <u>IF</u> dur<br>with S<br>reinit          | ing off normal work hour<br>hift Manager deem necess<br>ialized as follows:                                        | s and Nuc<br>ary, Hone                          | lear Computer (<br>ywell Computer                                      | Group along<br>may be                                   |              |
|      |             | a. In<br>(C                                | Honeywell Computer Room<br>XAO1), RESET CPU A as fo                                                                | (TSC Bsm<br>11ows:                              | nt) at CPU A Pro                                                       | cessor                                                  |              |
|      |             | 1.                                         | TURN Panel Security Ke                                                                                             | yswitch f                                       | fully clockwise.                                                       | ,                                                       |              |
|      |             | 2.                                         | PRESS "Halt-Run" Pushb                                                                                             | utton.                                          |                                                                        |                                                         |              |
|      |             | 3.                                         | PRESS "RESET" and "O"                                                                                              | simultane                                       | eously.                                                                |                                                         |              |
| ļ    |             | 4.                                         | TURN Panel Security Ke                                                                                             | yswitch f                                       | ully <u>counter</u> cl                                                 | ockwise.                                                |              |
|      |             | b. In<br>(C                                | Honeywell Computer Room<br>XAO2), RESET CPU B as fo                                                                | (TSC Bsm<br>llows:                              | nt) at CPU B Pro                                                       | OCESSOr                                                 |              |
| 1    |             | 1.                                         | TURN Panel Security Ke                                                                                             | yswitch f                                       | ully clockwise.                                                        |                                                         |              |
| 1    |             | 2.                                         | PRESS "Halt-Run" Pushb                                                                                             | utton.                                          |                                                                        |                                                         |              |
| 1    |             | 3.                                         | PRESS "RESET" and "O"<br><u>CONTINU</u>                                                                            | simultane<br><u>ED</u>                          | eously.                                                                |                                                         |              |

| NO. | A-C | P-46 |
|-----|-----|------|
|-----|-----|------|

KEWAUNEE NUCLEAR POWER PLANT

| TITLE | Abnormal<br>Computer | Honeywell | Plant | Process |  |
|-------|----------------------|-----------|-------|---------|--|
|       | Computer             |           |       |         |  |

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#### 4.2.5.b CONTINUED

|    | 4. TURN Panel Security Keyswitch fully <u>counter</u> clockwise. |
|----|------------------------------------------------------------------|
| c. | At CPU A Processor (CXAO1), START CPU A as follows:              |
|    | 1. TURN Panel Security Keyswitch fully clockwise.                |
|    | 2. PRESS "RESET" and "3" simultaneously.                         |
|    | 3. PRESS "DMD" pushbutton.                                       |
|    | 4. PRESS "HALT-RUN" pushbutton.                                  |
|    | 5. PRESS "INT L/O" pushbutton.                                   |
|    | 6. TURN Panel Security Keyswitch fully <u>counter</u> clockwise. |
| d. | At CPU B Processor (CXAO2), START CPU B as follows:              |
|    | 1. TURN Panel Security Keyswitch fully clockwise.                |
|    | 2. PRESS "RESET" and "3" simultaneously.                         |
|    | 3. PRESS "DMD" pushbutton.                                       |
|    | 4. PRESS "HALT-RUN" pushbutton.                                  |
|    | 5. PRESS "INT L/O" pushbutton.                                   |
|    | 6. TURN Panel Security Keyswitch fully <u>counter</u> clockwise. |
| e. | UPDATE manual values per Step 4.1.2.                             |
| f. | RESTORE Control Room functions per Step 4.1.3.                   |
|    |                                                                  |
|    |                                                                  |
|    |                                                                  |
|    |                                                                  |
|    |                                                                  |
|    | c.<br>d.<br>f.                                                   |

| WISCONSIN PUBLIC SERVICE CORPORATION |            | N PUBLIC SERVICE CORPORATION                                                                                                                              | <b>NO.</b> A-CP-46                                 |  |  |  |
|--------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT         |            | UNEE NUCLEAR POWER PLANT                                                                                                                                  | TITLE Abnormal Honeywell Plant Process<br>Computer |  |  |  |
|                                      | 0          | PERATING PROCEDURE                                                                                                                                        | DATE APR 08 2004 PAGE 5 of 1                       |  |  |  |
|                                      |            |                                                                                                                                                           |                                                    |  |  |  |
| 4.3                                  | <u>Pro</u> | <u>ogram Monitor Hardware Failure o</u>                                                                                                                   | <u>)ccurs:</u>                                     |  |  |  |
|                                      | 1.         | Only indication of Program Mon<br>PPCS CPU ABNORMAL (47024-K).                                                                                            | nitor Hardware Failure is annunciator              |  |  |  |
|                                      | 2.         | To ensure Honeywell is operati                                                                                                                            | ing, VERIFY following:                             |  |  |  |
|                                      |            | a. Operators Keyboard is func                                                                                                                             | ctional.                                           |  |  |  |
|                                      |            | b. Cursor remains white.                                                                                                                                  |                                                    |  |  |  |
|                                      |            | c. Alarm Video Screen time di                                                                                                                             | isplay is updating.                                |  |  |  |
|                                      | 3.         | NOTIFY Nuclear Computer Group                                                                                                                             | during normal work hours.                          |  |  |  |
| 4.4                                  | <u>Hor</u> | eywell Program Malfunction occu                                                                                                                           | <u>irs:</u>                                        |  |  |  |
|                                      | 1.         | TLA-17 PPCS PROGRAM ABNORMAL (47033-42) indicates program malfunction.                                                                                    |                                                    |  |  |  |
|                                      | 2.         | Check Alarm Typer to identify                                                                                                                             | malfunctioning program.                            |  |  |  |
|                                      | 3.         | <u>IF</u> any of the following programs are affected, NOTIFY Nuclear<br>Computer Group immediately <u>AND</u> PERFORM applicable actions per<br>Step 4.5: |                                                    |  |  |  |
|                                      |            | a. Program 166, Rod Supervisi                                                                                                                             | ion - refer to Step 4.5.1                          |  |  |  |
|                                      |            | b. Program 176, Thermal Outpu                                                                                                                             | uts - refer to Step 4.5.3                          |  |  |  |
|                                      |            | c. Program 198, Xenon & Samar<br>Step 4.5.4                                                                                                               | rium Calculations - refer to                       |  |  |  |
|                                      |            | d. Program 188, Safety Assess<br>Step 4.5.7                                                                                                               | sment System Part 1 - refer to                     |  |  |  |
|                                      |            | e. Program 190, Safety Assess<br>Step 4.5.7                                                                                                               | sment System Part 2 – refer to                     |  |  |  |
|                                      |            |                                                                                                                                                           |                                                    |  |  |  |
|                                      |            | CONTINU                                                                                                                                                   | JED                                                |  |  |  |
|                                      |            |                                                                                                                                                           |                                                    |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>NO.</b> A-CP-46                                                                                                                                                                                                                                                                                                                                                   |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | TITLE Abnormal Honeywell Plant Process<br>Computer                                                                                                                                                                                                                                                                                                                   |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | DATE APR 08 2004 PAGE 6 of 19                                                                                                                                                                                                                                                                                                                                        |  |  |  |
| 4.4         CONTINUED         4. IF any of the following program<br>Computer Group during normal we<br>a. Program 178. Thermocouple (<br>b. Program 181. One Minute Ave<br>c. Program 182. Core Tilt Mone<br>d. Program 186. General Data (<br>e. Program 206. Data Interface<br>4.5 IF Honeywell Computer is out of see<br>malfunctioning. PERFORM following scompleted Data Sheets to SP-87-125         1. Rod Supervision (TS 3.10.i and<br>a. RECORD individual rod positi<br>1. Once every 8 hours.         2. After a load change >10<br>3. After rod motion >24 st<br>2. Core Average Temperature (TS 3<br>a. RECORD RCS Tave temperature<br>3. Thermal Output (TS Table 4.1-1) | DATE APR 08 2004 PAGE 6 of 19<br>ms are affected. NOTIFY Nuclear<br>ork hours:<br>Calculations<br>erages<br>itor<br>Link<br>e Program<br>rvice <u>OR</u> required programs are<br>steps as applicable and ATTACH<br>or SP-87-149.<br>TS Table 4.1-1):<br>tions on Data Sheet 1.<br>D% power.<br>teps.<br>.10.k):<br>es once every 12 hours on SP-87-125.<br>):<br>ED |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                    | <b>NO.</b> A-CP-46                                                                                                                                               |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                            | TITLE Abnormal Honeywell Plant Process<br>Computer                                                                                                               |  |  |  |
| OPERATING PROCEDURE .                                                                                                                                                   | DATE APR 08 2004 PAGE 7 of 19                                                                                                                                    |  |  |  |
| 4.5.3<br><u>CONTINUED</u>                                                                                                                                               |                                                                                                                                                                  |  |  |  |
| <u>NOTE</u> : While the PPCS is Out<br>THERMAL POWER HIGH (47<br>GREATER THAN UFMD LIMI<br>available.                                                                   | of Service TLA-11, REACTOR<br>033-31) <u>AND</u> TLA-28, POWER<br>T (47034-23), are <u>NOT</u>                                                                   |  |  |  |
| <u>NOTE</u> : The ARTO Computer show<br>determining the Reactor<br>PPCS is out of service<br>factors for the ARTO C<br>the PPCS, a slight dif<br>calculated thermal out | ld be used for trending and<br>r Thermal Output when the<br>. Because the correction<br>omputer are different than<br>ference may be noted in the<br>put values. |  |  |  |
| <u>NOTE</u> : Operation at the curre<br>continue for up to 24<br>calorimetric performed<br>becoming out-of-servic                                                       | nt reactor power may<br>hours from the last<br>per SP-87-125 prior to PPCS<br>e.                                                                                 |  |  |  |
| a. <u>IF</u> reactor power is great<br>increase reactor power ab                                                                                                        | er than 96.5%, do <u>NOT</u><br>ove its current value.                                                                                                           |  |  |  |
| b. <u>IF</u> ARTO Computer is avail<br>following:                                                                                                                       | able for trending, PERFORM the                                                                                                                                   |  |  |  |
| 1. At ARTO Computer, OPE                                                                                                                                                | N ARTO Screen.                                                                                                                                                   |  |  |  |
| 2. On ARTO Screen, VERIF<br>selected.                                                                                                                                   | Y correct FW Flow Channels are                                                                                                                                   |  |  |  |
| 3. On ARTO Screen, VERIF<br>used.                                                                                                                                       | Y correct Blowdown Value is being                                                                                                                                |  |  |  |
| 4. USE available ARTO Co<br>Hour, and One Minute<br>plant operating limit                                                                                               | mputer Trends (i.e., Eight Hour, One<br>Averages) to maintain power within<br>s using the following guidance:                                                    |  |  |  |
| A. <u>IF</u> incorrect FW F<br>value in Step 4.5<br>following guidanc                                                                                                   | low Channel was selected <u>OR</u> Blowdown<br>.3.b.3 was <u>NOT</u> correct, USE the<br>e:                                                                      |  |  |  |
| 1. Do <u>NOT</u> add po<br>for the first                                                                                                                                | sitive reactivity for burnup control<br>two hours.                                                                                                               |  |  |  |
| <u>CONTIN</u>                                                                                                                                                           | <u>UED</u>                                                                                                                                                       |  |  |  |

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| WISCONSIN PUBLIC SERVICE CORPORAT                                             | TION NO. A-CP-46                                                                                                                                   |  |  |  |
|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLAN                                                   | T Abnormal Honeywell Plant Process<br>Computer                                                                                                     |  |  |  |
| OPERATING PROCEDURE                                                           | DATE APR 08 2004 PAGE 8 of 19                                                                                                                      |  |  |  |
|                                                                               |                                                                                                                                                    |  |  |  |
| 4.5.3.b.4.A<br>- <u>CONTINUED</u>                                             |                                                                                                                                                    |  |  |  |
| 2. After the<br>Reactor<br>the next                                           | e first two hours, MAINTAIN One Hour<br>Thermal Average less than 1772 MWth for<br>six hours.                                                      |  |  |  |
| 3. <u>GO</u> <u>TO</u> St                                                     | ep 4.5.3.b.4.C                                                                                                                                     |  |  |  |
| B. <u>IF</u> ARTO Comp<br>1772 MWth at<br>do <u>NOT</u> add p<br>Average is 1 | uter Eight Hour Average is greater than<br>the time PPCS became out of service,<br>ositive reactivity until ARTO Eight Hour<br>ess than 1772 MWth. |  |  |  |
| C. MAINTAIN ART<br>1772 MWth un                                               | O Computer Eight Hour Average less than<br>til PPCS is returned to service.                                                                        |  |  |  |
| c. <u>IF</u> PPCS <u>AND</u> the ARTO<br>the following:                       | Computer are both out of service, PERFORM                                                                                                          |  |  |  |
| <ol> <li>For the first 24<br/>performed per SP<br/>out-of-service,</li> </ol> | For the first 24 hours since the last calorimetric performed per SP-87-125 prior to PPCS becoming out-of-service, PERFORM the following:           |  |  |  |
| A. CALCULATE reaution of the all Heat Balance                                 | actor thermal power hourly per SP-87-125<br>ternate method of calculating Reactor                                                                  |  |  |  |
| B. <u>IF</u> reactor p<br>increase rea                                        | ower is greater than 96.5%, do <u>NOT</u><br>ctor power above its current value.                                                                   |  |  |  |
| C. Before exceed<br>performed pr<br>ENSURE react                              | ding 24 hours since the last SP-87-125<br>ior to PPCS becoming out-of-service,<br>or power is less than or equal to 96.5%                          |  |  |  |
| 2. After the first performed per SP out-of-service,                           | fter the first 24 hours since the last calorimetric<br>erformed per SP-87-125 prior to PPCS becoming<br>ut-of-service, PERFORM the following:      |  |  |  |
| A. CALCULATE rea<br>SP-87-125 us<br>Reactor Heat                              | actor thermal power every two hours per<br>ing the alternate method of calculating<br>Balance.                                                     |  |  |  |
| B. MAINTAIN rea                                                               | ctor power less than or equal to 96.5%.                                                                                                            |  |  |  |
| <u>C</u>                                                                      | ONTINUED                                                                                                                                           |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NO. A                                                                                                                                                                                                                                               | -CP-46                                                                                                                                                                                                                                                                                                                         |                                                                                                                                               |              |  |
|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                     | TITLE Abnormal Honeywell Plant Process<br>Computer                                                                                                                                                                                                                                                                             |                                                                                                                                               |              |  |
| OPERATING                                                                                                                                    | PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | DATE                                                                                                                                                                                                                                                | APR 08 2004                                                                                                                                                                                                                                                                                                                    | PAGE 9                                                                                                                                        | <b>of</b> 19 |  |
| 4.5.3<br><u>CONTINUED</u><br>d. <u>IF</u> Pl<br>calor<br>out-1<br>1.<br>2.<br>e. <u>WHEN</u><br><u>NOTE</u><br>1.<br>2.<br><u>NOTE</u><br>3. | PCS is <u>NOT</u> returned to<br>rimetric performed per<br>of-service, PERFORM th<br><u>IF</u> ARTO Computer is in<br>or equal to 1749 MWt.<br><u>IF</u> ARTO Computer is <u>NO</u><br>than or equal to 96.5%<br>PPCS is returned to s<br>: Feedwater flow and<br>factors may take up<br>sufficient data for<br>and RTO 1 minute av<br>[PCR015437]<br>REVIEW PPCS Graphics D<br>Output program is func<br><u>GO TO</u> A-CP-46A. [PCR01<br>: After RTO 1 minute<br>15 minute average <u>A</u><br>provide good data a<br>collect sufficient<br><u>WHEN</u> UFMD Correction F<br>average is good, APPLY<br>[PCR015437] | service<br>SP-87-12<br>e followi<br>service,<br><u>I</u> in serv<br>ervice, P<br>temperatu<br>to five<br>UFMD cor<br>erage to<br>isplays 6<br>tioning p<br>3311]<br>average i<br><u>ND</u> RTO 8<br>s their r<br>data. [PC<br>actors ar<br>UFMD Ope | within 24 hours<br>5 prior to PPCS<br>ng:<br>REDUCE power t<br>ice. REDUCE pow<br>ERFORM the foll<br>re correction<br>hours to collec<br>rection factors<br>provide good da<br>0 and 61 to ens<br>roperly. [PCR01<br>s good. RT0<br>hour average wi<br>espective buffe<br>R015437]<br>e good <u>AND</u> RT0<br>rating Limits p | of the last<br>becoming<br>o less than<br>ver to less<br>owing:<br>t<br>ita.<br>sure Thermal<br>4879]<br>11<br>ers<br>1 minute<br>per N-0-03. |              |  |
| 4. Estimate                                                                                                                                  | d Critical Position:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                               |              |  |
| a. Refe<br>ECP.                                                                                                                              | r to N-CRD-49D, for an                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | alternat                                                                                                                                                                                                                                            | e method of cal                                                                                                                                                                                                                                                                                                                | culating an                                                                                                                                   |              |  |
| 5. RHR Syste                                                                                                                                 | em Monitor:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                               |              |  |
| a. <u>IF</u> Ri<br>para                                                                                                                      | HR System is in servic<br>meters each hour on Da                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | e for RCS<br>ta Sheet                                                                                                                                                                                                                               | cooling, RECOR<br>2.                                                                                                                                                                                                                                                                                                           | RD RHR System                                                                                                                                 | n            |  |
|                                                                                                                                              | <u>CONTINU</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ED                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                               |              |  |
|                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                |                                                                                                                                               |              |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>NO.</b> A-CP-46                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | TITLE Abnormal Honeywell Plant Process<br>Computer                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DATE APR 08 2004 PAGE 10 of 19                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 4.5.5         CONTINUED         b. IF RHR System is in service<br>reduced inventory condition<br>& hour on Data Sheet 2.         6. TLA-15 RMS ABOVE NORMAL (47033:<br>NOTE: Refer to GNP-01.21.04, I<br>Monitoring Program, for<br>alternate monitoring mediatering and the secondary Leak I<br>Continuous Radiation Monitor         NOTE: IF Nuclear Computer Group is<br>Manager may restart SPDS.         7. SAS Units:         a. NOTIFY Nuclear Computer Group<br>immediately.         c. IF both SPDS are down, REST<br>immediately.         c. IF both SPDS units are down<br>following 8 hours.         d. SPDS Unit may be restarted         1. OPEN rear cabinet door         2. TURN OFF Isobar Surge S         3. After 10 seconds, IHEN<br>power switch.         4. Message, "Waiting For I<br>screen, WHEN the unit | DATE APR 08 2004 PAGE 10 of 19<br>e for RCS cooling AND RCS is in<br>n, RECORD RHR System parameters each<br>-35):<br>Primary-to-Secondary Leak<br>sampling frequencies and<br>thods.<br>sampling per CHEM-59.003.<br>Rate Data, for No Operable<br>or.<br>s unavailable. Shift<br>oup.<br>TART at least one SPDS unit<br>n >8 hours, NOTIFY NRC within<br>as follows:<br>Suppressor power switch.<br>TURN ON Isobar Surge Suppressor<br>Data Link* will appear on the<br>is ready for restart. |
| applicable SPDS Unit.<br><u>CONTINU</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                   | <b>NO.</b> A-CP-46                                                                                             |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                           | TITLE Abnormal Honeywell Plant Process<br>Computer                                                             |
| OPERATING PROCEDURE                                                                                                                    | DATE APR 08 2004 PAGE 11 of 19                                                                                 |
| 4.5<br><u>CONTINUED</u><br>8. TLA-25 SURVEILLANCE PROCEDURE<br>operational and increased atten<br>shall be implemented.                | PERFORMANCE (47034-15), will <u>NOT</u> be<br>ntion to SP performance scheduling                               |
| 9. CDRS 1A CW Inlet T DY MX (T251                                                                                                      | 3G):                                                                                                           |
| a. RECORD local Main Condense<br>one of following indicator<br>every six (6) hours, on Tu<br>Equipment Operator Log.                   | r Water Box inlet temperature from<br>s (12125, 12126, 12127, or 12128),<br>rbine Building Basement section of |
| <u>NOTE: IF</u> Honeywell is reloaded, tempor restored to old data base values                                                         | ary changes will be<br>•                                                                                       |
| <u>NOTE</u> : <u>IF</u> a value will be inserted, a W<br>Step 4.6.5. The Work Request wi<br>performed to determine the impac<br>value. | ork Request is required per<br>11 ensure an evaluation is<br>t prior to inserting the                          |
| <u>NOTE</u> : <u>IF</u> values, alarm setpoints, or p<br>controlled by a procedure, a Wor                                              | oints deleted from scan are<br>k Request is <u>NOT</u> required.                                               |
| <u>NOTE: IF</u> computer points become invali<br>Work Request is <u>NOT</u> required to                                                | d due to plant conditions,a<br>delete the point from scan.                                                     |
| 4.6 <u>IF</u> computer related problems exist<br>changed <u>OR</u> computer input is provi<br>following:                               | <u>OR</u> computer data needs to be<br>ding bad data, PERFORM the                                              |
| <ol> <li>VERIFY inaccurate or questional<br/>board or other backup indication</li> </ol>                                               | ble data by comparison with control<br>ons.                                                                    |
| <u>NOTE</u> : The following step is <u>NOT</u> recalibration/surveillance pe completed during ONE Operat                               | equired during scheduled<br>riods that will be<br>ing Shift.                                                   |
| 2. <u>IF</u> data points identified on A<br>invalid <u>AND</u> are <u>NOT</u> identified<br>PERFORM following: [PCR011716              | ttachment A are determined to be<br>as questionable (?) on PPCS,<br>, PCR013725, PCR014854]                    |
| a. ENSURE data point(s) is re<br>organization from using it<br><u>CONTINU</u>                                                          | moved from scan to prevent EP<br><u>ED</u>                                                                     |

| WISCONSIN PUBLIC SERVICE CORPORATION |                                                                                                                                                                                                                                                          | <b>NO.</b> A-CP-46                                                                                                                               |                         |  |  |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--|--|
| KEWAUNEE NUCLEAR POWER PLANT         |                                                                                                                                                                                                                                                          | TITLE Abnormal Honeywell Plant Process<br>Computer                                                                                               |                         |  |  |
| 0                                    | PERATING PROCEDURE                                                                                                                                                                                                                                       | DATE APR 08 2004 PAGE 12 of 19                                                                                                                   |                         |  |  |
| 4.6.2<br>CONTINUED                   |                                                                                                                                                                                                                                                          |                                                                                                                                                  |                         |  |  |
|                                      | b. REQUEST a Danger Tagout id<br>point to be placed on PPCS<br>and on Control Rooom ARTO I                                                                                                                                                               | entifying the invalid PF<br>monitors in Control Roc<br>Monitor, as required.                                                                     | PCS data<br>om and TSC. |  |  |
|                                      | c. REVIEW EPIP AD-02, for abi<br>classifications. [PCR01469]                                                                                                                                                                                             | lity to make Emergency F<br>2]                                                                                                                   | Plan event              |  |  |
| 3.                                   | <u>IF</u> inaccurate or questionable<br>Annunciators associated with To<br>INITATE contingency actions pe                                                                                                                                                | data invalidates Control<br>echnical Specification r<br>r Step 4.5.                                                                              | Room<br>requirements,   |  |  |
| 4.                                   | <u>IF</u> computer point impacts Technical Specifications or other regulatory requirements <u>AND NO</u> contingency actions are identified, immediately INITLATE action to correct the condition: [PCR013725]                                           |                                                                                                                                                  |                         |  |  |
|                                      | a. INITIATE Work Request per                                                                                                                                                                                                                             | Step 4.6.5.                                                                                                                                      |                         |  |  |
|                                      | b. ENSURE Nuclear Computer Graits affect on Technical Sparser<br>requirements.                                                                                                                                                                           | b. ENSURE Nuclear Computer Group is informed of invalid point and<br>its affect on Technical Specifications or other regulatory<br>requirements. |                         |  |  |
| 5.                                   | Corrective actions should include initiating a Work Request per<br>GNP-08.02.14, Work Screening and Classification. The Work Request<br>shall address the following conditions and the impact of this<br>change on Technical Specification requirements: |                                                                                                                                                  |                         |  |  |
|                                      | a. Deleting a point from scan.                                                                                                                                                                                                                           |                                                                                                                                                  |                         |  |  |
|                                      | b. Changing alarm setpoints.                                                                                                                                                                                                                             |                                                                                                                                                  |                         |  |  |
| 1                                    | c. Inserting a value.                                                                                                                                                                                                                                    |                                                                                                                                                  |                         |  |  |
| -                                    |                                                                                                                                                                                                                                                          |                                                                                                                                                  |                         |  |  |
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|                                      |                                                                                                                                                                                                                                                          |                                                                                                                                                  |                         |  |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION | NO. A-CP-46<br>TITLE Abnormal Honeywell Plant Process<br>Computer |             |      |    |              |
|--------------------------------------|-------------------------------------------------------------------|-------------|------|----|--------------|
| KEWAUNEE NUCLEAR POWER PLANT         |                                                                   |             |      |    | ocess        |
| OPERATING PROCEDURE                  | DATE                                                              | APR 08 2004 | PAGE | 13 | <b>of</b> 19 |
|                                      |                                                                   |             |      |    | ·            |
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| WISCONSIN PUBLIC SERVICE CORPORATION | NO. A-CP-46<br>TITLE Abnormal Honeywell Plant Process<br>Computer |              |  |  |
|--------------------------------------|-------------------------------------------------------------------|--------------|--|--|
| KEWAUNEE NUCLEAR POWER PLANT         |                                                                   |              |  |  |
| OPERATING PROCEDURE                  | DATE APR 08 2004                                                  | PAGE 14 of 1 |  |  |
|                                      |                                                                   |              |  |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION | NO. A | N-CP-46                    |                      |
|--------------------------------------|-------|----------------------------|----------------------|
| KEWAUNEE NUCLEAR POWER PLANT         | TITLE | Abnormal Honey<br>Computer | well Plant Process   |
| OPERATING PROCEDURE                  | DATE  | APR 08 2004                | <b>PAGE</b> 15 of 19 |
|                                      |       |                            |                      |
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| WISCONSIN PI                                   | UBLIC SERVICE CORPORATION                                                                                                    | NO. A                       | -CP-46                     |                |              |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------|----------------------------|----------------|--------------|
| KEWAUNI                                        | EE NUCLEAR POWER PLANT                                                                                                       | TITLE                       | Abnormal Honey<br>Computer | well Plant P   | rocess       |
| OPER                                           | ATING PROCEDURE                                                                                                              | DATE                        | APR 08 2004                | <b>PAGE</b> 16 | <b>of</b> 19 |
|                                                | <u>ATTACHMENT A</u><br>(Page                                                                                                 | - <u>ERDS DA</u><br>1 of 4) | <u>TA POINTS</u>           |                |              |
| <u>ERDS_DATA_POIN</u><br><u>POINT_ID</u>       | T <u>LIBRARY TABLE INDEX</u> (Refer<br><u>GENERIC DESCRIPTION</u>                                                            | to Figur                    | e EPMPFG-090.05            | 5-00)          |              |
| ERDSDATATYPE<br>NOT AVAIL.<br>F0626A<br>F0128G | ERDS PLANT/SIMULATOR DATA<br>CONTAINMENT SUMP NARROW RNG<br>LOW PRESS SAFETY INJECTION I<br>PRIMARY SYSTEM CHARGING FLOW     | LVL<br>FLOW<br>W            |                            |                |              |
| F8001G<br>F8002G<br>F8003A<br>F8004A           | HIGH PRESS SAFETY INJECTION<br>HIGH PRESS SAFETY INJECTION<br>STM GEN A AUXILIARY FW FLOW<br>STM GEN B AUXILIARY FW FLOW     | FLOW<br>FLOW                |                            |                |              |
| F8007G<br>F8008G<br>F8009G<br>F8010G           | REACTOR COOLANT FLOW LOOP A<br>REACTOR COOLANT FLOW LOOP B<br>STM GEN A MAIN FEEDWATER FLO<br>STM GEN B MAIN FEEDWATER FLO   | OW<br>OW                    |                            |                |              |
| G0009G<br>G0014G<br>G0015G<br>G0018G           | RAD LEVEL OF RCS LETDOWN LIN<br>RADIOACTIVITY OF RELEASED GA<br>CONDENSER AIR EJECTOR RADIOA<br>RADIOACT. OF RELEASED LIQUID | NE<br>ASSES<br>ACT<br>DS    |                            |                |              |
| G0019G<br>G0032G<br>G0034G<br>G0040G           | STM GEN BLOWDOWN RAD LEVEL<br>STM GEN A STEAM LINE RAD LE'<br>STM GEN B STEAM LINE RAD LE'<br>RADIATION LEVEL IN CONTAINM    | VEL<br>VEL<br>ENT           |                            |                |              |
| 11100G<br>L8001A<br>L8008A<br>L8013G           | HIGHEST TEMP AT THE CORE EX<br>CONTAINMENT SUMP WIDE RNG L<br>BORATED WATER STORAGE TANK I<br>STEAM GENERATOR A WATER LEVI   | IT<br>VL<br>LEVEL<br>EL     |                            |                |              |
| L8014G<br>L8015G<br>L8024G<br>M0001A           | STEAM GENERATOR B WATER LEV<br>PRIMARY SYSTEM PRESSURIZER D<br>REACTOR VESSEL WATER LEVEL<br>WIND SPEED AT REACTOR SITE      | EL<br>LEVEL                 |                            |                |              |
| M0002G<br>M0004A<br>N7035G<br>N8020G           | WIND DIRECTION AT REACTOR SI<br>AIR STABILITY AT REACTOR SI<br>NUCLEAR INSTRU. INTERMED. RA<br>NUCLEAR INSTRUMENTS, POWER D  | ITE<br>TE<br>ANGE<br>RANGE  |                            |                |              |
| N8031G<br>P8021G<br>P8004A<br>P8022G           | NUCLEAR INSTRU. SOURCE RANG<br>STEAM GENERATOR A PRESSURE<br>CONTAINMENT PRESSURE<br>STEAM GENERATOR B PRESSURE              | E                           |                            |                |              |

| WISCONSIN                               | PUBLIC SERVICE CORPORATION                                                                                                | NO. A                       | A-CP-46                    |               |              |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------|----------------------------|---------------|--------------|
| KEWAU                                   | NEE NUCLEAR POWER PLANT                                                                                                   | TITLE                       | Abnormal Honey<br>Computer | vwell Plant P | rocess       |
| OPE                                     | ERATING PROCEDURE                                                                                                         | DATE                        | APR 08 2004                | PAGE 17       | <b>of</b> 19 |
|                                         | ATTACHMENT A (Page                                                                                                        | <u>- ERDS D/</u><br>2 of 4) | ATA POINTS                 |               |              |
| <u>ERDS_DATA_PO</u><br><u>POINT_ID</u>  | INT LIBRARY TABLE INDEX (contin<br>GENERIC DESCRIPTION                                                                    | nued)                       |                            |               |              |
| P8023G<br>T0020G<br>T0406A<br>T0419A    | REACTOR COOLANT SYSTEM PRES<br>SATURATION TEMP-HIGHEST CET<br>STM GEN A OUTLET TEMPERATURI<br>STM GEN A INLET TEMPERATURE | SURE<br>E                   |                            |               |              |
| T0426A<br>T0439A<br>T1000A<br>X8001A    | STM GEN B OUTLET TEMPERATUR<br>STM GEN B INLET TEMPERATURE<br>CONTAINMENT TEMPERATURE<br>CONTAINMENT HYDROGEN CONCEN      | E<br>•                      |                            |               |              |
| MISCELLANEOU                            | S EMERGENCY PLAN DATA POINTS:                                                                                             |                             |                            |               |              |
| 19075A                                  | FOREBAY LEVEL                                                                                                             |                             |                            |               | i            |
| RADIOLOGICAL                            | DATA POINTS:                                                                                                              |                             |                            |               |              |
| <u>ALL</u> PPCS d                       | ata points with a prefix of "G                                                                                            | ۳.                          |                            |               |              |
| <u>METEOROLOGIC.</u><br><u>POINT ID</u> | AL DATA POINTS:<br>GENERIC DESCRIPTION                                                                                    |                             |                            |               |              |
| M0007A<br>M0023A<br>M0301G<br>M0302G    | PRI TWR - 10M SIGMA<br>BCKUP TWR - 10M SIGMA<br>PRI TWR-60M WND SPD<br>PR T-60M WND DIR FRM                               |                             |                            |               |              |
| M0303G                                  | PRI TWR-10M AMB T                                                                                                         |                             |                            |               |              |
| M0308G                                  | PRI TWR-10M WND SPD                                                                                                       |                             |                            |               |              |
| M0321G<br>M0322G<br>M0322G              | BCK TWR-10M WND DIR FRM<br>BCK TWR-10M WND DIR FRM<br>BCK TWR-10M AMB T                                                   |                             |                            |               |              |
| <u>DATA POINTS</u><br><u>POINT_ID</u>   | <u>THAT IMPACT GENERATED POINTS</u><br><u>GENERIC DESCRIPTION</u>                                                         |                             |                            |               |              |
| F0128A<br>F0411G<br>F0412G<br>F0413G    | CHG PUMP DISCH HDR FLOW<br>RCLA CHANNEL 1 FLOW<br>RCLA CHANNEL 2 FLOW<br>RCLA CHANNEL 3 FLOW                              |                             |                            |               |              |
|                                         |                                                                                                                           |                             |                            |               |              |

| WISCONSIN                             | PUBLIC SERVICE CORPORATION                                          | NO. A     | A-CP-46                    |               |              |
|---------------------------------------|---------------------------------------------------------------------|-----------|----------------------------|---------------|--------------|
| KEWAU                                 | NEE NUCLEAR POWER PLANT                                             | TITLE     | Abnormal Honey<br>Computer | /well Plant P | 'rocess      |
| OPI                                   | ERATING PROCEDURE                                                   | DATE      | APR 08 2004                | PAGE 18       | <b>of</b> 19 |
|                                       | ATTACHMENT A                                                        | - ERDS DA | TA POINTS                  |               |              |
|                                       | (Page                                                               | 3 of 4)   |                            |               |              |
| <u>DATA_POINTS</u><br><u>POINT_ID</u> | <u>THAT IMPACT GENERATED POINTS</u> (<br><u>GENERIC DESCRIPTION</u> | continued | 1)                         |               |              |
| F0414G                                | RCLB CHANNEL 1 FLOW                                                 |           |                            |               |              |
| F0415G                                | RCLB CHANNEL 3 FLOW                                                 |           |                            |               | I            |
| F0416G                                | RCLB CHANNEL 4 FLOW                                                 |           |                            |               |              |
| F0466A                                | S/G A CHAN 1 FW FLOW                                                |           |                            |               |              |
| FOA66F                                | S/C A CHAN 1 EW E CORR                                              |           |                            |               |              |
| F0466G                                | S/G A CHAN 1 FW FLOW                                                |           |                            |               |              |
| F0467A                                | S/G A CHAN 2 FW FLOW                                                |           |                            |               |              |
| F0467F                                | S/G A CHAN 2 FW F CORR                                              |           |                            |               | I            |
| FOACTO                                | CA CHAN 2 EU ELOU                                                   |           |                            |               |              |
| F040/G                                | S/G A GHAN 2 FW FLOW<br>C/C R CHAN 3 FW FLOW                        |           |                            |               |              |
| F0476F                                | S/G B CHAN 3 FW F CORR                                              |           |                            |               |              |
| F0476G                                | S/G B CHAN 3 FW FLOW                                                |           |                            |               |              |
|                                       |                                                                     |           |                            |               |              |
| F0477A                                | S/G B CHAN 4 FW FLOW                                                |           |                            |               |              |
| F04//F                                | S/G B CHAN 4 FW F CUKK                                              |           |                            |               |              |
| F0477G                                | TRN R RHR F TO RCS-CALC                                             |           |                            |               |              |
| 1002/0                                |                                                                     |           |                            |               |              |
| F6006G                                | UFM/VENTURI RATIO TRN A                                             |           |                            |               |              |
| F6007G                                | UFM/VENTURI RATIO TRN B                                             |           |                            |               |              |
| F6008G                                | S/G A CHAN 1 FW FLOW UFM                                            |           |                            |               |              |
| F6009G                                | S/G B CHAN 1 FW FLOW UFM                                            |           |                            |               |              |
| F8001A                                | SI COLD LEG INJ FLOW                                                |           |                            |               |              |
| F8002A                                | SI RX VESSEL INJ FLOW                                               |           |                            |               |              |
| F8003G                                | SI TOTAL INJ FLOW                                                   |           |                            |               |              |
| F8101G                                | TOTAL S/G FW FLOW                                                   |           |                            |               |              |
| F8102G                                | TOTAL S/G AFW FLOW                                                  |           |                            |               |              |
| F9466G                                | S/G A FW FLOW EXP FACTOR                                            |           |                            |               |              |
| F9476G                                | S/G B FW FLOW EXP FACTOR                                            |           |                            |               |              |
| L0400G                                | PRZR LEVEL DEVIATION                                                |           |                            |               |              |
| TODOR                                 | הע זוכו דות הסאו א עוס                                              |           |                            |               |              |
| 1.8020B                               | KA VOL LVL IKN A AIU<br>Dy Vegget, levet, - teatn a                 |           |                            |               |              |
| L8021B                                | RX VESSEL LEVEL TRN B X10                                           |           |                            |               |              |
| L8021G                                | RX VESSEL LEVEL - TRAIN B                                           |           |                            |               |              |
|                                       |                                                                     |           |                            |               |              |
| MODOLA                                | PRI TWR - 60M WIND SPEED                                            |           |                            |               |              |
| MODO2A                                | PRI TWR - GOM WIND SPEED<br>PRI TWR - GOM WIND SPEED                |           |                            |               |              |
| MOOO2L                                | PRI TWR - 60M WIND > 360                                            |           |                            |               |              |
|                                       |                                                                     |           |                            |               |              |

| WISCONSIN                             | PUBLIC SERVICE CORPORATION                                                                                  | NO. A                       | -CP-46                     |                |              |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------|----------------------------|----------------|--------------|
| KEWAU                                 | NEE NUCLEAR POWER PLANT                                                                                     | TITLE                       | Abnormal Honey<br>Computer | /well Plant Pr | ocess        |
| OPI                                   | ERATING PROCEDURE                                                                                           | DATE                        | APR 08 2004                | PAGE 19        | <b>of</b> 19 |
|                                       | <u>ATTACHMENT A</u><br>(Page                                                                                | <u>- ERDS DA</u><br>4 of 4) | NTA_POINTS                 |                |              |
| <u>DATA POINTS</u><br><u>POINT ID</u> | <u>THAT IMPACT GENERATED POINTS</u> (4<br><u>GENERIC DESCRIPTION</u>                                        | continued                   | 1)                         |                |              |
| M0003A<br>M0004A<br>M0008A<br>M0009A  | PRI TWR - 10M AMBIENT TEMP<br>PRI TWR - DELTA TEMP<br>PRI TWR - 10M WIND SPEED<br>PRI TWR - 10M WD DIR FROM |                             |                            |                |              |
| M0021A<br>M0022A<br>M0024A<br>N1041A  | BCK TWR - 10M WIND SPEED<br>BCK TWR - 10M WD DIR FROM<br>BCK TWR - 10M AMBIENT TEMP<br>PR N-41 FLUX         |                             |                            |                |              |
| N1042A<br>N1043A<br>N1044A            | PR N-42 FLUX<br>PR N-43 FLUX<br>PR N-44 FLUX                                                                |                             |                            |                |              |
| N7035A<br>N8031A<br>P0420A<br>P2901A  | IR N-35 FLUX<br>SR N-31 COUNTS<br>RCLA SYSTEM PRESS (WR)<br>ATMOSPHERIC PRESSURE                            |                             |                            |                |              |
| P8021C<br>P8022C<br>P8024G<br>R1001G  | PC-S/G A STEAM PRESS<br>PC-S/G B STEAM PRESS<br>SAT PRESS FOR RCLA C/L<br>HEAT UP RATE - HOTTEST TC         |                             |                            |                |              |
| T0013G<br>T0014G<br>T0022G<br>T0418A  | PRZR - RCLA DIFF TEMP<br>PRZR - RCLB DIFF TEMP<br>RX SUBCOOLING - MAX THOT<br>S/G A FEED WATER TEMP         |                             |                            |                |              |
| T0438A<br>T0440G<br>T0441G<br>T0442G  | S/G B FEED WATER TEMP<br>RCL WR AVERAGE TCOLD<br>RCL WR AVERAGE THOT<br>RCL WR TAVE FR AVG TH&TC            |                             |                            |                |              |
| T0443G<br>T0452G<br>T0454G<br>T0456G  | RCL WR DT FROM AVG TH&TC<br>CALCULATED REACTOR THOT<br>CALCULATED REACTOR TCOLD<br>MAXIMUM THOT             |                             |                            |                |              |
| T0460G<br>T8001G<br>T8002G            | COLDEST RCS TEMPERATURE<br>SAT TEMP FOR S/G A PRESS<br>SAT TEMP FOR S/G B PRESS                             |                             |                            |                |              |
|                                       | ·                                                                                                           |                             |                            |                |              |

|                 |             |             | R   | OD POS      | ITION | LOG         |          | DAT         | ſE  |             |     |
|-----------------|-------------|-------------|-----|-------------|-------|-------------|----------|-------------|-----|-------------|-----|
| BANK &<br>GROUP | GRID<br>LOC | STEP<br>CTR | RPI | STEP<br>CTR | RPI   | STEP<br>CTR | RPI      | STEP<br>CTR | RPI | STEP<br>CTR | RPI |
|                 | L6          |             |     | (           |       |             |          |             |     |             |     |
| <b>65</b> 4 4   | B8          |             |     | 1           |       |             |          |             |     |             |     |
| CBA-I           | F2          | 1           |     |             |       |             |          |             |     |             |     |
|                 | H12         |             |     |             |       |             |          |             |     |             |     |
|                 | H2          |             |     |             |       |             |          |             |     |             |     |
| CD4 0           | F12         |             |     |             |       |             |          |             |     |             |     |
| CBA-2           | B6          |             |     |             |       |             |          |             |     |             |     |
|                 | L8          |             |     |             |       |             |          |             |     |             |     |
|                 | F6          |             |     |             |       |             |          |             |     |             |     |
| CPD 1           | F8          |             |     |             |       |             |          |             |     |             |     |
|                 | <u>H8</u>   |             |     |             |       |             |          |             |     |             |     |
|                 | H6          |             |     | L           |       | ·           |          |             |     |             | L   |
| CBC-1           | J4          | ļ           |     |             |       |             |          |             |     |             |     |
| CDC-1           | D10         |             |     |             |       |             |          |             |     |             |     |
|                 | D4          |             |     |             |       |             |          |             |     |             |     |
| CBC-2           | G7          |             |     |             |       |             |          |             |     |             |     |
|                 | J10         |             |     |             |       |             |          |             | L   |             |     |
|                 | G3          | Į           |     |             |       |             |          |             |     |             |     |
| CBD-1           | C7          |             |     |             |       |             |          |             |     |             | L   |
|                 | G11         |             |     |             |       |             | <u> </u> |             |     |             | L   |
|                 | <u> </u>    |             |     |             |       |             |          |             |     |             |     |
| SBA-1           | E3          |             |     |             |       |             |          |             | L   |             |     |
|                 | 111         |             |     |             |       |             |          |             |     |             | ļ   |
| SBA-2           | <u>C9</u>   |             |     |             |       |             | L        |             |     |             |     |
|                 | _K5         |             |     |             |       |             |          |             |     |             |     |
|                 | <u>C5</u>   | ŀ           |     |             |       |             |          |             |     |             |     |
| SBB-1           | <u>K9</u>   |             |     |             | L     |             | L        |             |     |             |     |
|                 | E11         | ł           |     |             |       |             |          |             |     |             |     |
|                 | I3          |             | l   |             | I     |             | [        |             |     |             | l   |
| MAX DEV         | VIATION     |             |     | L           |       |             |          |             |     | <br>        |     |

#### DATA SHEET #1

Acceptance Criteria: (Allow 30 minute soak time after rod movement)

≥85% Full Power : 12 steps from bank step counter (TS 3.10.e.1)

<85% Full Power: 24 steps from bank step counter (TS 3.10.e.2)

See A-CRD-49 for corrective actions.

| TIME     |  |  |  |
|----------|--|--|--|
| POWER    |  |  |  |
| INITIALS |  |  |  |

### DATA SHEET #2 RHR SYSTEM PARAMETERS (SHEET 1 OF 2)

.

LOG PUMP PARAMETERS FOR OPERATING PUMPS ONLY. REFER TO A-RHR-34 IF ABNORMAL INDICATIONS ARE OBSERVED.

|      |           |         |      | RHR PUMPS |       |                     |                     |        |          |      | RHR SUCT | & OUTL               | CE             | Ts      |        | _      |       |           |
|------|-----------|---------|------|-----------|-------|---------------------|---------------------|--------|----------|------|----------|----------------------|----------------|---------|--------|--------|-------|-----------|
|      | PUP       | Die     | Cu   |           | MPS   |                     | DDECC               | **PRZR | LDHX     |      | LUME     | TEMP R<br>425        | CDR            | 2 SELEC | TED OR | ** LOC | ALRX  | RY CAVITY |
|      | FLOW      | PRES!   | SURE |           | B     |                     | CAL)                | CAL    | FLOW     | TANK | LEVEL    |                      | OUTLET         |         | MS)    | SIGHT  | GLASS | LEVEL     |
| TIME | F626      | P629    | P628 | 41335     | 41336 | P1634 OR<br>P111819 | P1633 OR<br>P111820 | 1433A  | F134     | L112 | L141     | SUCTION<br>(RED PEN) | (GREEN<br>PEN) |         | в      | IN     | %     | 41337     |
| 0600 |           |         |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 0630 |           |         |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 0700 |           |         |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 0730 |           |         |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 0800 |           |         |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 0830 | $\square$ | $\Box$  |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 0900 |           | $\Box'$ |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 0930 |           |         |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 1000 |           |         |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 1030 |           | $\Box$  |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 1100 |           |         |      |           |       |                     |                     |        | <u> </u> |      |          |                      |                |         |        |        |       |           |
| 1130 |           |         |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 1200 |           |         |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 1230 |           | $\Box$  |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 1300 |           |         |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 1330 |           | $\Box$  |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 1400 |           | $\Box$  |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 1430 |           | $\Box$  |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 1500 |           | $\Box'$ |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 1530 |           |         |      |           |       |                     |                     |        | $\Box$   |      |          |                      |                |         |        |        |       |           |
| 1600 |           | $\Box$  |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 1630 |           |         |      |           |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 1700 |           | $\Box'$ |      | $\Box$    |       |                     |                     |        |          |      |          |                      |                |         |        |        |       |           |
| 1730 |           |         |      | 1 1       | '     |                     | I                   |        |          |      |          |                      |                |         |        | _      |       |           |

Use most accurate indication as dictated by plant conditions, e.g., use low range RHR Suction Press if RCS Press <100 psig</li>
 IF indication NOT on scale, enter NA.

NOTE: IF the Honeywell is available, computer values may be substituted for the appropriate meter indications.

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Initials \_\_\_\_\_ Date

|       |      |       |      | RHR F    | UMPS  |                     |                     |          |       |      |       | RHR SUCT             | & OUTL         | CE      | Ts     |       |                |           |
|-------|------|-------|------|----------|-------|---------------------|---------------------|----------|-------|------|-------|----------------------|----------------|---------|--------|-------|----------------|-----------|
|       | RHR  | DIS   | сн   | A        | MPS   | •suct               | PRESS               | **PRZR   | LD НХ |      | NTROL | TEMP 1<br>425        | CDR<br>51      | 2 SELEC | TED OR | VESSE | AL RX<br>L LVL | RX CAVITY |
| ł     | FLOW | PRESS | SURE | <u> </u> | B     | (LO                 | CAL)                | COLD CAL | FLOW  | TAN  | LEVEL |                      | OUTLET         | 000     | MS)    | SIGHT | GLASS          | LEVEL     |
| TIME  | F626 | P629  | P628 | 41335    | 41336 | P1634 OR<br>P111819 | P1633 OR<br>P111820 | L433A    | F134  | L112 | L141  | SUCTION<br>(RED PEN) | (GREEN<br>PEN) |         | в      | IN    | %              | 41337     |
| 1800  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 1\$30 |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 1900  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 1930  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 2000  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 2030  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 2100  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       | [              |           |
| 2130  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 2200  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 2230  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 2300  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 2330  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 0000  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 0030  |      |       |      |          |       |                     |                     |          |       | _    |       |                      |                |         |        |       |                |           |
| 0100  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 0130  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                | _       |        |       |                |           |
| 0200  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         | l      |       |                |           |
| 0230  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 0300  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 0330  |      | _     | _    |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 0400  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 0430  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 0500  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |
| 0530  |      |       |      |          |       |                     |                     |          |       |      |       |                      |                |         |        |       |                |           |

# DATA SHEET #2 RHR SYSTEM PARAMETERS (SHEET 2 OF 2) LOG PUMP PARAMETERS FOR OPERATING PUMPS ONLY. REFER TO A-RHR-34 IF ABNORMAL INDICATIONS ARE OBSERVED.

Use most accurate indication as dictated by plant conditions, e.g., use low range RHR Suction Press if RCS Press <100 psig</li>
 IF indication NOT on scale, enter NA.

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NOTE: IF the Honeywell is available, computer values may be substituted for the appropriate meter indications.

Initials \_\_\_\_\_ Date

| WISCONSIN PUBLIC SERVICE C                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ORPORATION                                                                                                                                                                                                                                                                              | <b>NO.</b> A-E                                                                                                                                            | DC-38                               | <b>REV</b> Z            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------|
| KEWAUNEE NUCLEAR POW                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | /ER PLANT                                                                                                                                                                                                                                                                               | TITLE S                                                                                                                                                   | bnormal DC S<br>System              | upply and Distribution  |
| OPERATING PROCED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | DURE                                                                                                                                                                                                                                                                                    | DATE (                                                                                                                                                    | OCT 14 2004                         | <b>PAGE 1 of 17</b>     |
| REVIEWED BYStephen                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | N Hull                                                                                                                                                                                                                                                                                  | APPRO                                                                                                                                                     | VED BY                              | Phillip A Short         |
| NUCLEAR XES<br>SAFETY RELATED NO                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | PORC REVIEW<br>REQUIRED                                                                                                                                                                                                                                                                 | ⊠ YES<br>□ NO                                                                                                                                             | SRO APPROV<br>TEMPORARY<br>REQUIRED | AL OF XES<br>CHANGES NO |
| <ul> <li>1.0 <u>INTRODUCTION</u></li> <li>1.1 Procedure describes<br/>System.</li> <li>2.0 <u>SYMPTOMS</u></li> <li>2.1 Control Room Annunci<br/>BRA-102 DC VOLTAGE</li> <li>BRB-102 DC VOLTAGE</li> <li>INSTRUMENT BUS VOL</li> <li>BRA-102 FEEDER BKR</li> <li>BRB-102 FEEDER BKR</li> <li>BRB-104 FEEDER BKR</li> <li>BRD-103 FEEDER BKR</li> <li>BATTERY A CHARGER</li> <li>BATTERY B CHARGER</li> <li>BRC BATTERY SYSTEM</li> <li>BRE BATTERY SYSTEM</li> <li>BRE BATTERY SYSTEM</li> </ul> | actions for ab<br>ators:<br>LOW (47101-A)<br>LOW (47101-B)<br>TAGE LOW (4710<br>UNDERVOLTAGE<br>UNDERVOLTAGE<br>UNDERVOLTAGE<br>UNDERVOLTAGE<br>UNDERVOLTAGE<br>UNDERVOLTAGE<br>UNDERVOLTAGE<br>TROUBLE (47104<br>TROUBLE (47104<br>TROUBLE (47100<br>TROUBLE (47100<br>TROUBLE (47100) | normal cond<br>(47102-A)<br>(47102-B)<br>(47102-D)<br>(47103-A)<br>(47103-C)<br>(47103-C)<br>(47103-C)<br>(47103-D)<br>-A)<br>-B)<br>4-C)<br>4-D)<br>5-C) | litions in DC                       | Distribution            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                         |                                                                                                                                                           |                                     |                         |

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| WISCON            | SIN PUBLIC SERVICE CORPORATION           | <b>NO.</b> A-EDC-38               |                            |
|-------------------|------------------------------------------|-----------------------------------|----------------------------|
| KEW               | AUNEE NUCLEAR POWER PLANT                | <b>TITLE</b> Abnormal D<br>System | OC Supply and Distribution |
| (                 | OPERATING PROCEDURE                      | <b>DATE</b> 0CT 14 200            | 04 <b>PAGE</b> 2 of 17     |
|                   |                                          |                                   |                            |
| 3.0 <u>IMMEDI</u> | ATE_ACTIONS                              |                                   |                            |
| 3.1 <u>A</u>      | <u>utomatic</u>                          |                                   |                            |
| No                | one                                      |                                   | i                          |
| 3.2 <u>O</u>      | perator                                  |                                   |                            |
| 1                 | . Dispatch Equipment Operator to         | investigate.                      |                            |
| 4.0 <u>SUBSEQ</u> | JENT ACTIONS                             |                                   |                            |
| 4.1 <u>D</u> (    | <u>C_Bus_BRA-102/BRB-102_Voltage_Low</u> | <u>':</u>                         |                            |
| 1                 | . <u>IF</u> power is lost to BRA-102 or  | BRB-102, <u>THEN GO TO</u>        | <u>)</u> E-O.              |
| 2                 | . BRA-102 DC Voltage Low:                |                                   |                            |
|                   | a. Locally VERIFY BRA-102 vol            | tage 140-122 VDC.                 |                            |
|                   | b. VERIFY the following supp             | y breakers ON:                    |                            |
|                   | 1. BRA-102, Bkr 5 Battery                | Charger BRA-108                   |                            |
|                   | 2. Supply Breaker from Bl                | A-101.                            |                            |
|                   | c. VERIFY undervoltage relay             | tripped on TB-2495.               |                            |
|                   | 1. 27DC/BRA-102 undervol                 | age.                              |                            |
|                   | d. REQUEST Electricians to in            | vestigate cause of a              | alarm.                     |
| 3                 | . BRB-102 DC Voltage Low.                |                                   |                            |
|                   | a. Locally VERIFY BRB-102 vol            | tage 140-122 VDC.                 |                            |
|                   | b. VERIFY the following supp             | y breakers ON:                    |                            |
|                   | 1. BRB-102, Bkr 5 Battery                | Charger BRB-108                   |                            |
|                   | 2. Supply Breaker from B                 | B-101.                            |                            |
|                   | c. VERIFY undervoltage relay             | tripped on TB-2496.               |                            |
|                   | 1. 27DC/BRB-102 undervolt                | age.                              |                            |
|                   | d. REQUEST Electricians to in            | vestigate cause of a              | alarm.                     |

| TITLE Abnormal DC Supply and Distribution System         OPERATING PROCEDURE         DATE OCT 14 2004       PAGE 3 of 17         4.2 BRA-104/BRB-104 Feeder Bkr Undervoltage:         1. IF power is lost to BRA-104 or BRB-104. THEN GO TO E-0.       2.         2. PERFORM E-EDC-38A or E-EDC-38B while continuing with this procedure.       3.         3. Identify tripped breaker by breaker position and red light OFF with toggle switch in ON position.       4.         4. REFER to DC Electrical Cross-Reference for BRA-104 or BRB-104 to identify failure modes.       5.         5. POSITION toggle switch for tripped breaker to OFF to clear alarm and allow detection of subsequent breaker trips.         6. REQUEST Electricians to investigate cause of trip.         4.3 BRC-103/BRD-103 Feeder Bkr Undervoltage:         1. IF power is lost to BRC-103 or BRD-103, THEN PERFORM E-EDC-38C or E-EDC-38D while continuing with this procedure.         2. IDENTIFY tripped breaker by breaker position and red light OFF with toggle switch in ON position.         3. REFER to DC Electrical Cross-Reference for BRC-103 or BRD-103 to identify loads lost and component failure modes.         4. POSITION toggle switch for tripped breaker to OFF to clear alarm and allow detection of subsequent breaker trips. | WISC | ONSI       | N PUBLIC SERVICE CORPORATION                                            | NO. A                  | -EDC-38                           |               |              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------|-------------------------------------------------------------------------|------------------------|-----------------------------------|---------------|--------------|
| OPERATING PROCEDUREDATEOCT 14 2004PAGE 3of 174.2BRA-104/BRB-104 Feeder Bkr Undervoltage:1.IE power is lost to BRA-104 or BRB-104, THEN GO TO E-0.2.PERFORM E-EDC-38A or E-EDC-38B while continuing with this procedure.3.Identify tripped breaker by breaker position and red light OFF with toggle switch in ON position.4.REFER to DC Electrical Cross-Reference for BRA-104 or BRB-104 to identify failure modes.5.POSITION toggle switch for tripped breaker to OFF to clear alarm and allow detection of subsequent breaker trips.6.REQUEST Electricians to investigate cause of trip.4.3BRC-103/BRD-103 Feeder Bkr Undervoltage:1.IF power is lost to BRC-103 or BRD-103, THEN PERFORM E-EDC-38C or E-EDC-38D while continuing with this procedure.2.IDENTIFY tripped breaker by breaker position and red light OFF with toggle switch in ON position.3.REFER to DC Electrical Cross-Reference for BRC-103 or BRD-103 to identify loads lost and component failure modes.4.POSITION toggle switch for tripped breaker to OFF to clear alarm and allow detection of subsequent breaker trips.                                                                                                                                                                                                                                        | к    | EWA        | UNEE NUCLEAR POWER PLANT                                                | TITLE                  | Abnormal DC Si<br>System          | upply and Dis | tribution    |
| <ul> <li>4.2 <u>BRA-104/BRB-104 Feeder Bkr Undervoltage:</u> <ol> <li>IF power is lost to BRA-104 or BRB-104, <u>THEN GO TO</u> E-0.</li> <li>PERFORM E-EDC-38A or E-EDC-38B while continuing with this procedure.</li> <li>Identify tripped breaker by breaker position and red light OFF with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRA-104 or BRB-104 to identify failure modes.</li> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm and allow detection of subsequent breaker trips.</li> <li>REQUEST Electricians to investigate cause of trip.</li> </ol> </li> <li>14.3 <u>BRC-103/BRD-103 Feeder Bkr Undervoltage:</u> <ol> <li>IF power is lost to BRC-103 or BRD-103, <u>THEN PERFORM E-EDC-38C or E-EDC-38D while continuing with this procedure.</u></li> <li>IDENTIFY tripped breaker by breaker position and red light OFF with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRC-103 or BRD-103 to identify loads lost and component failure modes.</li> </ol> </li> </ul>                                                                                                                                                                                                                                           |      | 0          | PERATING PROCEDURE                                                      | DATE                   | OCT 14 2004                       | PAGE 3        | <b>of</b> 17 |
| <ul> <li>4.2 <u>BRA-104/BRB-104 Feeder Bkr Undervoltage:</u> <ol> <li>IF power is lost to BRA-104 or BRB-104, <u>THEN GO TO</u> E-0.</li> <li>PERFORM E-EDC-38A or E-EDC-38B while continuing with this procedure.</li> <li>Identify tripped breaker by breaker position and red light OFF with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRA-104 or BRB-104 to identify failure modes.</li> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm and allow detection of subsequent breaker trips.</li> <li>REQUEST Electricians to investigate cause of trip.</li> </ol> </li> <li>HE power is lost to BRC-103 or BRD-103, <u>THEN PERFORM E-EDC-38C or E-EDC-38D while continuing with this procedure.</u></li> <li>IDENTIFY tripped breaker by breaker position and red light OFF with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRC-103 or BRD-103 to identify loads lost and component failure modes.</li> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm and allow detection of subsequent breaker to OFF to clear alarm and allow detection of subsequent failure modes.</li> </ul>                                                                                                                          |      |            |                                                                         |                        |                                   |               |              |
| <ol> <li>IE power is lost to BRA-104 or BRB-104. THEN GO TO E-0.</li> <li>PERFORM E-EDC-38A or E-EDC-38B while continuing with this procedure.</li> <li>Identify tripped breaker by breaker position and red light OFF with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRA-104 or BRB-104 to identify failure modes.</li> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm and allow detection of subsequent breaker trips.</li> <li>REQUEST Electricians to investigate cause of trip.</li> <li>BRC-103/BRD-103 Feeder Bkr Undervoltage:         <ol> <li>IE power is lost to BRC-103 or BRD-103. THEN PERFORM E-EDC-38C or E-EDC-38D while continuing with this procedure.</li> <li>IDENTIFY tripped breaker by breaker position and red light OFF with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRC-103 or BRD-103 to identify loads lost and component failure modes.</li> </ol> </li> </ol>                                                                                                                                                                                                                                                                                                                                      | 4.2  | BRA        | -104/BRB-104 Feeder Bkr Undervo                                         | <u>ltage:</u>          |                                   |               |              |
| <ol> <li>PERFORM E-EDC-38A or E-EDC-38B while continuing with this procedure.</li> <li>Identify tripped breaker by breaker position and red light OFF with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRA-104 or BRB-104 to identify failure modes.</li> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm and allow detection of subsequent breaker trips.</li> <li>REQUEST Electricians to investigate cause of trip.</li> <li>BRC-103/BRD-103 Feeder Bkr Undervoltage:         <ol> <li>IF power is lost to BRC-103 or BRD-103, <u>THEN</u> PERFORM E-EDC-38C or E-EDC-38D while continuing with this procedure.</li> <li>IDENTIFY tripped breaker by breaker position and red light OFF with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRC-103 or BRD-103 to identify loads lost and component failure modes.</li> </ol> </li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                |      | 1.         | <u>IF</u> power is lost to BRA-104 or                                   | BRB-104,               | <u>THEN GO TO</u> E-0             | D.            |              |
| <ol> <li>Identify tripped breaker by breaker position and red light OFF with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRA-104 or BRB-104 to identify failure modes.</li> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm and allow detection of subsequent breaker trips.</li> <li>REQUEST Electricians to investigate cause of trip.</li> <li><u>BRC-103/BRD-103 Feeder Bkr Undervoltage:</u></li> <li><u>IF</u> power is lost to BRC-103 or BRD-103, <u>THEN</u> PERFORM E-EDC-38C or E-EDC-38D while continuing with this procedure.</li> <li>IDENTIFY tripped breaker by breaker position and red light OFF with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRC-103 or BRD-103 to identify loads lost and component failure modes.</li> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm and allow detection of subsequent breaker trips.</li> </ol>                                                                                                                                                                                                                                                                                                                                                         |      | 2.         | PERFORM E-EDC-38A or E-EDC-38B procedure.                               | while co               | ntinuing with f                   | this          |              |
| <ol> <li>REFER to DC Electrical Cross-Reference for BRA-104 or BRB-104 to<br/>identify failure modes.</li> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm<br/>and allow detection of subsequent breaker trips.</li> <li>REQUEST Electricians to investigate cause of trip.</li> <li><u>BRC-103/BRD-103 Feeder Bkr Undervoltage:</u> <ol> <li><u>IF</u> power is lost to BRC-103 or BRD-103, <u>THEN</u> PERFORM E-EDC-38C or<br/>E-EDC-38D while continuing with this procedure.</li> <li>IDENTIFY tripped breaker by breaker position and red light OFF<br/>with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRC-103 or BRD-103 to<br/>identify loads lost and component failure modes.</li> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm<br/>and allow detection of subsequent breaker trips.</li> </ol> </li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                |      | 3.         | Identify tripped breaker by brown with toggle switch in ON posit        | eaker pos<br>ion.      | ition and red [                   | light OFF     |              |
| <ol> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm<br/>and allow detection of subsequent breaker trips.</li> <li>REQUEST Electricians to investigate cause of trip.</li> <li>BRC-103/BRD-103 Feeder Bkr Undervoltage:         <ol> <li>IF power is lost to BRC-103 or BRD-103, <u>THEN</u> PERFORM E-EDC-38C or<br/>E-EDC-38D while continuing with this procedure.</li> <li>IDENTIFY tripped breaker by breaker position and red light OFF<br/>with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRC-103 or BRD-103 to<br/>identify loads lost and component failure modes.</li> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm<br/>and allow detection of subsequent breaker trips.</li> </ol> </li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      | 4.         | REFER to DC Electrical Cross-Reidentify failure modes.                  | eference               | for BRA-104 or                    | BRB-104 to    |              |
| <ol> <li>REQUEST Electricians to investigate cause of trip.</li> <li><u>BRC-103/BRD-103 Feeder Bkr Undervoltage:</u> <ol> <li><u>IF</u> power is lost to BRC-103 or BRD-103, <u>THEN</u> PERFORM E-EDC-38C or E-EDC-38D while continuing with this procedure.</li> <li>IDENTIFY tripped breaker by breaker position and red light OFF with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRC-103 or BRD-103 to identify loads lost and component failure modes.</li> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm and allow detection of subsequent breaker trips.</li> </ol> </li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      | 5.         | POSITION toggle switch for trip<br>and allow detection of subseque      | pped brea<br>ent break | ker to OFF to (<br>er trips.      | clear alarm   |              |
| <ul> <li>4.3 <u>BRC-103/BRD-103 Feeder Bkr Undervoltage:</u> <ol> <li>IF power is lost to BRC-103 or BRD-103, <u>THEN PERFORM E-EDC-38C or E-EDC-38D while continuing with this procedure.</u></li> <li>IDENTIFY tripped breaker by breaker position and red light OFF with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRC-103 or BRD-103 to identify loads lost and component failure modes.</li> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm and allow detection of subsequent breaker trips.</li> </ol></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      | 6.         | REQUEST Electricians to invest                                          | se of trip.            |                                   |               |              |
| <ol> <li><u>IF</u> power is lost to BRC-103 or BRD-103, <u>THEN</u> PERFORM E-EDC-38C or<br/>E-EDC-38D while continuing with this procedure.</li> <li>IDENTIFY tripped breaker by breaker position and red light OFF<br/>with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRC-103 or BRD-103 to<br/>identify loads lost and component failure modes.</li> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm<br/>and allow detection of subsequent breaker trips.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 4.3  | <u>BRC</u> | C-103/BRD-103_Feeder_Bkr_Undervo                                        | <u>ltage:</u>          |                                   |               |              |
| <ol> <li>IDENTIFY tripped breaker by breaker position and red light OFF<br/>with toggle switch in ON position.</li> <li>REFER to DC Electrical Cross-Reference for BRC-103 or BRD-103 to<br/>identify loads lost and component failure modes.</li> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm<br/>and allow detection of subsequent breaker trips.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      | 1.         | <u>IF</u> power is lost to BRC-103 or<br>E-EDC-38D while continuing wit | BRD-103,<br>h this pr  | <u>THEN</u> PERFORM  <br>ocedure. | E-EDC-38C or  |              |
| <ol> <li>REFER to DC Electrical Cross-Reference for BRC-103 or BRD-103 to<br/>identify loads lost and component failure modes.</li> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm<br/>and allow detection of subsequent breaker trips.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      | 2.         | IDENTIFY tripped breaker by browith toggle switch in ON posit           | eaker pos<br>ion.      | ition and red                     | light OFF     |              |
| <ol> <li>POSITION toggle switch for tripped breaker to OFF to clear alarm<br/>and allow detection of subsequent breaker trips.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      | 3.         | REFER to DC Electrical Cross-Reidentify loads lost and component        | eference<br>ent failu  | for BRC-103 or<br>re modes.       | BRD-103 to    |              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      | 4.         | POSITION toggle switch for trip<br>and allow detection of subseque      | pped brea<br>ent break | ker to OFF to (<br>er trips.      | clear alarm   |              |
| 5. REQUEST Electricians to investigate cause of trip.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      | 5.         | REQUEST Electricians to invest                                          | igate cau              | se of trip.                       |               |              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |            |                                                                         |                        |                                   |               |              |
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| WISCONSIN PUBLIC SERVICE CORPORATION NO. A-EDC-38                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | TITLE Abnormal DC Supply and Distribution System |  |  |  |
| OPERATING PROCEDURE DATE 0CT 14 2004 PAGE 4 of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |  |  |  |
| <pre>0PERATING PROCEDURE 4.4 Instrument Bus Voltage Low: 1. VERIFY power from source bread distribution panel. ON:     a. BRA-113 - Instrument Bus 1     b. BRB-113 - Instrument Bus 1     c. BRB-114 - Instrument Bus 1     d. BRA-114 - Instrument Bus 1     d. ATTACHMENTS A, B, C, and I     b. Electrical Cross-Reference     d. A-MI-87     e. GMP-245 series procedures </pre> | DATE OCT 14 2004 PAGE 4 of 17                    |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                            | NO. A-EDC-38                                                                                                                                                                                                                               |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                    | <b>TITLE</b> Abnormal DC Supply and Distribution System                                                                                                                                                                                    |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                             | DATE OCT 14 2004 PAGE 5 of 17                                                                                                                                                                                                              |  |  |  |  |
|                                                                                                                                                                                                                 |                                                                                                                                                                                                                                            |  |  |  |  |
| 4.5 Instrument Bus Inverter Trouble:                                                                                                                                                                            |                                                                                                                                                                                                                                            |  |  |  |  |
| 1. REFER to SER printout to ident                                                                                                                                                                               | ify affected inverter.                                                                                                                                                                                                                     |  |  |  |  |
| 2. OBSERVE local indications to d                                                                                                                                                                               | etermine affected inverter status.                                                                                                                                                                                                         |  |  |  |  |
| <ol> <li><u>IF</u> Inverter Supplying Load light is ON, <u>THEN</u> REQUEST Electricians<br/>to investigate and repair inverter.</li> </ol>                                                                     |                                                                                                                                                                                                                                            |  |  |  |  |
| <ol> <li><u>IF</u> Alternate Source Supplying Load light is ON, <u>THEN</u> TRANSFER load<br/>back to inverter as follows:</li> </ol>                                                                           |                                                                                                                                                                                                                                            |  |  |  |  |
| a. For all inverters except B<br>breaker, ON. [PCR000282]                                                                                                                                                       | RD-109, VERIFY Inverter Output                                                                                                                                                                                                             |  |  |  |  |
| b. VERIFY In Sync light, ON.                                                                                                                                                                                    |                                                                                                                                                                                                                                            |  |  |  |  |
| c. PRESS Inverter to Load pushbutton.                                                                                                                                                                           |                                                                                                                                                                                                                                            |  |  |  |  |
| d. VERIFY the following:                                                                                                                                                                                        |                                                                                                                                                                                                                                            |  |  |  |  |
| 1. Inverter Supplying Loa                                                                                                                                                                                       | d light, ON.                                                                                                                                                                                                                               |  |  |  |  |
| 2. Alternate Source Suppl                                                                                                                                                                                       | ying Load light, OFF.                                                                                                                                                                                                                      |  |  |  |  |
| 3. INSTRUMENT BUS INVERTE                                                                                                                                                                                       | R TROUBLE (47102-D), OFF.                                                                                                                                                                                                                  |  |  |  |  |
| <u>NOTE</u> : In the event a plant shutdo<br>plant mode would correspond<br>operability requirements.                                                                                                           | wn is required, the final<br>to the supported equipment                                                                                                                                                                                    |  |  |  |  |
| 5. <u>IF</u> load does <u>NOT</u> transfer back<br>clear, <u>THEN</u> REQUEST Electricia<br>inverter.                                                                                                           | to inverter or alarm does <u>NOT</u><br>ns to investigate and repair                                                                                                                                                                       |  |  |  |  |
| a. <u>WHEN</u> the reactor is heated<br>be taken out-of-service wi<br>powered from the alternate<br><u>IF</u> the inverter is <u>NOT</u> res<br><u>THEN</u> within one hour actio<br>plant shutdown using norma | above 200°F, <u>THEN</u> one inverter may<br>th the associated instrument bus(es)<br>source for a period of seven days.<br>tored to service within seven days,<br>n shall be initiated to perform a<br>l operating procedures. [PCR012237] |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                               | NO. A-EDC-38                                                                                                                                                                     |  |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                       | TITLE Abnormal DC Supply and Distribution System                                                                                                                                 |  |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                | DATE OCT 14 2004 PAGE 6 of 17                                                                                                                                                    |  |  |  |  |  |
|                                                                                                                                    |                                                                                                                                                                                  |  |  |  |  |  |
| 4.6 DC Bus BRA-102/BRB-102 Feeder Bl                                                                                               | r Undervoltage:                                                                                                                                                                  |  |  |  |  |  |
| <ol> <li>IDENTIFY tripped breaker by<br/>with toggle switch in ON pos</li> </ol>                                                   | breaker position and red light OFF<br>ition.                                                                                                                                     |  |  |  |  |  |
| <ol><li>REFER to DC Electrical Cross<br/>identify loads or power supp</li></ol>                                                    | . REFER to DC Electrical Cross-Reference for BRA-102 or BRB-102 to identify loads or power supply affected.                                                                      |  |  |  |  |  |
| <ol> <li>POSITION toggle switch for t<br/>and allow detection of subse</li> </ol>                                                  | POSITION toggle switch for tripped breaker to OFF to clear alarm and allow detection of subsequent breaker trips.                                                                |  |  |  |  |  |
| 4. REQUEST Electricians to inve                                                                                                    | stigate cause of trip.                                                                                                                                                           |  |  |  |  |  |
| 4.7 <u>Battery A/B Charger Trouble:</u>                                                                                            |                                                                                                                                                                                  |  |  |  |  |  |
| 1. REQUEST Electricians to inve                                                                                                    | REQUEST Electricians to investigate cause of alarm.                                                                                                                              |  |  |  |  |  |
| 2. <u>IF</u> use of spare battery char<br>Battery Charger BRA-108 (BRE<br>BRA/B-108 per N-EDC-38.                                  | <u>IF</u> use of spare battery charger is required, <u>THEN</u> SHUT DOWN<br>Battery Charger BRA-108 (BRB-108) <u>AND</u> ALIGN Spare Battery Charger<br>BRA/B-108 per N-EDC-38. |  |  |  |  |  |
| <ol> <li><u>IF</u> required to cross-connect following:</li> </ol>                                                                 | DC system trains, <u>THEN</u> PERFORM the                                                                                                                                        |  |  |  |  |  |
| <u>NOTE</u> : When in Refueling Mod<br>to 23 feet of water 1<br>and upper internals r<br>in the reactor, BRA-1<br>cross-connected. | e with greater than or equal<br>evel above the vessel flange<br>emoved <u>OR</u> if there is no fuel<br>D2 and BRB-102 may be                                                    |  |  |  |  |  |
| <u>NOTE</u> : When RCS average temp<br>same train of RHR and<br>Charger are operable,<br>cross-connected up to                     | erature is 200-350°F <u>AND</u> the<br>S/G and Safeguards Battery<br>BRA-102 and BRB-102 may be<br>7 days.                                                                       |  |  |  |  |  |
| a. VERIFY plant conditions                                                                                                         | permit cross-connecting.                                                                                                                                                         |  |  |  |  |  |
| b. VERIFY grounds do <u>NOT</u> ex                                                                                                 | ist on either train.                                                                                                                                                             |  |  |  |  |  |
| c. SHUT DOWN failed Battery                                                                                                        | Charger per N-EDC-38.                                                                                                                                                            |  |  |  |  |  |
| d. CLOSE Bus Tie Breaker or                                                                                                        | BRA-102.                                                                                                                                                                         |  |  |  |  |  |
| e. CLOSE Bus Tie Breaker or                                                                                                        | BRB-102.                                                                                                                                                                         |  |  |  |  |  |

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| WISC | ONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                    | NO.                                                                                                             | A-EDC-38    |        |              |  |  |
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| к    | EWAUNEE NUCLEAR POWER PLANT                                                                                                                                                         | TITLE Abnormal DC Supply and Distribution System                                                                |             |        |              |  |  |
|      | OPERATING PROCEDURE                                                                                                                                                                 | DATE                                                                                                            | OCT 14 2004 | PAGE 7 | <b>of</b> 17 |  |  |
|      |                                                                                                                                                                                     |                                                                                                                 |             |        |              |  |  |
| 4.8  | BRC/BRD Battery System Trouble:                                                                                                                                                     |                                                                                                                 |             |        |              |  |  |
|      | 1. REQUEST Electricians investiga                                                                                                                                                   | te cause                                                                                                        | of alarm.   |        |              |  |  |
|      | <ol> <li><u>WHEN</u> problem has been corrected, <u>THEN</u> PRESS Reset pushbutton on<br/>local alarm panel to clear alarm.</li> </ol>                                             |                                                                                                                 |             |        |              |  |  |
|      | 3. <u>IF</u> use of spare battery charger is required, <u>THEN</u> SHUT DOWN<br>Battery Charger BRC-108 (BRD-108) <u>AND</u> ALIGN Spare Battery Charger<br>BRC/D-108 per N-EDC-38. |                                                                                                                 |             |        |              |  |  |
|      | 4. <u>IF</u> required to cross-connect N<br>PERFORM the following:                                                                                                                  | . <u>IF</u> required to cross-connect Non-Safeguard DC System trains, <u>THEN</u><br>PERFORM the following:     |             |        |              |  |  |
|      | a. VERIFY grounds do <u>NOT</u> exist on either train.                                                                                                                              |                                                                                                                 |             |        |              |  |  |
|      | b. CLOSE Bus Tie Breaker on B                                                                                                                                                       | RC-102.                                                                                                         |             |        |              |  |  |
|      | c. CLOSE Bus Tie Breaker on B                                                                                                                                                       | RD-102.                                                                                                         |             |        |              |  |  |
| 4.9  | BRE_Battery_System_Trouble:                                                                                                                                                         |                                                                                                                 |             |        |              |  |  |
|      | 1. REQUEST electricians investiga                                                                                                                                                   | REQUEST electricians investigate cause of alarm.                                                                |             |        |              |  |  |
|      | <ol> <li><u>WHEN</u> problem has been correcten<br/>local alarm panel to clear ala</li> </ol>                                                                                       | <u>WHEN</u> problem has been corrected, <u>THEN</u> PRESS Reset pushbutton on local alarm panel to clear alarm. |             |        |              |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                  | TITLE Abnormal DC Su<br>System | pply and Distribution |  |  |  |  |
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| <u>ATTACHMENT A - INSTRUMENT BUS I - RED</u><br>(Page 1 of 3) |                                |                       |  |  |  |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION  | NO. A                     | A-EDC-38                 |              |              |
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| KEWAUNEE NUCLEAR POWER PLANT          | TITLE                     | Abnormal DC Su<br>System | pply and Dis | tribution    |
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| <u>ATTACHMENT A - INSTR</u><br>(Page 3 | <u>UMENT BUS I - RED</u><br>of 3)                   |
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| <u>ATTACHMENT B - INSTRU</u><br>(Page 1 | MENT_BUS<br>of 2) | <u>II - WHITE</u>        |              |              |
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| KEWAUNEE NUCLEAR POWER PLANT           | TITLE                    | Abnormal DC Su<br>System | pply and Dis | stribution   |
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| <u>ATTACHMENT C - INSTRI</u><br>(Page 2 | <u>UMENT BUS III - BLUE</u><br>of 3)             |
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| WISCONSIN PUBLIC SERVICE CORPO | RATION                | NO. A                    | -EDC-38                  |              |              |
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| KEWAUNEE NUCLEAR POWER PL      | ANT                   | TITLE                    | Abnormal DC Su<br>System | pply and Dis | tribution    |
| OPERATING PROCEDURE            |                       | DATE                     | OCT 14 2004              | PAGE 15      | <b>of</b> 17 |
| ATTACHMENT (                   | C - INSTRU<br>(Page 3 | <u>MENT BUS</u><br>of 3) | III - BLUE               |              |              |
|                                |                       |                          |                          |              |              |
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| WISCONSIN PUBLIC SERVICE CORPORATION    | NO. A                     | -EDC-38                  |              |              |
|-----------------------------------------|---------------------------|--------------------------|--------------|--------------|
| KEWAUNEE NUCLEAR POWER PLANT            | TITLE                     | Abnormal DC Su<br>System | pply and Dis | stribution   |
| OPERATING PROCEDURE                     | DATE                      | OCT 14 2004              | PAGE 16      | <b>of</b> 17 |
| <u>ATTACHMENT D - INSTRU</u><br>(Page 1 | <u>IMENT BUS</u><br>of 2) | IV - YELLOW              |              |              |
|                                         |                           |                          |              |              |
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| WISCONSIN PUBLIC SERVICE CORPORATION   | NO. A-EDC-38                                     |
|----------------------------------------|--------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT           | TITLE Abnormal DC Supply and Distribution System |
| OPERATING PROCEDURE                    | DATE OCT 14 2004 PAGE 17 of 17                   |
| <u>ATTACHMENT D - INSTR</u><br>(Page 2 | <u>JMENT BUS IV - YELLOW</u><br>of 2)            |
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| RED     |                                               | BRA-113          |              | RED                                            |
|---------|-----------------------------------------------|------------------|--------------|------------------------------------------------|
| Circuit | Equipment                                     | Equipment OOS    | TS           | LCO                                            |
| 1       | Instrument Bus I UV Relay (27/BRA113)         |                  |              |                                                |
| 2       | FI-924 "SI Pump B Flow Ind"                   |                  |              |                                                |
| 2       | HI-28010 "Cont Humd Xmtr"                     |                  |              |                                                |
| 2       | TIA-608 "RXCP B CC Return Alarm"              |                  |              |                                                |
| 2       | TIA-612 "RXCP A CC Return Alarm"              |                  |              |                                                |
|         |                                               | PR-2B auto open  |              | 1-hr to close/de-energize PR-1B,               |
| 3       | PT-429 Przr Press Xmtr                        | perm             | 3.5, 3.1.a.5 | then 72-hr                                     |
| 3       | LT-426 Przr Level Xmtr                        |                  | 3.5          |                                                |
| 3       | Channel 1 (Red) DT and Tavg                   |                  |              |                                                |
| 4       | LT-461 SG A Level Xmtr                        |                  | 3.5          | 1                                              |
| 4       | LT-472 SG B Level xmtr                        |                  | 3.5          |                                                |
| 4       | FT-464 SG A steam flow                        |                  | 3.5          |                                                |
| 4       | PT-468 SG A steam press                       |                  | 3.5          |                                                |
| 4       | FT-466 SG A fw flow                           |                  | 3.5          |                                                |
| 4       | PT-483 SG B steam press                       |                  | 3.5          |                                                |
| 4       | FT-411 Loop A RC flow                         |                  | 3.5          |                                                |
| 4       | FT-414 Loop B RC flow                         |                  | 3.5          |                                                |
|         |                                               | ICS              |              | HSD as soon as practicable,                    |
| 4       | PT-945 Cont press                             | (min redundancy) | 3. <b>5</b>  | 24-hr to restore                               |
| 4       | Auto control of FW-7A and FW-10A              |                  |              |                                                |
| 5       | Auto Control Rod speed and direction          |                  |              |                                                |
|         | Tavg - Tref trip signal for cond and atmos SD |                  |              |                                                |
| 6       | Auto control PS-1A                            |                  |              |                                                |
| 6       | Auto control PS-1B                            |                  |              |                                                |
| 6       | Auto speed control for charging pumps         |                  |              |                                                |
| 6       | Auto control Przr Htr Grp C                   |                  |              |                                                |
| 6       | Auto control PR-2A Przr PORV                  | PR-2A auto open  | 3.1.a.5.A.2  | 1-hr to close/de-energize PR-1A,<br>then 72-hr |
| 6       | Przr Htr Grps D and E receive ON signal       |                  |              |                                                |
| 7       | RHR-299A, RHR to SI pump A                    | Sump recirc      | 3.3.b        | 72-hr (SI/RHR train A inoperable)              |
| 7       | Auto speed control for Charging pumps         |                  |              |                                                |
| 7       | Steam Dump control                            |                  |              |                                                |
| 8       | Auto Level controller for FW-7B and FW-10B    |                  |              |                                                |
| 8       | Auto Pressure controller for SD-3B            |                  |              |                                                |
| 8       | LI-470B SG B WR level                         | WR SG Level      | Table 3.5-6  | 7-day                                          |

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| RED     | ED BRA-113 (continued)                  |               |              |                                              |
|---------|-----------------------------------------|---------------|--------------|----------------------------------------------|
| Circuit | Equipment                               | Equipment OOS | TS           | LCO                                          |
| 9       | LD-14 fails to VCT                      |               |              |                                              |
| 9       | RxCP Labrynth Seal DP and #1 Seal DP    |               |              |                                              |
| 9       | Various other indications               |               |              |                                              |
| 10,12   | N-31                                    | N-31          | 3.8          | No fuel movement                             |
| 10,12   | N-35                                    |               |              |                                              |
| 10,12   | N-41                                    | N-41          | 3.11.c       | Verify 4 CETs/quad; otherwise, less than 85% |
| 11      | N44, N43 Upper Flux E/I converter       |               |              |                                              |
| 11      | Stm exclusion recorders                 |               |              |                                              |
| 13      | CW forebay 1A1 level relays             |               | 3.3.e        |                                              |
| 15      | None                                    |               |              |                                              |
| 16      | RED channel steam exclusion for dampers |               | USAR 10A.2.3 | 72-hours                                     |
| 16      | CRD room inlet                          |               | USAR 10A.2.3 | 72-hours                                     |
| 16      | CRD room outlet                         |               | USAR 10A.2.3 | 72-hours                                     |
| 16      | Batt room inlet                         |               | USAR 10A.2.3 | 72-hours                                     |
| 16      | Aux Building area outlets               |               | USAR 10A.2.3 | 72-hours                                     |
| 16      | CRAC recirc                             |               | USAR 10A.2.3 | 72-hours                                     |
| 16      | CRAC makeup air                         |               | USAR 10A.2.3 | 72-hours                                     |
| 16      | Aux Building lab areas                  |               | USAR 10A.2.3 | 72-hours                                     |
| 16      | Aux Building AC exhaust filters         |               | USAR 10A.2.3 | 72-hours                                     |
| 17      | Protection Status Panels (RED)          |               | 1            |                                              |
| 17      | Safeguards Status Panels (RED)          |               |              |                                              |

| RED     |                                                      | BRA-113 Ext      |                   | RED                              |
|---------|------------------------------------------------------|------------------|-------------------|----------------------------------|
| Circuit | Equipment                                            | Equipment OOS    | TS                | LCO                              |
| 1,6     | Train A Annunciator Panels                           |                  |                   |                                  |
| 1,6     | BETA SER Train A                                     |                  |                   |                                  |
| 3       | ICCMS Train A                                        | CETs, RVLIS, SMM | 3.11, Table 3.5-6 | 14-day, 7-day, 85% (CETs & N-41) |
| 2,5     | N-33                                                 |                  | 1                 |                                  |
| 2,5     | N-38                                                 |                  |                   | 1                                |
| 2,5     | DSP (Analog Control Panel SD-103)                    |                  |                   |                                  |
| 7       | LT-24070 WR Cont Sump Level (Train A)                |                  | Table 3.5-6       | 14-day                           |
| 8       | App "R" Opto-Electronic Isol for N31/N33,<br>N35/N38 | N31              | 3.8               | No fuel movement                 |

| RED     |                                                   | BRA-113 Ext (continu | ed)         |        | RED |
|---------|---------------------------------------------------|----------------------|-------------|--------|-----|
| Circuit | Equipment                                         | Equipment OOS        | TS          | LCO    |     |
| 10      | Hi Range Cont Rad Monitor (2906502)               |                      |             |        |     |
| 9       | ICS pump B flow (FT-23152)                        |                      |             |        |     |
| 9       | SI pump A flow (FT-23054/FI-925)                  |                      |             |        |     |
| 9       | LHSI (RHR) to Rx Vessel flow<br>(FT-23056/FI-928) |                      |             |        |     |
| 9       | WR Cont Press (P21132)                            |                      | Table 3.5-6 | 14-day |     |
| 9       | Containment Area Hi Range R40 (42599)             |                      |             |        |     |

| WHIT    | E                                           | BRB-113                 |              | WHITE                                           |
|---------|---------------------------------------------|-------------------------|--------------|-------------------------------------------------|
| Circuit | Equipment                                   | Equipment OOS           | TS           | LCO                                             |
| 1       | Instrument Bus II UV Relay                  |                         | 1            |                                                 |
| 2       | RXCP B Seal Water Flow (Low and High Range) | 1                       |              |                                                 |
| 3       | PT-430 Przr Press Xmtr                      | PR-2B auto open         | 3.1.a.5, 3.5 | I-hr to close/de-energize PR-1B,<br>then 72-hr  |
| 3       | LT-427 Przz Level Xmtr                      |                         | 3.5          |                                                 |
| 3       | Channel 2 (White) DT and Tavg               |                         | 3.5          |                                                 |
| 3       | P-485 Turbine Impulse Pressure              |                         | 3.5          |                                                 |
| 4       | LT-473 SG B Level xmtr                      |                         | 3.5          |                                                 |
| 4       | FT-465 SG A steam flow                      |                         | 3.5          |                                                 |
| 4       | PT-469 SG A steam press                     |                         | 3.5          |                                                 |
| 4       | FT-467 SG A fw flow                         |                         | 3.5          |                                                 |
| 4       | FT-412 Loop A RC flow                       |                         | 3.5          |                                                 |
| 4       | PT-946 Cont press                           | ICS<br>(min redundancy) | 3.5_         | HSD as soon as practicable,<br>24-hr to restore |
| 4       | PT-949 Containment Pressure                 | ICS<br>(min redundancy) | 3.5          | HSD as soon as practicable,<br>24-hr to restore |
| _5,12   | BAST A&B Level Inst. (LT-172 & LT-102)      |                         |              |                                                 |
| 5,12    | SI Accum A&B Level and Press ind            |                         |              |                                                 |
| 5,12    | PRT Level (LT-442)                          |                         |              |                                                 |
| 5,12    | VCT Level (LT-112)                          |                         |              |                                                 |
| _ 5,12  | RCS Loop B Bypass Flow                      |                         |              |                                                 |
| 5,12    | SI pump B disch press (PI-923)              |                         |              |                                                 |
| 5,12    | Rx Vessel flange leakoff temp               | _                       |              |                                                 |
| 5,12    | RCS Temp (TI-410)                           |                         |              |                                                 |
| _5,12   | RCS WR press (PI-419)                       |                         | 3.1.a        |                                                 |
| 5,12    | RXCP B cooling wtr return temp (TI-608)     |                         |              |                                                 |
| 5,12    | Shield Bldg DP                              |                         |              |                                                 |
| 5,12    | RR120                                       |                         |              |                                                 |
| 5,12    | Radiation Recorders                         |                         |              |                                                 |
| 6       | DT deviation alarms                         |                         |              |                                                 |
| 6       | Control Rod insertion limit alarms          |                         |              |                                                 |
| 7       | SBV Train B hydraulic pack                  |                         |              |                                                 |
| 8       | CW forebay 1A2 level relays                 |                         | 3.3.e        |                                                 |

| WHIT    | E                                      | BRB-113 (continued | )            | WHITE            |
|---------|----------------------------------------|--------------------|--------------|------------------|
| Circuit | Equipment                              | Equipment OOS      | TS           | LCO              |
| 9       | Steam Exclusion WHITE channel          |                    | USAR 10A.2.3 | 72-hours         |
| 9       | CRD room inlet                         |                    | USAR 10A.2.3 | 72-hours         |
| 9       | CRD room outlet                        |                    | USAR 10A.2.3 | 72-hours         |
| 9       | Battery room inlet                     |                    | USAR 10A.2.3 | 72-hours         |
| 9       | TDAFW pump room                        |                    | USAR 10A.2.3 | 72-hours         |
| 9       | Aux Bldg area inlet                    |                    | USAR 10A.2.3 | 72-hours         |
| 9       | Aux Bldg fan floor                     |                    | USAR 10A.2.3 | 72-hours         |
| 9       | Aux Bldg area outlet                   |                    | USAR 10A.2.3 | 72-hours         |
| 9       | CRAC recirc                            |                    | USAR 10A.2.3 | 72-hours         |
| 9       | CRAC makeup air                        |                    | USAR 10A.2.3 | 72-hours         |
| 10,15   | White channel NIS (N32, N36, N42)      | N32, N42           | 3.8, 3.5     | No fuel movement |
| 11      | NI recorders (Upper Flux, Overpower)   |                    |              |                  |
| 13      | Safeguards rack RR126 test circuits    |                    |              |                  |
| 14      | WR Cntmt Sump Level B xmtr (LT-24071)  |                    | Table 3.5-6  | 14-day           |
| 14      | Hi range Cntmt Rad Mon (channel B)     |                    |              |                  |
| 16      | RR121 Train B test relays              |                    |              |                  |
| 17      | Protection Status Panel lights (white) |                    | 1            |                  |
| 18      | Safeguards Status Panel lights (white) |                    |              |                  |

| WHIT    | Έ                                                       | BRB-113 EXT      |                   | WHITE                                       |
|---------|---------------------------------------------------------|------------------|-------------------|---------------------------------------------|
| Circuit | Equipment                                               | Equipment OOS    | TS                | LCO                                         |
|         | RXCP A&B #1 Seal Inj Flow                               |                  |                   |                                             |
| 1       | ICS pump A disch flow                                   |                  |                   |                                             |
| 1       | SG WR level recorder                                    |                  | Table 3.5-6       | 7-day                                       |
| 1       | Cntmt WR radiation R-41 recorder                        |                  |                   |                                             |
| 1       | Cntmt WR pressure train B recorder                      |                  | Table 3.5-6       | 14-day                                      |
| 1       | Modulating control for MU-3B                            |                  |                   |                                             |
| 3       | ICCMS train B                                           | CETs, RVLIS, SMM | 3.11, Table 3.5-6 | 7-day, 14-day,<br>72-hr (< 4 CETs/quadrant) |
| 4,6     | Train B annunciator system<br>(BETA and panel lights)   |                  |                   |                                             |
| 5,7     | R-11/12, 14, 15, 16, 17, 18, 19<br>(Train B process RM) |                  | 3.1.d.5<br>ODCM   |                                             |

| BLUE    |                                             | BRB-114          | · · · · · · · · · · · · · · · · · · · |                             | BLUE |
|---------|---------------------------------------------|------------------|---------------------------------------|-----------------------------|------|
| Circuit | Equipment                                   | Equipment OOS    | TS                                    | LCO                         |      |
| _1      | BRB-114 UV relay                            |                  |                                       |                             |      |
| 2       | LT-112, VCT Level                           |                  |                                       |                             |      |
| 2       | FT-110, BA flow to blender                  |                  |                                       |                             |      |
| 2       | FT-111, RMU flow to blender                 |                  |                                       |                             |      |
| 2       | VCT level indicator/alarm hi-lo (LIC-50017) |                  |                                       |                             |      |
| 2       | Auto divert to HUT                          |                  |                                       |                             |      |
|         | Auto makeup to VCT                          |                  |                                       |                             |      |
| _ 2     | Auto swap-over to RWST                      |                  |                                       |                             |      |
| 3       | RCS Loop B DT                               |                  | 3.5                                   |                             |      |
| 3       | RCS Loop B Tave                             |                  | 3.5                                   |                             |      |
| 3       | Przr pressure (PT-431)                      |                  | 3.5                                   |                             |      |
| 3       | Pizi level (LT-428)                         |                  | 3.5                                   |                             |      |
| 3       | Turbine 1st stage press (PT-486)            |                  |                                       |                             |      |
| _4      | P-482 (SG A pressure)                       |                  | 3.5                                   |                             |      |
| 4       | L-462 (SG A level)                          |                  | 3.5                                   |                             |      |
|         |                                             | ICS              |                                       | ISD as soon as practicable, |      |
| 4       | Containment press (P948)                    | (min redundancy) | 3.5                                   | 24-hr to restore            |      |
| 4       | FT-413 (RC Loop A flow)                     |                  | 3.5                                   |                             |      |
| 4       | FT-415 (RC Loop B flow)                     |                  | 3.5                                   |                             |      |
| 4       | FT-474 (SG B steam flow)                    |                  | 3.5                                   |                             |      |
| 4       | FT-476 (SG B feed flow)                     |                  | 3.5                                   |                             |      |
| 4       | PT-478 (SG B steam pressure)                |                  | 3.5                                   |                             |      |
| 5       | Steam Exclusion BLUE channel                |                  | USAR 10A.2.3                          | 72-hours                    |      |
| 5       | CRD room inlet & outlet                     |                  | USAR 10A.2.3                          | 72-hours                    |      |
| 5       | Battery room inlet                          |                  | USAR 10A.2.3                          | 72-hours                    |      |
| 5       | TDAFW pump room                             |                  | USAR 10A.2.3                          | 72-hours                    |      |
|         | Aux Bldg area inlet                         |                  | USAR 10A.2.3                          | 72-hours                    |      |
| 5       | Aux Bldg fan floor                          |                  | USAR 10A.2.3                          | 72-hours                    |      |
| 5       | Aux Bldg lab areas                          |                  | USAR 10A.2.3                          | 72-hours                    |      |
| 5       | Aux Bldg AC exhaust filters                 |                  | USAR 10A.2.3                          | 72-hours                    |      |

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| BLUE           |                                                      | BRB-114 (continued) |                | BLUE                                           |
|----------------|------------------------------------------------------|---------------------|----------------|------------------------------------------------|
| Circuit        | Equipment                                            | Equipment OOS       | TS             | LCO                                            |
| 6              | Loss of auto control for PRZR PORV, PR-2A            | PR-2A auto open     | 3.1.a.5        | 1-hr to close/de-energize PR-1A,<br>then 72-hr |
|                | Loss of auto control for PRZR spray valves,          |                     |                |                                                |
| 6              | PS-1A(B)                                             |                     |                |                                                |
| 6              | PRZR heaters                                         |                     |                |                                                |
| 6              | Control of LD-3 from control room                    | <u> </u>            | ·              | <u> </u>                                       |
| 7              | Auto close of CVC-406/408 on flow deviation<br>alarm |                     |                |                                                |
| 7              | Auto control of CVC-403 and MU-1022                  |                     |                |                                                |
| 7              | Auto temp control of CC-302                          |                     |                |                                                |
| 7              | Auto press control of LD-10                          |                     |                |                                                |
| 7              | Auto divert to HUT by LD-27                          |                     |                |                                                |
| 7              | RXCP B labyrinth seal DP                             |                     |                |                                                |
| 7              | RXCP B #1 seal DP                                    |                     |                |                                                |
| 7              | RXCP B #1 seal water discharge temp                  |                     |                |                                                |
| 7              | VCT relief line pressure                             |                     |                |                                                |
| 8              | SG A WR level (LT-460)                               |                     | Table 3.5-6    | 7-day                                          |
| 8              | RHR pump B discharge press                           |                     |                |                                                |
| 8              | Auto level control for FW-7A and FW-10A              |                     |                |                                                |
| 8              | SG level setpoint for FW-7A, FW-7B, and FW-10A       |                     |                |                                                |
|                |                                                      | SI/RHR train B sump |                |                                                |
| 8              | Open permissive for RHR-299B                         | recirc              | 3.3.b          | 72-hr                                          |
| 8              | SG A press signal to controller for SD-3A            | <u> </u>            |                |                                                |
|                | Incore Rack 2 Panel CR114, Incore                    |                     |                |                                                |
|                |                                                      | - <u> </u>          | D.11           | - <u> </u>                                     |
| 10,12          | DA downtotalines                                     |                     | 0.5, 3.8, 3.11 | Into Iuei movement                             |
| ┝-::           | DA now totalizer                                     |                     |                |                                                |
| +              |                                                      |                     | }              |                                                |
| <u>├</u> -     | NR.43, N.41 and N.42 Lower Detector Elive            |                     |                |                                                |
| 1 11           | recorder                                             |                     |                |                                                |
| $\frac{1}{11}$ | NM-45A, NM-45B - Flux differential amplifier         | · [                 |                | 1                                              |
| 13             | CW Forebay 1B1 level relays                          |                     | 3.3.e          |                                                |
| 14             | Aux Relay Rack RR142                                 | 1                   |                | 1                                              |

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| BLUE    |                                              | BRB-114 (continued)          | )    |     | BLUE |
|---------|----------------------------------------------|------------------------------|------|-----|------|
| Circuit | Equipment                                    | Equipment OOS                | TS   | LCO |      |
| 15      | Spare                                        |                              |      |     |      |
| 16      | Radiation Monitor rack CR117 (area monitors) | R-1, 2, 4, 5, 6, 7, 9,<br>10 | ODCM |     |      |
| 17      | Protection status panel lights (BLUE)        |                              |      |     |      |
| 18      | Safeguards status panel lights (BLUE)        |                              |      |     |      |

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| YELL    | OW                                 | BRA-114          |                  | YELLOW                           |
|---------|------------------------------------|------------------|------------------|----------------------------------|
| Circuit | Equipment                          | Equipment OOS    | TS               | LCO                              |
| 2       | FT-113 Boric Acid Emer Bypass Flow |                  |                  |                                  |
| 2       | LT-112 VCT Level                   |                  |                  |                                  |
|         |                                    | PR-2A auto open  |                  | 1-hr to close/de-energize PR-1A, |
|         | PT-449 Przr Press Xmtr             | perm             | 3.1.a.5.A.2, 3.5 | then 72-hr                       |
| 3       | Channel 4 (Yellow) DT and Tavg     |                  | 3.5              |                                  |
| _4      | LT-463 SG A Level Xmtr             |                  | 3.5              |                                  |
| 4       | LT-471 SG B Level xmtr             |                  | 3.5              |                                  |
| 4       | FT-475 SG B steam flow             |                  | 3.5              |                                  |
| 4       | PT-479 SG B steam press            |                  | 3.5              |                                  |
| 4       | FT-477 SG B fw flow                |                  | 3.5              |                                  |
| 4       | FT-416 Loop B RC flow              |                  | 3.5              |                                  |
|         |                                    | ICS              |                  | HSD as soon as practicable,      |
| 4       | PT-947 Containment Pressure        | (min redundancy) | 3.5              | 24-hr to restore                 |
|         |                                    | ICS              |                  | HSD as soon as practicable,      |
| 4       | PT-950 Containment Pressure        | (min redundancy) | 3.5              | 24-hr to restore                 |
|         | Przr Safety A/B outlet temp        |                  | Table 3.5-6      | 14-day                           |
| 5       | Przr PORV outlet temp              |                  | Table 3.5-6      | 14-day                           |
| 5       | Przr Spray Loop A/B temp           |                  |                  |                                  |
| 5       | Przr liquid/steam temp             |                  |                  |                                  |
| 5       | PRT temp and pressure              |                  |                  |                                  |
| _5      | WR RCS pressure (PT-420)           |                  | 3.1.a            |                                  |
|         | SBV train A damper modulation      |                  |                  |                                  |
| 5       | (SBV-10A, SBV-20A)                 |                  | 3.6.c            | 7-day                            |
| 5       | ICCMS train A SMM and RVLIS        |                  | Table 3.5-6      | 14-day (SMM), 7-day (RVLIS)      |
| 6       | SBV Hydraulic Package              | SBV train A      | 3.6.c            | 7-day                            |
| 7       | SI accum B level (LT-934)          |                  |                  |                                  |
| 7       | SI accum B press (PT-936)          |                  |                  |                                  |
| 7       | SI accum A level (LT-938)          |                  |                  |                                  |
| 7       | SI accum A press (PT-940)          |                  |                  |                                  |
| 7       | CC Hx outlet flow                  |                  |                  |                                  |
| 7       | Auto control of RHR-101            |                  |                  |                                  |
| 7       | SI pump A discharge press (PT-922) |                  | 1                |                                  |
| 7       | CC surge tank level (LT-618)       |                  | 1                |                                  |
| 8       | CR recorders                       |                  |                  |                                  |

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| YELL    | ow                                                       | BRA-114 (continued) | )               |          | YELLOW |
|---------|----------------------------------------------------------|---------------------|-----------------|----------|--------|
| Circuit | Equipment                                                | Equipment OOS       | TS              | LCO      |        |
| 9       | Radiation Monitors<br>(Train A process monitors - local) |                     |                 |          |        |
| 10, 15  | N-44, Misc Controls and Ind, Comp and<br>Rate Drawer     | QPTR Monitor        | 3.10.j          | Log QPTR |        |
| 11      | N-43 and N-44 Lower Detector flux level                  |                     | <u> </u>        |          |        |
| 12      | Steam Exclusion YELLOW channel:                          |                     | USAR 10A.2.3    | 72-hours |        |
| 12      | TDAFW pump room                                          |                     | USAR 10A.2.3    | 72-hours |        |
| 12      | AB area inlet                                            |                     | USAR 10A.2.3    | 72-hours |        |
| 12      | AB fan floor                                             |                     | USAR 10A.2.3    | 72-hours |        |
| 12      | AB area outlet                                           |                     | USAR 10A.2.3    | 72-hours |        |
| 12      | CRAC recirc and makeup                                   |                     | USAR 10A.2.3    | 72-hours |        |
| 12      | AB lab area                                              |                     | USAR 10A.2.3    | 72-hours |        |
| 12      | AB AC exhaust filters                                    |                     | USAR 10A.2.3    | 72-hours |        |
| 13      | Safeguard Rack RR128 (Train A EST test circuits)         |                     |                 |          |        |
| 14      | R-13, 20, 21, 22, 23<br>(Train A process monitors - CR)  |                     | 3.1.d.5<br>ODCM |          |        |
| 16      | CW forebay 1B2 level relays                              |                     | 3.3.e           |          |        |
| 17      | Protection Status Panel                                  |                     |                 |          |        |
| 18      | Safeguards Status Panel                                  |                     |                 |          |        |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                            | NO. A-GE-84                                                                                                 |                                                                                                   | REV M                           |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------|--|
| KEWAUNEE NUCLEAR POWER PLANI                                                                                                                                                                                                                                                                                                                                                                                                                                                | Т                                                                                          | TITLE Abnormal Operation of the Generator<br>Hydrogen and/or Seal Oil System                                |                                                                                                   |                                 |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                            | DATE A                                                                                                      | PR 15 2004                                                                                        | PAGE 1 of 11                    |  |
| REVIEWED BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                            | APPRO                                                                                                       | VED BY                                                                                            |                                 |  |
| NUCLEAR I YES PORC R<br>SAFETY RELATED REQUIR                                                                                                                                                                                                                                                                                                                                                                                                                               | REVIEW<br>Red                                                                              | □ YES<br>⊠ NO                                                                                               | SRO APPROV<br>TEMPORARY<br>REQUIRED                                                               | AL OF XES<br>CHANGES NO         |  |
| <pre>1.0 INTRODUCTION<br/>1.1 Procedure describes operator<br/>condition in the Generator Hy<br/>2.0 SYMPTOMS<br/>2.1 Control Room Annunciators:<br/>GENERATOR SEAL OIL TEMP HIGH/<br/>HP SEAL OIL BACKUP PUMP RUNNI<br/>HYDROGEN PANEL TROUBLE (4707)<br/>2.2 Alarm light on local Seal Oil<br/>3.0 AUTOMATIC ACTIONS<br/>3.1 WHEN seal oil pressure decreat<br/>pressure. THEN Air Side Seal<br/>3.2 WHEN Turbine Oil pressure decreat<br/>Backup Pump auto starts.</pre> | actior<br>ydroger<br>/LOW (4<br>ING (47<br>1-E)<br>1 Syste<br>ases to<br>Oil Ba<br>creases | ns to be ta<br>n or Seal O<br>47054-U)<br>7055-U)<br>em Supervis<br>o within 5<br>ackup Pump<br>s to 12 psi | ken for an a<br>bil System.<br>fory Panel.<br>psig of gene<br>auto starts.<br>g. <u>THEN</u> HP S | bnormal<br>rator gas<br>eal Oil |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                          | <b>NO.</b> A-GE-84                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| KEWAUNEE NUCLEAR POWER PLANT                                                  | TITLE ABNORMAL OPERATION OF THE GENERATOR<br>HYDROGEN AND/OR SEAL OIL SYSTEM                                                                                                                                                                                                                                                                                                                                                            |
| OPERATING PROCEDURE                                                           | DATE APR 15 2004 PAGE 2 of 11                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| STEP OPERATOR ACTIONS                                                         | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 4.0 <u>DETAILED_PROCEDURE</u>                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <u>NOTE</u> : <u>IF</u> generator depressurization or<br>N-GE-84 or A-GE-84A. | purge is required, <u>THEN</u> refer to                                                                                                                                                                                                                                                                                                                                                                                                 |
| 1 Check Annunciator HYDROGEN PANEL<br>TROUBLE (47071-E) - CLEAR               | Refer to applicable Generator<br>Hydrogen Panel Local Alarm<br>response sheet(s).                                                                                                                                                                                                                                                                                                                                                       |
| 2 Check Annunciator HP SEAL OIL<br>BACKUP PUMP RUNNING (47055-U) -<br>CLEAR   | <ul> <li>Perform the following:</li> <li>a. <u>IF</u> HP seal oil pump has auto started during turbine coastdown, <u>THEN GO TO</u> Step 3.</li> <li>b. Investigate to determine cause for pump start.</li> <li>c. Initiate corrective actions.</li> </ul>                                                                                                                                                                              |
| <u>NOTE</u> : Alarms checked in Steps 3, 4, 5 a<br>Supervisory Panel.         | nd 6 are located on Seal Oil System                                                                                                                                                                                                                                                                                                                                                                                                     |
| 3 Check Air Side Oil/H2 Side Oil D<br>High Alarms - BOTH CLEAR                | <ul> <li>P Perform the following:         <ul> <li>a. Determine if alarm is valid:</li> <li>Gas pressure greater than 5 psig <u>AND</u> DP greater than 5"H20</li> <li><u>OR</u></li> <li>Gas pressure less than 5 psig <u>AND</u> DP greater than 10"H20</li> <li><u>IF</u> alarm is due to loss of H2 Side Seal Oil Pump, <u>THEN</u> refer to applicable Generator Hydrogen Panel Local Alarm response sheet.</li> </ul> </li> </ul> |

| WISCONSIN PUBLIC SERVICE CORPORATION                             | <b>NO.</b> A-GE-84                                                                                                                                                                                                                                                                                                    |
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| KEWAUNEE NUCLEAR POWER PLANT                                     | TITLE ABNORMAL OPERATION OF THE GENERATOR<br>HYDROGEN AND/OR SEAL OIL SYSTEM                                                                                                                                                                                                                                          |
| OPERATING PROCEDURE                                              | DATE APR 15 2004 PAGE 3 of 11                                                                                                                                                                                                                                                                                         |
| STEP OPERATOR ACTIONS                                            | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                   |
| 4 Check Air Side Oil/Gas DP Low<br>Alarms - BOTH CLEAR           | <ul> <li>Perform the following:</li> <li>a. Determine if alarm is valid: <ul> <li>DP less than or equal to</li> <li>10 psid</li> </ul> </li> <li>b. Verify proper operation of valve #256, Oil/Gas DP Regulator.</li> <li>c. Refer to applicable Generator Hydrogen Panel Local Alarm response sheet.</li> </ul>      |
| 5 Check Air Side Oil/Gas DP High<br>Alarms - BOTH CLEAR          | <ul> <li>Perform the following:</li> <li>a. Determine if alarm is valid: <ul> <li>DP greater than or equal to 14 psid</li> </ul> </li> <li>b. Verify proper operation of valve #256. Oil/Gas DP Regulator.</li> </ul>                                                                                                 |
| 6 Check Air Side Oil/H2 Side Oil<br>Temp Diff High Alarm – CLEAR | <ul> <li>Perform the following:</li> <li>a. Determine if alarm is valid: <ul> <li>DT greater than or equal to 5°F</li> </ul> </li> <li>b. Verify proper operation of SW-2910-1/CV-31693, Air Side Temperature CV.</li> <li>c. Verify proper operation of SW-2920-1/CV-31692, Hydrogen Side Temperature CV.</li> </ul> |

| wisco         | ONSIN PUBLIC SERVICE CORPORATION                                          | <b>NO.</b> A-GE-84                                                                                                                                    |
|---------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| KE            | WAUNEE NUCLEAR POWER PLANT                                                | TITLE ABNORMAL OPERATION OF THE GENERATO<br>HYDROGEN AND/OR SEAL OIL SYSTEM                                                                           |
|               | OPERATING PROCEDURE                                                       | DATE APR 15 2004 PAGE 4 of 11                                                                                                                         |
| STEP          | OPERATOR ACTIONS                                                          | CONTINGENCY ACTIONS                                                                                                                                   |
| 7             | Check #6 Bearing Oil Temperature<br>STABLE AT 108-112°F<br>• TI-12371     | <ul> <li>Adjust service water to Turbine</li> <li>Oil Cooler to maintain 108-112°F</li> <li>oil temperatures per A-TB-54.</li> </ul>                  |
| <u>NOTE</u> : | Large temperature variations may differential pressures.                  | affect air side/hydrogen side oil                                                                                                                     |
| <u>NOTE</u> : | SW-2910-1/CV-31693, Air Side Cool<br>until air side oil temperature is    | er Outlet CV, will <u>NOT</u> start to control<br>8°F above #6 bearing oil temperature.                                                               |
| <u>NOTE</u> : | SW-2910-1 fails open on loss of a controller failure.                     | ir or power and fails as is on                                                                                                                        |
| 8             | Check Air Side Seal Oil<br>Temperature - GREATER THAN 120°F               | <u>GO TO</u> Step 11.                                                                                                                                 |
|               | • TI-12333<br>• TI-12052                                                  |                                                                                                                                                       |
| 9             | Check SW-2910-1 - RESPONDING<br>PROPERLY TO HIGH TEMPERATURE<br>CONDITION | <u>IF</u> SW-2910-1 is <u>NOT</u> operating<br>properly, <u>THEN</u> transfer SW flow<br>control to SW-2910-2, Air Side<br>Cooler Outlet CV Bypass:   |
|               |                                                                           | a. Throttle open SW-2910-2 until<br>oil temperature starts to<br>decrease.                                                                            |
|               |                                                                           | b. Slowly close SW-2910-5, Air<br>Side Cooler Temp CV Outlet <u>AND</u><br>open SW-2910-2 while<br>maintaining oil temperature<br>stable.             |
|               |                                                                           | c. <u>WHEN</u> SW-2910-5 is closed, <u>THEN</u><br>throttle SW-2910-2 <u>AND</u> valve<br>#252 as necessary to maintain<br>oil temperature 112-120°F. |
|               |                                                                           |                                                                                                                                                       |



| WISCON | NSIN PUBLIC SERVICE CORPORATION                                          | NO.                                                                          | A-GE-84                                                                                              |                                                                                         |    |  |  |
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| KEV    | WAUNEE NUCLEAR POWER PLANT                                               | TITLE ABNORMAL OPERATION OF THE GENERATOR<br>HYDROGEN AND/OR SEAL OIL SYSTEM |                                                                                                      |                                                                                         |    |  |  |
|        | OPERATING PROCEDURE                                                      | DATE                                                                         | APR 15 2004                                                                                          | PAGE 6 of                                                                               | 11 |  |  |
|        |                                                                          |                                                                              |                                                                                                      |                                                                                         |    |  |  |
| STEP   | OPERATOR ACTIONS                                                         |                                                                              | CONTINGENO                                                                                           | CY ACTIONS                                                                              |    |  |  |
| 11     | Check Air Side Seal Oil<br>Temperature - LESS THAN 112°F                 | -                                                                            | <u>GO TO</u> Step 14.                                                                                |                                                                                         | I  |  |  |
|        | • TI-12333<br>• TI-12052                                                 |                                                                              |                                                                                                      |                                                                                         |    |  |  |
| 12     | Check SW-2910-1 - RESPONDING<br>PROPERLY TO LOW TEMPERATURE<br>CONDITION |                                                                              | <u>IF</u> SW-2910-1 is <u>N</u><br>properly, <u>THEN</u> tr<br>control to SW-291<br>Cooler Outlet CV | <u>10T</u> operating<br>ansfer SW flow<br>10-2, Air Side<br>Bypass:                     |    |  |  |
|        |                                                                          | i                                                                            | a. Throttle close<br>Side Cooler Te<br>until oil temp<br>increase.                                   | e SW-2910-5, Air<br>emp CV Outlet<br>perature starts to                                 |    |  |  |
|        |                                                                          | I                                                                            | b. Slowly open SW<br>SW-2910-5 whil<br>temperature st                                                | /-2910-2 <u>AND</u> close<br>le maintaining oil<br>cable.                               |    |  |  |
|        |                                                                          |                                                                              | c. <u>WHEN</u> SW-2910-5<br>throttle SW-29<br>#252 as necess<br>oil temperatur                       | 5 is closed, <u>THEN</u><br>210-2 <u>AND</u> valve<br>Sary to maintain<br>Se 112-120°F. |    |  |  |
|        |                                                                          |                                                                              |                                                                                                      |                                                                                         |    |  |  |
|        |                                                                          |                                                                              |                                                                                                      |                                                                                         |    |  |  |
|        |                                                                          |                                                                              |                                                                                                      |                                                                                         |    |  |  |
|        |                                                                          |                                                                              |                                                                                                      |                                                                                         |    |  |  |



| WISCONSIN PUBLIC SERVICE CORPORATION                                                                             | <b>NO.</b> A-GE-84                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                     | TITLE ABNORMAL OPERATION OF THE GENERATOR<br>HYDROGEN AND/OR SEAL OIL SYSTEM                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| OPERATING PROCEDURE                                                                                              | DATE APR 15 2004 PAGE 8 of 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| STEP OPERATOR ACTIONS                                                                                            | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| STEP     OPERATOR ACTIONS       15     Check SW-2920-1 - RESPONDING<br>PROPERLY TO HIGH TEMPERATURE<br>CONDITION | <ul> <li>JF SW-2920-1 is <u>NOT</u> operating properly, <u>THEN</u> transfer SW flow control to SW-2920-2, Hydrogen Side Cooler Outlet CV Bypass:</li> <li>a. Throttle open SW-2920-2 until oil temperature starts to decrease.</li> <li>b. Slowly close SW-2920-5, Hydrogen Side Cooler Temp CV Outlet <u>AND</u> open SW-2920-2 while maintaining oil temperature stable.</li> <li>c. <u>WHEN</u> SW-2920-5 is closed, <u>THEN</u> throttle SW-2920-2 <u>AND</u> valve #241 as necessary to maintain oil temperature 112-120°F.</li> </ul> |
|                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |



| WISCONSIN PUBLIC SERVICE CORPORATION                                        | <b>NO.</b> A-GE-84                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| KEWAUNEE NUCLEAR POWER PLANT                                                | TITLE ABNORMAL OPERATION OF THE GENERATOR<br>HYDROGEN AND/OR SEAL OIL SYSTEM                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| OPERATING PROCEDURE                                                         | DATE APR 15 2004 PAGE 10 of 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| STEP OPERATOR ACTIONS                                                       | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 18 Check SW-2920-1 - RESPONDING<br>PROPERLY TO LOW TEMPERATURE<br>CONDITION | <ul> <li><u>IF</u> SW-2920-1 is <u>NOT</u> operating properly, <u>IHEN</u> transfer SW flow control to SW-2920-2, Hydrogen Side Cooler Outlet CV Bypass:</li> <li>a. Throttle close SW-2920-5, Hydrogen Side Cooler Temp CV Outlet until oil temperature starts to increase.</li> <li>b. Slowly open SW-2920-2 <u>AND</u> close SW-2920-5 while maintaining oil temperature stable.</li> <li>c. <u>WHEN</u> SW-2920-5 is closed, <u>THEN</u> throttle SW-2920-2 <u>AND</u> valve #241 as necessary to maintain oil temperature 112-120°F.</li> </ul> |

| WISCONSIN PUBLIC S                                                                                                                                                                                     | ERVICE CORPORATION    | NO.                                                | A-GE-84                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                          |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----|
| KEWAUNEE NUCI                                                                                                                                                                                          | EAR POWER PLANT       | TITLE                                              | ABNORMAL OPER<br>HYDROGEN AND/                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ATION OF THE<br>OR SEAL OIL S                                                                                                                                                                                                                                                                                                                                                          | GENERATO                                                                                                 | OR |
| OPERATIN                                                                                                                                                                                               | IG PROCEDURE          | DATE                                               | APR 15 2004                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PAGE 11                                                                                                                                                                                                                                                                                                                                                                                | <b>of</b> 11                                                                                             | 1  |
| STEP OI                                                                                                                                                                                                | PERATOR ACTIONS       |                                                    | CONTINGEN                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CY ACTIONS                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                          |    |
| <ul> <li>19 Throttle O<br/>Hydrogen S</li> <li>a. Maintain<br/>at 112-5</li> <li>b. Verify of<br/>satisfic<br/>• SW-293<br/>9/16</li> <li>SW be<br/>SW-293</li> <li>20 Return To<br/>Effect</li> </ul> | Procedure And Step In | e   Pe<br>re:   1.<br>1.<br>2.<br>-   3.<br>-   3. | <pre>erform the folle<br/><u>IF</u> SW-2920-1<br/>properly, <u>THEN</u><br/><u>IF</u> #6 Bearing<br/>less than 108<br/>Step 20.<br/><u>IF</u> valve #241<br/>SW-2920-1 is<br/>3/16 inch oper<br/>SW flow contre<br/>Hydrogen Side<br/>Bypass:<br/>a) Throttle C<br/>Air Side Co<br/>Outlet unt<br/>starts to<br/>b) Slowly oper<br/>close SW-22<br/>maintaining<br/>stable.<br/>c) <u>WHEN</u> SW-299<br/><u>THEN</u> throt<br/>valve #241<br/>maintain o<br/>112-120°F.</pre> | owing:<br>is <u>NOT</u> operat<br><u>N GO TO</u> STEP<br>oil temperat<br>F, <u>THEN GO T</u><br>is full open<br>less than<br>n, <u>THEN</u> trans<br>ol to SW-2920<br>Cooler Outle<br>lose SW-2920-<br>cooler Temp CV<br>il oil temperation<br>increase.<br>n SW-2920-2 <u>A</u><br>920-5 while<br>g oil temperatur<br>20-5 is close<br>tle SW-2920-2<br>as necessary<br>il temperatur | ing<br>18.<br>Ure<br>O<br>AND<br>fer<br>-2,<br>t CV<br>5.<br>ature<br>MD<br>ture<br>d,<br>AND<br>to<br>e |    |

| WISCONSIN PUBLIC SERVICE C                                                                                                                                                                                                                | ORPORATION                                                                                                                                                                                                                                                                                                        | NO. A-MDS-30 REV N                                                   |                                                                        |             |  |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------|-------------|--|--|--|--|
| KEWAUNEE NUCLEAR POW                                                                                                                                                                                                                      | VER PLANT                                                                                                                                                                                                                                                                                                         | <b>TITLE</b> Miscellaneous Drains and Sumps (MDS) Abnormal Operation |                                                                        |             |  |  |  |  |
| OPERATING PROCEE                                                                                                                                                                                                                          | DURE                                                                                                                                                                                                                                                                                                              | DATE M                                                               | AR 05 2002                                                             | PAGE 1 of 6 |  |  |  |  |
| REVIEWED BY                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                   | APPRO                                                                | VED BY                                                                 |             |  |  |  |  |
| NUCLEAR XES<br>SAFETY RELATED NO                                                                                                                                                                                                          | PORC REVIEW<br>REQUIRED                                                                                                                                                                                                                                                                                           | YES                                                                  | ☑ YES SRO APPROVAL OF ☑ YES<br>TEMPORARY CHANGES<br>☐ NO REQUIRED ☐ NO |             |  |  |  |  |
| 1.0 <u>INTRODUCTION</u><br>1.1 Procedure describes<br>2.0 SYMPTOMS                                                                                                                                                                        | action require                                                                                                                                                                                                                                                                                                    | d for a sum                                                          | p high level                                                           | alarm.      |  |  |  |  |
| 2.0 <u>Sim Tons</u><br>2.1 Control Room Annunci                                                                                                                                                                                           | ators.                                                                                                                                                                                                                                                                                                            |                                                                      |                                                                        |             |  |  |  |  |
| <ul> <li>CONTAINMENT SUMP A</li> <li>CONTAINMENT SUMP A</li> <li>CONTAINMENT SUMP A</li> <li>REACTOR CAVITY SUM</li> <li>ANNULUS SUMP A/B L</li> <li>RHR PUMP PIT A/B L</li> <li>RHR PUMP PIT SUMP</li> <li>MISCELLANEOUS SUMP</li> </ul> | <ul> <li>CONTAINMENT SUMP A LEVEL HI-HI (47031-P)</li> <li>CONTAINMENT SUMP A LEVEL HIGH (47031-Q)</li> <li>REACTOR CAVITY SUMP LEVEL HIGH/LOW (47031-R)</li> <li>ANNULUS SUMP A/B LEVEL HIGH (47032-P)</li> <li>RHR PUMP PIT A/B LEVEL HIGH (47032-Q)</li> <li>RHR PUMP PIT SUMP LEVEL HIGH (47032-R)</li> </ul> |                                                                      |                                                                        |             |  |  |  |  |
| 3.0 IMMEDIATE ACTIONS                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                   |                                                                      |                                                                        |             |  |  |  |  |
| 3.1 <u>Automatic</u>                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                   |                                                                      |                                                                        |             |  |  |  |  |
| <u>NOTE</u> : Following pumps automatically start before annunciator<br>is actuated: <ul> <li>Screenhouse sump pump</li> <li>Turbine Building sump pumps</li> </ul>                                                                       |                                                                                                                                                                                                                                                                                                                   |                                                                      |                                                                        |             |  |  |  |  |
| • Waste Area<br>1. High level in RH<br>MD(R)-201B/CV-31                                                                                                                                                                                   | <ul> <li>Waste Area sump pump</li> <li>1. High level in RHR Pump Pit Sump, MD(R)-201A/CV-31341 and<br/>MD(R)-201B/CV-31342, RHR Pump A and B Pit Drain to Sump, CLOSES.</li> </ul>                                                                                                                                |                                                                      |                                                                        |             |  |  |  |  |
| 2. High level in RH                                                                                                                                                                                                                       | R Pump Pit A, I                                                                                                                                                                                                                                                                                                   | MD(R)-201A.                                                          | CLOSES.                                                                |             |  |  |  |  |
| 3. High level in RH                                                                                                                                                                                                                       | R Pump Pit B, I                                                                                                                                                                                                                                                                                                   | MD(R)-201B,                                                          | CLOSES.                                                                |             |  |  |  |  |
| 3.2 <u>Operator</u>                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                   |                                                                      |                                                                        |             |  |  |  |  |
| 1. None                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                   |                                                                      |                                                                        |             |  |  |  |  |

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| WISC            | ONSI              | N PU                 | BLIC SERVICE CORPORATION                                                                           | NO.                                                              | A-MDS-30                                                |                              |             |  |
|-----------------|-------------------|----------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------|------------------------------|-------------|--|
| к               | ŒWA               | UNE                  | E NUCLEAR POWER PLANT                                                                              | TITLE Miscellaneous Drains and Sumps<br>(MDS) Abnormal Operation |                                                         |                              |             |  |
|                 | 0                 | PERA                 | ATING PROCEDURE                                                                                    | DATE                                                             | MAR 05 2002                                             | PAGE 2                       | <b>of</b> 6 |  |
|                 |                   |                      |                                                                                                    |                                                                  |                                                         |                              |             |  |
| 4.0 <u>SUBS</u> | <u>SEQUE</u>      | <u>NT /</u>          | ACTIONS                                                                                            |                                                                  |                                                         |                              |             |  |
| 4.1             | Dis<br>acc<br>Mar | pato<br>essi<br>ager | ch Operator to investigate a<br>ible (Containment, Annulus, I<br>r will decide if inspection :     | larm. <u>II</u><br>RHR Pump<br>should be                         | alarm is in ar<br>Pit, etc.), the<br>made.              | n area <u>NOT</u><br>2 Shift |             |  |
| 4.2             | An<br>amc<br>wit  | inve<br>unt<br>h th  | estigation shall be made to o<br>of leakage has occurred from<br>ne affected sump system.          | determine<br>m any pip                                           | e whether an exc<br>bing or equipmer                    | cessive<br>nt associated     |             |  |
| 4.3             | <u>Rea</u>        | cto                  | <u>r Cavity Sump</u>                                                                               |                                                                  |                                                         |                              |             |  |
|                 | <u>101</u>        | <u>E</u> :           | Reactor Cavity Sump level h<br>before pump start setpoint<br>in-leakage is low, the pump<br>hours. | igh alarn<br>is reache<br>may NOT                                | n is activated<br>ed. <u>IF</u> sump<br>start for seven | al                           |             |  |
|                 | 1.                | Hig                  | gh Level:                                                                                          |                                                                  |                                                         |                              |             |  |
|                 |                   | a.                   | POSITION Reactor Cavity Sur<br>Pump will <u>NOT</u> START.                                         | mp Pump d                                                        | control switch 1                                        | to AUTO.                     |             |  |
|                 |                   | b.                   | <u>WHEN</u> level reaches start se<br>alarm clears.                                                | etpoint,                                                         | VERIFY auto sta                                         | art and high                 |             |  |
| 1               |                   | c.                   | <u>WHEN</u> pump stops, POSITION                                                                   | Reactor (                                                        | Cavity Sump Pump                                        | o C/S to OFF.                |             |  |
|                 |                   | d.                   | RECORD pump run data on Ac                                                                         | cumulated                                                        | i Run Time Log.                                         |                              |             |  |
|                 | 2.                | Lo                   | v Level:                                                                                           |                                                                  |                                                         |                              |             |  |
|                 |                   | a.                   | POSITION Reactor Cavity Su                                                                         | mp Pump (                                                        | control switch t                                        | to OFF.                      |             |  |
|                 |                   | b.                   | RECORD pump run data on Ac                                                                         | cumulated                                                        | d Run Time Log.                                         |                              |             |  |
|                 |                   |                      |                                                                                                    |                                                                  |                                                         |                              |             |  |
|                 |                   |                      |                                                                                                    |                                                                  |                                                         |                              |             |  |
|                 |                   |                      |                                                                                                    |                                                                  |                                                         |                              |             |  |
|                 |                   |                      |                                                                                                    |                                                                  |                                                         |                              |             |  |
|                 |                   |                      |                                                                                                    |                                                                  |                                                         |                              |             |  |
|                 |                   |                      | ·                                                                                                  |                                                                  |                                                         |                              |             |  |

|   | WISC                                           | ONSIN       | I PUE      | BLIC SERVICE CORPORATION                                                       | NO. /                                                                   | \-MDS-30                   |            |             |  |
|---|------------------------------------------------|-------------|------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------------|------------|-------------|--|
|   | к                                              | EWAU        | JNEE       | NUCLEAR POWER PLANT                                                            | <b>TITLE</b> Miscellaneous Drains and Sumps<br>(MDS) Abnormal Operation |                            |            |             |  |
| _ | OPERATING PROCEDURE DATE MAR 05 2002 PAGE 3 of |             |            |                                                                                |                                                                         |                            |            | <b>of</b> 6 |  |
|   |                                                |             |            |                                                                                |                                                                         |                            |            |             |  |
|   | 4.4                                            | <u>Annu</u> | lus        | Sump_A(B)                                                                      |                                                                         |                            |            |             |  |
|   |                                                | 1.          | Hig        | h Level:                                                                       |                                                                         |                            |            |             |  |
| l |                                                |             | a.         | POSITION Annulus Sump Pump                                                     | A C/S to                                                                | AUTO.                      |            |             |  |
| l |                                                |             | b.         | POSITION Annulus Sump Pump                                                     | B C/S to                                                                | AUTO.                      |            |             |  |
| I |                                                |             | c.         | WHEN pumps stop, POSITION                                                      | following                                                               | ]:                         |            |             |  |
| ĺ |                                                |             |            | <ul> <li>Annulus Sump Pump A C/S</li> <li>Annulus Sump Pump B C/S</li> </ul>   | to OFF.<br>to OFF.                                                      |                            |            |             |  |
|   |                                                |             | d.         | RECORD pump run data on Ac                                                     | cumulated                                                               | i Run Time Log.            |            |             |  |
|   | 4.5                                            | <u>Cont</u> | ain        | <u>ment Sump A</u>                                                             |                                                                         |                            |            |             |  |
|   |                                                | 1.          | Hig        | h Level:                                                                       |                                                                         |                            |            |             |  |
|   |                                                |             | a.         | NOTIFY HP to monitor for c<br>due to pumping Containment                       | hanging n<br>Sump A.                                                    | radiological com           | nditions,  |             |  |
|   |                                                |             | b.         | OPEN MD(R)-134/CV-31136, C<br>Header Isol.                                     | ntmt Sump                                                               | o Pumps Discharg           | je         |             |  |
|   |                                                |             | c.         | OPEN MD(R)-135/CV-31137, C<br>Header Isol.                                     | ntmt Sump                                                               | o Pumps Discharg           | je         |             |  |
|   |                                                |             | <u>NOT</u> | E: Pumps automatically alt                                                     | ernate ru                                                               | uns.                       |            |             |  |
| ļ |                                                |             | d.         | POSITION Containment Sump                                                      | Pump A C                                                                | /S to AUTO.                |            |             |  |
| I |                                                |             | e.         | POSITION Containment Sump                                                      | Pump B C                                                                | /S to AUTO.                |            |             |  |
|   |                                                |             | f.         | REFER to SP 36-082, Data S started.                                            | heet 3, a                                                               | and VERIFY corre           | ect pump   |             |  |
| 1 |                                                |             | g.         | <u>WHEN</u> Containment Sump Pump                                              | s A and E                                                               | 3 stop, PERFORM            | following: |             |  |
|   |                                                |             |            | <ul> <li>POSITION Containment Sum</li> <li>POSITION Containment Sum</li> </ul> | p Pump A<br>p Pump B                                                    | C/S to OFF.<br>C/S to OFF. |            |             |  |
| j |                                                |             | h.         | POSITION MD(R)-134 to CLOS                                                     | E.                                                                      |                            |            |             |  |
| ] |                                                |             | i.         | POSITION MD(R)-135 to CLOS                                                     | Ε.                                                                      |                            |            |             |  |
|   |                                                |             |            | <u>CONTINU</u>                                                                 | <u>ED</u>                                                               |                            |            |             |  |

| WISCONSIN PUE      | BLIC SERVICE CORPORATION                                                                                              | NO. A                              | A-MDS-30                                                      |                                              |             |
|--------------------|-----------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------------------------------------------------|----------------------------------------------|-------------|
| KEWAUNEE           | E NUCLEAR POWER PLANT                                                                                                 | TITLE                              | Miscellaneous<br>(MDS) Abnormal                               | Drains and S<br>Operation                    | Sumps       |
| OPERA              | TING PROCEDURE                                                                                                        | DATE                               | MAR 05 2002                                                   | PAGE 4                                       | <b>of</b> 6 |
|                    | · · · · · · · · · · · · · · · · · · ·                                                                                 |                                    |                                                               |                                              |             |
| 4.5.1              |                                                                                                                       |                                    |                                                               |                                              |             |
| <u>CONTINUED</u>   |                                                                                                                       |                                    |                                                               |                                              |             |
| J.                 | RECORD pump run date on SP                                                                                            | 36-082,                            | Data Sheet 3.                                                 |                                              |             |
| 2. Ino             | perable sump pumps or level                                                                                           | alarms:                            |                                                               |                                              |             |
| a.                 | <u>IF</u> both Containment Sump A<br>annunciators CONTAINMENT SU<br>CONTAINMENT SUMP LEVEL HI-1<br>PERFORM following: | pumps ar<br>JMP A LEV<br>HI (47031 | re inoperable <u>OF</u><br>/EL HIGH (47031-<br>P) are inopera | <u>}</u> both<br>Q) and<br>able, <u>THEN</u> |             |
|                    | 1. INSPECT Containment Sur                                                                                            | np A week                          | ly.                                                           |                                              |             |
| 1                  | 2. RECORD results on KAP a                                                                                            | and attac                          | ch copy to SP 36                                              | 5-082.                                       |             |
| 4.6 <u>RHR Pum</u> | <u>p_Pit_1A</u>                                                                                                       |                                    |                                                               |                                              |             |
| 1. Hig             | h Level:                                                                                                              |                                    |                                                               |                                              |             |
| a.                 | NOTIFY HP to monitor for cl<br>due to pumping RHR Pump Pi                                                             | hanging r<br>t Sump.               | adiological cor                                               | nditions,                                    |             |
| b.                 | VERIFY MD(R)-201A/CV-31341<br>CLOSED.                                                                                 | , RHR Pun                          | np A Pit Drain 1                                              | to Sump,                                     |             |
| с.                 | POSITION MD(R)-201A contro                                                                                            | l switch                           | to OPEN.                                                      |                                              |             |
| ] d.               | POSITION RHR Pump Pit Sump                                                                                            | Pump A C                           | C/S to AUTO.                                                  |                                              |             |
| e.                 | POSITION RHR Pump Pit Sump                                                                                            | Pump B C                           | C/S to AUTO.                                                  |                                              |             |
| f.                 | <u>IF</u> RHR PUMP PIT SUMP LEVEL<br>draining, OPEN MD(R)-201B/<br>Sump.                                              | HIGH (47<br>CV-31342,              | (032-R) actuates<br>RHR Pump B Pit                            | s while<br>t Drain to                        |             |
| ] g.               | <u>WHEN</u> pumps stop, POSITION                                                                                      | following                          | :                                                             |                                              |             |
|                    | <ul> <li>RHR Pump Pit Sump Pump A</li> <li>RHR Pump Pit Sump Pump B</li> </ul>                                        | C/S to C<br>C/S to C               | )FF.<br>)FF.                                                  |                                              |             |
| h.                 | VERIFY MD(R)-201A, OPEN.                                                                                              |                                    |                                                               |                                              |             |
| i.                 | RECORD pump run data on Acc                                                                                           | cumulated                          | l Run Time Log.                                               |                                              |             |
|                    |                                                                                                                       |                                    |                                                               |                                              |             |

|   | WISCONSIN PUBLIC SERVICE CORPORATION             |            |      |                                                                                | NO.                    | A-MDS-30                             |                           |      |
|---|--------------------------------------------------|------------|------|--------------------------------------------------------------------------------|------------------------|--------------------------------------|---------------------------|------|
|   | к                                                | EWA        | UNEI | E NUCLEAR POWER PLANT                                                          | TITLE                  | Miscellaneous<br>(MDS) Abnormal      | Drains and S<br>Operation | umps |
|   | OPERATING PROCEDURE DATE MAR 05 2002 PAGE 5 of 6 |            |      |                                                                                |                        |                                      | <b>of</b> 6               |      |
|   |                                                  | _          |      |                                                                                |                        |                                      |                           |      |
|   | 4.7                                              | <u>RHR</u> | Pum  | p <u>Pit_1B</u>                                                                |                        |                                      |                           |      |
|   |                                                  | 1.         | Hig  | h Level:                                                                       |                        |                                      |                           |      |
|   |                                                  |            | a.   | NOTIFY HP to monitor for c<br>due to pumping RHR Pump Pi                       | hanging r<br>t Sump.   | radiological con                     | ditions,                  |      |
|   |                                                  |            | b.   | VERIFY MD(R)-201B/CV-31342<br>CLOSED.                                          | , RHR Pun              | np B Pit Drain t                     | co Sump,                  |      |
|   |                                                  |            | c.   | POSITION MD(R)-201B contro                                                     | l switch               | to OPEN.                             |                           |      |
| 1 |                                                  |            | d.   | POSITION RHR Pump Pit Sump                                                     | Pump A (               | C/S to AUTO.                         |                           |      |
| ł |                                                  |            | e.   | POSITION RHR Pump Pit Sump                                                     | Pump B (               | C/S to AUTO.                         |                           |      |
|   |                                                  |            | f.   | <u>IF</u> RHR PUMP PIT SUMP LEVEL<br>draining, OPEN MD(R)-201A/<br>Sump.       | HIGH (47<br>CV-31341,  | 7032-R) actuates<br>, RHR Pump A Pit | while<br>Drain to         |      |
|   |                                                  |            | g.   | WHEN pumps stop, POSITION                                                      | following              | ):                                   |                           |      |
|   |                                                  |            |      | <ul> <li>RHR Pump Pit Sump Pump A</li> <li>RHR Pump Pit Sump Pump B</li> </ul> | C/S to (<br>C/S to (   | DFF.<br>DFF.                         |                           |      |
|   |                                                  |            | h.   | VERIFY MD(R)-201B OPEN.                                                        |                        |                                      |                           |      |
|   |                                                  |            | i.   | RECORD pump run data on Ac                                                     | cumulated              | d Run Time Log.                      |                           |      |
|   | 4.8                                              | <u>Rhr</u> | Pum  | <u>p Pit Sump</u>                                                              |                        |                                      |                           |      |
|   |                                                  | 1.         | Hig  | h Level:                                                                       |                        |                                      |                           |      |
|   |                                                  |            | a.   | NOTIFY HP to monitor for c<br>due to pumping RHR Pump Pi                       | hanging ı<br>t Sump.   | radiological cor                     | ditions,                  |      |
|   |                                                  |            | b.   | VERIFY MD(R)-201A/CV-31341<br>Pump A and B Pit Drain to                        | `and/or N<br>Sump, CL( | 4D(R)-201B/CV-31<br>DSED.            | .342, RHR                 |      |
| 1 |                                                  |            | c.   | POSITION RHR Pump Pit Sump                                                     | Pump A (               | C/S to AUTO.                         |                           |      |
| 1 |                                                  |            | d.   | POSITION RHR Pump Pit Sump                                                     | Pump B (               | C/S to AUTO.                         |                           |      |
| 1 |                                                  |            | e.   | <u>WHEN</u> pumps stop, PERFORM f                                              | ollowing               | :                                    |                           |      |
| 1 |                                                  |            |      | <ul> <li>POSITION RHR Pump Pit Sun<br/>CONTINU</li> </ul>                      | mp Pump /<br><u>ED</u> | A C/S to OFF.                        |                           |      |

| WISCONSI                             | IN PUB                 | LIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                       | NO. /                                                                                                                                    | A-MDS-30                                                                                                                                                              |                                                              |             |
|--------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------|
| KEWA                                 | UNEE                   | NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>TITLE</b> Miscellaneous Drains and Sumps (MDS) Abnormal Operation                                                                     |                                                                                                                                                                       |                                                              |             |
| О                                    | PERAT                  | TING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DATE                                                                                                                                     | MAR 05 2002                                                                                                                                                           | PAGE 6                                                       | <b>of</b> 6 |
| 0<br>4.8.1<br><u>CONTINUED</u><br>2. | f.<br>Meas<br>a.<br>b. | <ul> <li>POSITION RHR Pump Pit Sum</li> <li>OPEN MD(R)-201A.</li> <li>OPEN MD(R)-201B.</li> <li>RECORD pump run data on Accuring leakage into RHR Pumm</li> <li>IF RHR pump was NOT runnin rotating shaft by hand or</li> <li>Measuring RHR pump leakage</li> <li>CLOSE MD(R)-201A/CV-31 A(B) Pit Drain to Sump</li> <li>Locally note time at w sump as leakage fills</li> <li>Locally note time at w</li> <li>OPEN MD(R)-201A(B).</li> <li>IF required, RUN RHR P</li> </ul> | DATE<br>mp Pump E<br>cumulated<br>p Pit:<br>g, seal 1<br>bumping r<br>:<br>341, (MD)<br>tich wate<br>sump draf<br>hich sump<br>ump Pit 1 | MAR 05 2002<br>B C/S to OFF.<br>d Run Time Log.<br>leakage may be s<br>notor.<br>(R)-201B/CV-3134<br>er level reaches<br>in line.<br>b is filled to to<br>Sump Pumps. | PAGE 6<br>stopped by<br>42), RHR Pump<br>s bottom of<br>top. | <b>of</b> 6 |
|                                      | с.                     | <ul> <li>6. CALCULATE Teak rate as Leak Rate = <u>8.75 ga</u> x hours</li> <li>x = Difference in hour</li> <li>7. REFER to System Integr Teakrate.</li> <li><u>IF</u> required, ISOLATE the a</li> </ul>                                                                                                                                                                                                                                                                      | follows:<br><u>1</u><br>s between<br>ity Progn<br>ffected I                                                                              | :<br>ram for maximum<br>RHR pump.                                                                                                                                     | allowable                                                    |             |
| WISCONSIN PUBLIC SERVICE C                                                                                                                                                                                                                                        | ORPORATION                                                                                                                  | NO. A-RC-36A REV J                                                                    |                                                                            | REV J                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------|
| KEWAUNEE NUCLEAR POW                                                                                                                                                                                                                                              | /ER PLANT                                                                                                                   | TITLE High Reactor Coolant Activity                                                   |                                                                            | Coolant Activity                                           |
| OPERATING PROCED                                                                                                                                                                                                                                                  | OPERATING PROCEDURE                                                                                                         |                                                                                       | PR 29 2003                                                                 | PAGE 1 of 2                                                |
| REVIEWED BY                                                                                                                                                                                                                                                       |                                                                                                                             | APPROVED BY                                                                           |                                                                            |                                                            |
| NUCLEAR XES<br>SAFETY RELATED NO                                                                                                                                                                                                                                  | PORC REVIEW<br>REQUIRED                                                                                                     | W 🛛 YES SRO APPROVAL OF 🖾<br>TEMPORARY CHANGES<br>REQUIRED                            |                                                                            | AL OF XES<br>CHANGES NO                                    |
| <pre>1.0 <u>INTRODUCTION</u>     1.1 The purpose of this of high reactor cools 2.0 <u>SYMPTOMS</u>     2.1 Alarm on the letdown     2.2 Informed by Chemistry     criteria:     1. The specific act         a. ≤1.0 µCi/gram         b. ≤ <u>91 µCi</u> gro</pre> | procedure is to<br>ant activity.<br>line radiation<br>y Dept. of app<br>ivity of the ro<br>m DOSE EQUIVAL<br>ss radioactivi | o deal with<br>n monitor (<br>roaching or<br>eactor cool<br>ENT I-131,<br>ty due to n | the abnorma<br>R-9).<br>exceeding t<br>ant shall be<br>and<br>uclides with | <pre>1 condition he following limited to: half lives</pre> |
| E is<br>E is<br>3.0 <u>IMMEDIATE ACTIONS</u><br>3.1 <u>Automatic</u><br>None<br>3.2 <u>Operator</u><br>None                                                                                                                                                       | critical <u>OR</u> the                                                                                                      | e average c                                                                           | oolant tempe                                                               | rature is                                                  |

•

| wisc                                               | ONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>NO.</b> A-RC-36A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| к                                                  | KEWAUNEE NUCLEAR POWER PLANT TITLE High Reactor Coolant Activity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  |
|                                                    | OPERATING PROCEDURE DATE APR 29 2003 PAGE 2 of 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  |
| 4.0 <u>SUBS</u><br>4.1<br>4.2<br>4.3<br>4.4<br>4.5 | OPERATING PROCEDURE         EQUENT ACTIONS         REVIEW the Emergency Plan Implement<br>classification criteria.         REQUEST Chemistry Dept. to determine<br>concentration.         OPERATE CVC mixed bed demineralized<br>per N-CVC-35B, to reduce RCS active         Refer to NAD 8.11, Failed Fuel Activation<br>plant support.         IE the reactor is critical OR the ativation<br>DOSE EQUIVALENT I-131 for more<br>time interval, OR exceeding 60<br>in at least INTERMEDIATE SHUTD<br>temperature of < 500°F within at<br>coolant temperature < 500°F within at<br>coolant temperature < 500°F with<br>3. With the specific activity of ativative of<br>DOSE EQUIVALENT I-131 or 91 µC<br>- cc<br>E         PERFORM sampling and isotopic at<br>four hours until restored to with | DATE APR 29 2003 PAGE 2 of 2<br>ting Procedures for emergency<br>the RCS activity and I-131<br>rs at maximum flow rate (80 gpm),<br>ity.<br>ion Plan, for further information on<br>average temperature is > 500° F:<br>the reactor coolant > 1.0 $\mu$ Ci/gram<br>than 48 hours during one continuous<br>$\mu$ Ci/gram DOSE EQUIVALENT I-131, be<br>DWN with an average coolant<br>six hours.<br>the reactor coolant > $91 \mu$ Ci<br>at least<br>T = CC<br>average E<br>thin six hours.<br>the reactor coolant > 1.0 $\mu$ Ci/gram<br>1.<br>analysis for RCS Iodine once every<br>ithin its limits. |  |  |  |
|                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  |

| WISCONSIN PUBLIC SERVICE C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                             | NO. A-RC-36D REV AE                                                                                                                                          |                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                               | TITLE Reactor Coolant Leak                                                                                                                                                                                                                                  |                                                                                                                                                              | nt Leak                               |
| OPERATING PROCED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | DURE                                                                                                                                                                                                                                                                                                                                                                                                          | DATE APR 30 2003 PAGE 1 of                                                                                                                                                                                                                                  |                                                                                                                                                              | PAGE 1 of 7                           |
| REVIEWED BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                               | APPROVED BY                                                                                                                                                                                                                                                 |                                                                                                                                                              |                                       |
| NUCLEAR SAFETY RELATED NO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PORC REVIEW<br>REQUIRED                                                                                                                                                                                                                                                                                                                                                                                       | N 🛛 YES SRO APPROVAL OF 🖾 Y<br>TEMPORARY CHANGES<br>NO REQUIRED 🗌 N                                                                                                                                                                                         |                                                                                                                                                              | AL OF 🛛 YES<br>CHANGES 🗌 NO           |
| <ul> <li>1.0 <u>INTRODUCTION</u> <ol> <li>Procedure describes</li> <li>Purpose of procedure severity, and minimi</li> </ol> </li> <li>2.0 <u>SYMPTOMS</u> <ul> <li><u>NOTE</u>: <u>IF</u> RHR is in opera on RHR, A-RHR-34 s</li> <li>Unidentified RCS lea</li> <li>Increase in charg</li> <li>Increase in Chmt</li> <li>Decreasing Pressu</li> <li>CHARGING PUMP IN</li> <li>PRESSURIZER LEVEL</li> <li>PRESSURIZER LEVEL</li> <li>PRESSURIZER LEVEL</li> <li>PRESSURIZER LVL L</li> </ul> </li> <li>PRESSURIZER PRESS</li> <li>PRESSURIZER CONTR</li> <li>CONTAINMENT SUMP</li> <li>REACTOR CAVITY SU</li> </ul> <li>2.2 Leak from the CVC Sy <ul> <li>Abnormal Chg Flow</li> <li>Abnormal Letdown H</li> <li>Abnormal RXCP A(B)</li> <li>REGEN HX LETDOWN T</li> <li>LETDOWN FLOW HIGH</li> <li>RXCP A(B) LABRYNTH</li> </ul> </li> | actions taken a<br>is to locate<br>ze its consequ<br>tion, this pro<br>hould be used.<br>k:<br>ing flow<br>ion on R-11 Co<br>or R-21 Contain<br>humidity<br>rizer Level<br>rizer/RCS Pres<br>AUTO HIGH/LOW<br>DEVIATION (47<br>ETDOWN ISOL &<br>URE LOW (47043<br>OL PRESS ABNOR<br>A LEVEL HIGH/<br>Stem:<br>to Regen Hx (F<br>x Outlet Flow<br>#1 Seal Injn<br>EMP HIGH (4704<br>(47045-K)<br>SEAL DP LOW 4 | when a RCS<br>source of F<br>ences.<br>cedure is <u>N</u><br>ntainment F<br>nment Vent<br>SPEED (4704<br>043-E)<br>HEATERS OFF<br>-D)<br>MAL (47043-<br>47031-Q)<br>LOW (47031-<br>UW (47031-<br>I-128)<br>indication<br>Flow, FI-11<br>1-K)<br>7014-I (470 | leak is susp<br>RCS leakage.<br><u>IOT</u> used. <u>WH</u><br>Particulate.<br>(3-J)<br>(47042-F)<br>(47042-F)<br>(5)<br>(FI-134)<br>(FI-134)<br>(5) (FI-116) | ected.<br>determine its<br>EN<br>R-12 |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>NO.</b> A-RC-36D                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                     |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | KEWAUNEE NUCLEAR POWER PLANT TITLE Reactor Coolant Leak                                                                                                                                                                                                                                                                                                                                                                    |                                                                     |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | DATE APR 30 2003                                                                                                                                                                                                                                                                                                                                                                                                           | PAGE 2 of 7                                                         |  |  |
| <ul> <li>2.2<br/><u>CONTINUED</u> <ul> <li>RXCP A(B) #1 SEAL DP LOW 47012-I</li> <li>Low Regen Hx Chg Outl Temp (TI-1)</li> <li>Rx Coolant Pump A(B) #1 Seal Out<br/>Increases</li> <li>Rx Coolant Pump A(B) Bearing Wat<br/>Increases</li> <li>NOTE: IF a PRZR Safety Valve opens, it<br/>and vent the PRT to Containment.</li> </ul> </li> <li>2.3 Leakage from Pressurizer Safeties,<br/>Leakoff on PORV Motor Operated Iso</li> <li>Przr Safety or PORV Outlet temp<br/>(TI-436, TI-437, &amp; TI-438)</li> <li>PRESSURIZER PORV DISCHARGE TEMP HI<br/>PRESSURIZER SAFETY DISCH TEMP HI<br/>PRESSURIZER SAFETY OPEN (47042-A)</li> <li>PRESSURIZER SAFETY OPEN (47041-A</li> <li>2.4 Reactor Coolant Pump No. 2 seal le</li> <li>RXCP A(B) STANDPIPE HIGH/LOW 470<br/>RXCP A(B) SEAL LEAKOFF FLOW HIGH<br/>RXCP Seal Leakoff Flow indicates</li> <li>2.5 Leakage into Component Cooling Sys</li> <li>CC SURGE TANK LEVEL HIGH/LOW (47<br/>RXCP A/B TOTAL CC WTR OUTLET TEM<br/>RXCP CF LOW LOW (47021-1) due t<br/>Thrm Barr CC Wtr Isol CV, closin</li> <li>High alarm on R-17</li> <li>Erratic Delta P across Rx Coolan<br/>PI-131B(PI-124B)</li> </ul> | (47012-L)<br>26)<br>let Temp TI-181(TI-182)<br>er Temp TI-132(TI-125) T<br>s rupture disc will rupt<br>Power Operated Relief V<br>lation Valves:<br>indicates higher than no<br>HIGH (47042-B)<br>GH (47041-B)<br>(47043-B)<br>)<br>akage:<br>15-I (47015-L)<br>/LOW 47013-I (47013-L)<br>low<br>tem:<br>D24-H)<br>(47014-J)<br>P HIGH (47015-J)<br>o CC-610A or CC-610B, RX<br>g on high flow<br>t Pump A(B) Lbrth S1 Del | Temperature<br>emperature<br>alves. or<br>rmal<br>CP 1A(1B)<br>ta P |  |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                          | NO. A-RC-36D                                                                                                 |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                  | TITLE Reactor Coolant Leak                                                                                   |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                           | OPERATING PROCEDURE DATE APR 30 2003 PAGE 3 of 7                                                             |  |  |  |  |
|                                                                                                                                                                                                                                               |                                                                                                              |  |  |  |  |
| 2.6 Reactor Vessel Flange Leak:                                                                                                                                                                                                               |                                                                                                              |  |  |  |  |
| <ul> <li>RX VSL FLANGE LEAKOFF TEMP HIGH</li> <li>Increased leakage to Reactor Coord</li> </ul>                                                                                                                                               | (47044-B)<br>lant Drain Tank                                                                                 |  |  |  |  |
| 2.7 Leak into SI Accumulator:                                                                                                                                                                                                                 |                                                                                                              |  |  |  |  |
| <ul> <li>ACCUMULATOR A(B) LEVEL HIGH/LOW 47024-B (47024-D)</li> <li>ACCUMULATOR A(B) PRESSURE HIGH/LOW 47024-A (47024-C)</li> </ul>                                                                                                           |                                                                                                              |  |  |  |  |
| 2.8 Primary to Secondary Leak:                                                                                                                                                                                                                | 2.8 Primary to Secondary Leak:                                                                               |  |  |  |  |
| <ul> <li>TLA-15 RMS ABOVE NORMAL (47033-35)</li> <li>RADIATION INDICATION HIGH (47011-B)</li> <li>Radiation Alarm on SPDS: <ul> <li>R-31, Steam Line A Low Range Monitor</li> <li>R-33, Steam Line B Low Range Monitor</li> </ul> </li> </ul> |                                                                                                              |  |  |  |  |
| <ul> <li>Sample results from RCC-88, Prim<br/>greater than 5 gpd.</li> </ul>                                                                                                                                                                  | <ul> <li>Sample results from RCC-88, Primary-to-Secondary Leak Rate Data,<br/>greater than 5 gpd.</li> </ul> |  |  |  |  |
| 3.0 <u>IMMEDIATE ACTION</u>                                                                                                                                                                                                                   |                                                                                                              |  |  |  |  |
| 3.1 <u>Automatic</u>                                                                                                                                                                                                                          |                                                                                                              |  |  |  |  |
| None                                                                                                                                                                                                                                          |                                                                                                              |  |  |  |  |
| 3.2 <u>Operator</u>                                                                                                                                                                                                                           |                                                                                                              |  |  |  |  |
| <ol> <li><u>IF</u> any of the following condit<br/>ACTUATE SI, and GO TO E-0:</li> </ol>                                                                                                                                                      | ions exist, <u>THEN</u> TRIP reactor,                                                                        |  |  |  |  |
| a. Reactor is critical <u>AND</u> RC<br>is <20°F.                                                                                                                                                                                             | S subcooling based on Core Exit TCs                                                                          |  |  |  |  |
| <u>OR</u>                                                                                                                                                                                                                                     |                                                                                                              |  |  |  |  |
| b. Reactor is <u>NOT</u> critical <u>AN</u><br>TCs is <30°F.                                                                                                                                                                                  | <u>D</u> RCS subcooling based on Core Exit                                                                   |  |  |  |  |
| <u>OR</u>                                                                                                                                                                                                                                     |                                                                                                              |  |  |  |  |
| c. PRZR level can <u>NOT</u> be main                                                                                                                                                                                                          | tained >5%.                                                                                                  |  |  |  |  |
|                                                                                                                                                                                                                                               |                                                                                                              |  |  |  |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                     | <b>NO.</b> A-RC-36D                                                                                          |       |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-------|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                             | EWAUNEE NUCLEAR POWER PLANT TITLE Reactor Coolant Leak                                                       |       |  |  |  |  |
| OPERATING PROCEDURE DATE APR 30 2003 PAGE 4 of 7                                                                                                                                                         |                                                                                                              |       |  |  |  |  |
|                                                                                                                                                                                                          |                                                                                                              |       |  |  |  |  |
| 4.0 <u>SUBSEQUENT ACTION</u>                                                                                                                                                                             |                                                                                                              |       |  |  |  |  |
| <u>NOTE: IF</u> RHR is in operation, this procedure is <u>NOT</u> used. <u>WHEN</u><br>on RHR, A-RHR-34 should be used.                                                                                  |                                                                                                              |       |  |  |  |  |
| 4.1 Unidentified RCS Leak:                                                                                                                                                                               | 4.1 Unidentified RCS Leak:                                                                                   |       |  |  |  |  |
| 1. INCREASE Charging to maintain                                                                                                                                                                         | Pressurizer level.                                                                                           |       |  |  |  |  |
| <ol><li>POSITION Pressurizer Heater switches to ON and maintain RCS pressure.</li></ol>                                                                                                                  |                                                                                                              |       |  |  |  |  |
| 3. <u>IF</u> required, to isolate letdow                                                                                                                                                                 | n, CLOSE the following:                                                                                      |       |  |  |  |  |
| <ul> <li>LD-2/CV-31108, Letdown Isolation</li> <li>LD-3/CV-31104, Letdown Isolation</li> <li>LD-4A/CV-31231, Letdown Orifice A Isolation</li> <li>LD-4B/CV-31232, Letdown Orifice B Isolation</li> </ul> |                                                                                                              |       |  |  |  |  |
| • LD-4C/CV-31233, Letdown Orif                                                                                                                                                                           | ice C Isolation                                                                                              |       |  |  |  |  |
| 4. VERIFY Reactor Makeup System C                                                                                                                                                                        | PERATING.                                                                                                    |       |  |  |  |  |
| <ol><li>Using Section 2.0, DETERMINE s<br/>applicable steps of procedure.</li></ol>                                                                                                                      | ource of leak and PERFOR                                                                                     | М     |  |  |  |  |
| <ol><li>PERFORM a charging versus leto<br/>leakrate.</li></ol>                                                                                                                                           | own flow balance to dete                                                                                     | rmine |  |  |  |  |
| 7. <u>IF</u> required. NOTIFY HP, and IN<br>Containment to identify source                                                                                                                               | 7. <u>IF</u> required, NOTIFY HP, and INSPECT Aux Building and/or Containment to identify source of leakage. |       |  |  |  |  |
| 8. <u>IF</u> Plant conditions permit, PE                                                                                                                                                                 | RFORM SP 36-082.                                                                                             |       |  |  |  |  |
| 4.2 Leak from CVC System:                                                                                                                                                                                | 4.2 Leak from CVC System:                                                                                    |       |  |  |  |  |
| 1. <u>GO</u> <u>TO</u> A-CVC-35B.                                                                                                                                                                        |                                                                                                              |       |  |  |  |  |
|                                                                                                                                                                                                          |                                                                                                              |       |  |  |  |  |
|                                                                                                                                                                                                          |                                                                                                              |       |  |  |  |  |
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| WISC | ONS                                            | IN PUE         | BLIC SERVICE CORPORATION                                                                                                   | NO. A-RC-36D                                                                                                  |                    |
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| к    | KEWAUNEE NUCLEAR POWER PLANT                   |                |                                                                                                                            | TITLE Reactor Coolan                                                                                          | t Leak             |
|      | OPERATING PROCEDURE DATE APR 30 2003 PAGE 5 of |                |                                                                                                                            | PAGE 5 of 7                                                                                                   |                    |
| 4.3  | Lea<br>Pro                                     | akoff<br>essur | on Pressurizer PORV Motor<br>izer Power Operated Reliefs                                                                   | Operated Isolations, or<br>, or Pressurizer Safetie                                                           | leakage from<br>S: |
|      | 1.                                             | Lea<br>Blo     | kage from PR-1A/MV-32089 (P<br>ock Valve leakoff:                                                                          | R-1B/MV-32090), Pressuri                                                                                      | zer PORV           |
|      |                                                | a.             | VERIFY PR-2A/CV-31110 (PR-                                                                                                 | 2B/CV-31109), Przr PORV,                                                                                      | CLOSED.            |
|      |                                                | b.             | OPEN and CLOSE PR-1A(PR-1B                                                                                                 | ) to stop or reduce leak                                                                                      | age.               |
|      | 2.                                             | Lea<br>ind     | kage from PR-2A/CV-31110 (P<br>licated by TI-438, PORV out]                                                                | R-2B/CV-31109), Przr POR<br>et temperature increasin                                                          | V A(B),<br>g:      |
|      |                                                | a.             | OPERATE the following to m                                                                                                 | aintain PRT level:                                                                                            |                    |
|      |                                                |                | 1. MU-1010-1/CV-31261, PR                                                                                                  | T Makeup Water Isol                                                                                           |                    |
|      |                                                |                | 2. MU-1012/CV-31258, PRT Makeup Water Isol                                                                                 |                                                                                                               |                    |
|      |                                                |                | 3. RC-507/CV-31134, Rx C1                                                                                                  | nt Drain Pump Disch Head                                                                                      | er Isol            |
|      |                                                |                | 4. RC-508/CV-31135, Rx C1                                                                                                  | nt Drain Pump Disch Head                                                                                      | er Isol            |
|      |                                                |                | 5. PR-40/CV-31257, Przr R                                                                                                  | elief Tank Drain Isolati                                                                                      | on                 |
|      |                                                | b.             | Alternately CLOSE PR-1A/MV<br>Block Valves, to identify                                                                    | -32089 (PR-1B/MV-32090),<br>leaking PORV.                                                                     | Pressurizer        |
|      |                                                | c.             | <u>WHEN</u> leaking PORV is ident                                                                                          | ified, PERFORM following                                                                                      | :                  |
|      |                                                |                | <u>NOTE</u> : Plant operation may<br>seat leakage. For<br>leakage, a plant sh<br>Refer to Tech Spec<br>conditions of opera | continue with excessive<br>causes other than seat<br>utdown may be required.<br>3.1.a.5 for limiting<br>tion. |                    |
|      |                                                |                | 1. CLOSE PR-1A(PR-1B) to                                                                                                   | isolate leaking PORV.                                                                                         |                    |
|      |                                                |                | 2. OPEN and CLOSE PR-2A(P seating and stop leaka                                                                           | R-2B) in an attempt to i<br>ge.                                                                               | mprove valve       |
|      |                                                |                | 3. VERIFY PR-2A(PR-2B), C                                                                                                  | LOSED.                                                                                                        |                    |
|      |                                                |                | 4. OPEN PR-1A(PR-1B) whil                                                                                                  | e watching for symptoms                                                                                       | of leakage.        |
|      |                                                |                | CONTINU                                                                                                                    | ED                                                                                                            |                    |
|      |                                                |                |                                                                                                                            |                                                                                                               |                    |

| WISCONSIN PUBLIC SERVICE CORPORATION                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | NO. A-RC-36D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                      |  |
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| KEWAUNEI                                                                          | E NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TITLE Reactor Coolant Leak                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| OPERATING PROCEDURE DATE APR 30 2003 PAGE 6 of                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                    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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                      |  |
| 4.3.2.c<br><u>CONTINUED</u><br>3. Lea<br>TI-<br>inc<br>a.<br>b.<br>c.<br>d.<br>e. | <ol> <li><u>IF</u> PORV leakage stops,<br/>with PR-1A(PR-1B) OPEN.</li> <li><u>IF</u> leakage continues, F<br/>akage from PR-3A or PR-3B, Pr<br/>-436, Safety A outlet, or TI-<br/>creasing:<br/>OPERATE the following to ma</li> <li>MU-1010-1/CV-31261, PRI</li> <li>MU-1012/CV-31258, PRT N</li> <li>RC-507/CV-31134, Rx Clr</li> <li>RC-508/CV-31135, Rx Clr</li> <li>RC-508/CV-31135, Rx Clr</li> <li>RC-508/CV-31257, Przr Re</li> <li>Attempt to reseat Safety by<br/>psig at 100% power).</li> <li><u>IF</u> leakage stops, INCRE<br/>and MONITOR for symptom</li> <li><u>IF</u> safety leakage can <u>NOT</u> to<br/>down.</li> <li>MONITOR PRT pressure to ver<br/>intact. <u>IF NOT</u>, PERFORM for</li> <li>CLOSE NG-302/CV-31298,<br/>Valve.</li> <li>VERIFY MG(R)-549/CV-312<br/><u>IF</u> a Safety Valve has opend</li> </ol> | return to normal<br>REPEAT Step 4.3.2<br>ressurizer Safety<br>437, Safety B ou<br>aintain PRT level<br>Makeup Water Iso<br>Makeup Water Iso<br>Mak | operating 1<br>2.c.<br>Valve indic<br>itlet tempera<br>i<br>ich Header Is<br>isch He | lineup<br>cated by<br>ature<br>sol<br>sol<br>2205<br>l band<br>shut<br>disc(s)<br>on |  |

| WISCO                                      | ONSIN PUBLIC SERVICE CORPORATION                                                                                               | NO. A-RC-36D                                                |                            |  |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|----------------------------|--|
| KEWAUNEE NUCLEAR POWER PLANT TITLE Reactor |                                                                                                                                |                                                             | r Coolant Leak             |  |
|                                            | OPERATING PROCEDURE                                                                                                            | G PROCEDURE DATE APR 30 2003 PAGE 7 of                      |                            |  |
| 4 4                                        | Reactor Coolant Pump No. 2 Seal lea                                                                                            | akano.                                                      |                            |  |
| т • т                                      | 1 GO TO A-RC-36C                                                                                                               | akaye.                                                      |                            |  |
| 4.5                                        | Leakage Into Component Cooling Syst                                                                                            | tem•                                                        |                            |  |
|                                            |                                                                                                                                |                                                             |                            |  |
| 4.6                                        | Reactor Vessel Flange Leak:                                                                                                    |                                                             |                            |  |
| · • -                                      | <ol> <li>MONITOR Reactor Flange Leakoff<br/>higher than Containment ambient</li> </ol>                                         | temperature TI-418. Ter<br>t indicate inner seal le         | nperatures<br>eakage.      |  |
| ,                                          | <ol> <li>CLOSE RC-41/CV-31262, Rx Vessel Flange Leakoff Isolation, and<br/>MONITOR TI-418 for temperature decrease.</li> </ol> |                                                             |                            |  |
|                                            | 3. VERIFY status of outer seal (Containment Entry required):                                                                   |                                                             |                            |  |
|                                            | a. CLOSE RC-40A, Inner Seal Is                                                                                                 | solation valve.                                             |                            |  |
|                                            | b. OPEN RC-40B, Outer Seal Isc                                                                                                 | olation valve.                                              |                            |  |
|                                            | c. OPEN RC-41 and MONITOR T-42                                                                                                 | 18.                                                         |                            |  |
|                                            | d. <u>IF</u> temperature returns to a continued operation shall I                                                              | ambient, outer seal is g<br>be evaluated.                   | good -                     |  |
|                                            | e. <u>IF</u> temperature remains hig<br>operation shall be evaluate<br>closed.                                                 | h, outer seal is leaking<br>ed and <u>IF</u> required, RC-4 | j - continued<br>41 may be |  |
| 4.7                                        | Reactor Coolant Leak Into SI Accum                                                                                             | ulator:                                                     |                            |  |
|                                            | 1. <u>GO TO</u> to Tech Spec 3.1.a.4. <u>ANI</u>                                                                               | <u>D</u> A-SI-33.                                           |                            |  |
|                                            | <ol> <li>CONTACT Plant Management for re<br/>leakage.</li> </ol>                                                               | ecommendations to reduce                                    | e or stop                  |  |
| 4.8                                        | Primary to Secondary Leak:                                                                                                     |                                                             |                            |  |
|                                            | 1. <u>GO TO</u> E-O-14, Steam Generator 1                                                                                      | Tube Leak.                                                  |                            |  |
|                                            |                                                                                                                                |                                                             |                            |  |
|                                            |                                                                                                                                |                                                             |                            |  |

| WISCONSIN PUBLIC SERVICE CO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | RPORATION                                                                                                                                                                                                                                                                                                                                          | <b>NO.</b> A-RHR-34 <b>REV</b> Y                                                                                                                                                                                                       |                                                                                                                | REV Y                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------|
| KEWAUNEE NUCLEAR POWE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | R PLANT                                                                                                                                                                                                                                                                                                                                            | TITLE Abnormal Residual Heat Removal System Operation                                                                                                                                                                                  |                                                                                                                | dual Heat Removal<br>ion |
| OPERATING PROCEDU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | JRE                                                                                                                                                                                                                                                                                                                                                | DATE FEB 19 2004 PAGE 1 of                                                                                                                                                                                                             |                                                                                                                | <b>PAGE</b> 1 of 13      |
| REVIEWED BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | i                                                                                                                                                                                                                                                                                                                                                  | APPROVED BY                                                                                                                                                                                                                            |                                                                                                                |                          |
| NUCLEAR SAFETY RELATED NO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PORC REVIEW<br>REQUIRED                                                                                                                                                                                                                                                                                                                            | W Ses SRO APPROVAL OF SRO APPROVAL OF TEMPORARY CHANGES CONTROL CHANGES                                                                                                                                                                |                                                                                                                | AL OF XES<br>CHANGES NO  |
| <ul> <li>1.0 INTRODUCTION <ol> <li>IF in Reduced Inventor</li> <li>Procedure describes active Residual Heat Remondance</li> <li>The following systems <ul> <li>Either train of Resi</li> <li>Either Steam Generat</li> <li>Refueling cavity, IF</li> <li>Either Safety Inject</li> </ul> </li> <li>2.0 SYMPTOMS <ul> <li>Control Room Annunciat</li> <li>TLA-18 RHR SYSTEM MOG</li> <li>RHR TO RCS COOLDOWN</li> <li>RHR TO RCS COOLDOWN</li> <li>RHR IMPROPER LINEUP</li> </ul> </li> <li>2.2 Computer Alarms <ul> <li>Refueling Water Leven L9055A)</li> <li>VCT Level High/Low (Or RCS Temperature High</li> <li>RHR Pump A/B Flow Him</li> <li>RHR Pump A/B NPSH (For RHR Pump IA/1B Disch</li> <li>RHR Pump IA/1B Disch</li> <li>RHR Pump IA/1B Suct For RHR Pump IA/1B Amps Him</li> <li>Lo Head Train A RHR</li> <li>RHR Pump Suct Hdr Teme</li> <li>RHR Pump Suct Hdr Teme</li> </ul> </li> </ol></li></ul> | ry Condition,<br>ctions require<br>oval System.<br>may be used<br>idual Heat Reat<br>tor<br>E flooded and<br>tion Pump<br>tors<br>DNITOR ABNORM<br>FLOW LOW (476<br>(47022-G)<br>el (A WR, B W<br>(L0112A)<br>h/Low (Two Se<br>igh/Low (F062-<br>P0210G, P02116<br>Press High/Low<br>High/Low (E05-<br>To RCS (F062<br>emp High/Low<br>Temp High/L | <u>GO TO</u> A-RH<br>ed to corre<br>to remove d<br>moval Syste<br>upper inte<br>AL (47033-4<br>021-G)<br>R. or NR) H<br>lected Cets<br>4A, F0625A)<br>G)<br>ow (P0200A,<br>W (P0200A,<br>00A, E0501A<br>6A)<br>(T0630A)<br>ow (T0627A) | R-34C.<br>ct abnormal<br>ecay heat:<br>m<br>rnals remove<br>3)<br>igh/Low (L90<br>)<br>P0201A)<br>P0203A)<br>) | conditions in<br>d       |

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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | threens] Desid                                        |                                             |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------|--|--|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | TITLE Abnormal Residual Heat Removal System Operation |                                             |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | DATE FEB 19 2004                                      | <b>PAGE</b> 3 of 13                         |  |  |
| OPERATING PROCEDURE         4.0 SUBSEQUENT ACTION         NOTE: Emergency Plan Implementing Proce<br>periodically to evaluate if emer<br>should be activated.         4.1 IF leakage from RHR or RCS is susp         1. STOP any draining activities i         2. STABILIZE RCS temperature.         3. Locally, VERIFY system piping.         4. MONITOR parameters of intercom         • PRT         • Boric Acid Tanks         • RWST         • CC Surge Tank         • SI Accumulators         • CVC HUTS         • CVC MTS         • Sump Tank         • RCDT         • Waste HUT         • Concentrates Holding Tank         • RHR Sump Pit         • DDT         • Spent Fuel Pool         • Containment Sump A | DATE FEB 19 2004                                      | <pre>PAGE 3 of 13 d ion owing: nents:</pre> |  |  |

| WISCONSI                                                                      | N PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>NO.</b> A-RHR-34                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>TITLE</b> Abnormal Residual Heat Removal System Operation                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |
| OF                                                                            | ERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | DATE FEB 19 2004 PAGE 4 of 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |
| 4.2 Los<br>1.<br>*Surge<br>excess<br>2.<br>3.<br>4.<br>5.<br><u>NOT</u><br>6. | s of Residual Heat Removal Cooli<br>OPEN following:<br>• RHR-1A/MV-32116. RCS Loop A S<br>• RHR-2A/MV-32117. RCS Loop B S<br>• RHR-2B/MV-32133. RCS Loop B S<br>• RHR-1B/MV-32132. RCS Loop B S<br>• RHR-11/MV-32118. RHR Discharg<br><u>CAUTIC</u><br>Line Flooding* will cause RCS To<br>of rate attributed to pumped fil<br>VERIFY RCS level and pressure s<br>Step 4.3.<br>VERIFY RHR Pump operating, IF J<br>VERIFY RHR flow 1600-2000 gpm p<br>VERIFY Component Cooling to RHH<br>Heat Exchanger and Bypass value<br>E: IF RXCPs are stopped, RCS He<br>indicate a trend.<br>VERIFY RCS temperature stable of<br>following:<br>a. STOP operating RHR Pump(s).<br>b. INITIATE Containment Closure<br>1. INITIATE closure of ope<br>2. EVACUATE unnecessary pe<br>3. VERIFY at least one door<br><u>CONTINUE</u> | ing:<br>Supply to RHR Pumps<br>Supply to RHR Pumps<br>Supply to RHR Pumps<br>ge to RCS Loop B<br><u>ON</u><br>level to increase at a rate far in<br>low.<br>stable or increasing, <u>IF NOT, GO TO</u><br><u>NOT</u> , START standby RHR Pump.<br>per operating train.<br>R Heat Exchangers <u>AND</u> ADJUST RHR<br>es for required cooling.<br>ot Leg temperatures only<br>or decreasing, <u>IF NOT</u> , PERFORM<br>re:<br>en containment boundaries.<br>ersonnel from containment.<br>or CLOSED in each airlock.<br>ED |  |  |

## WISCONSIN PUBLIC SERVICE CORPORATION

| NO. A- | RHR-34 |
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KEWAUNEE NUCLEAR POWER PLANT

| <b>ጥ</b> ተ ጥ ተ . 12 | Abnormal  | Residual | Heat | Removal |
|---------------------|-----------|----------|------|---------|
|                     | System Op | peration |      |         |

| <b>OPERATING</b> | PROCEDURE |
|------------------|-----------|
|------------------|-----------|

### 4.2.6.b CONTINUED

- 4. INITIATE Containment Isolation.
  - A. VERIFY CI Active status panel lights, ON.
- c. Maintain Containment habitability.
  - 1. START Containment Fan Coil Units.
  - 2. ESTABLISH Service Water to Containment Fan Coil Units.
  - 3. MONITOR containment radiation levels.
- d. <u>GO</u> <u>TO</u> Step 4.6.

#### 4.3 Decreasing RCS Level or Pressure:

- 1. VERIFY RCS temperature stable or increasing, <u>IF NOT</u>, STOP cooldown.
- 2. VERIFY following:
  - Pressurizer PORVs, CLOSED.
  - Normal Przr Spray Valves, CLOSED.
  - CVC-15/CV-31230, Przr Auxiliary Spray Valve, CLOSED.
- 3. ESTABLISH maximum Charging flow.
- 4. ISOLATE RHR to CVCS:
  - a. Locally, CLOSE RHR-210, RHR/CVC Inlet Isolation.
  - b. CLOSE LD-60/MV-32099, RHR To CVCS Letdown Line.
  - c. CLOSE LD-6/CV-31234, Letdown Line Isolation.
- 5. CLOSE LD-2/CV-31108, Letdown Isolation.
- 6. ENERGIZE Przr Heaters as required.

#### **CONTINUED**

NO. A-RHR-34

**KEWAUNEE NUCLEAR POWER PLANT** 

TITLE Abnormal Residual Heat Removal System Operation

**OPERATING PROCEDURE** 

| DATE | FEB | 19 | 2004 | PAGE | 6 | <b>of</b> 13 |
|------|-----|----|------|------|---|--------------|
|      | _   | _  | _    | L    | _ |              |

4.3 CONTINUED

# <u>CAUTION</u>

"Surge Line Flooding" will cause RCS level to increase at a rate far in excess of rate attributed to pumped flow.

- 7. VERIFY RCS level and pressure stable or increasing, <u>IF NOT</u>:
  - a. INITIATE Containment Closure:
    - 1. INITIATE closure of open containment boundaries.
    - 2. EVACUATE unnecessary personnel from containment.
    - 3. VERIFY at least one door CLOSED in each airlock.
    - 4. INITIATE Containment Isolation.
      - A. VERIFY CI Active status panel lights, ON.
  - b. Maintain Containment habitability.
    - 1. START Containment Fan Coil Units.
    - 2. ESTABLISH Service Water to Containment Fan Coil Units.
    - 3. MONITOR containment radiation levels.
  - c. STOP RHR Pumps.
    - <u>IF</u> both RCS Cold Leg temperatures increase to >200°F, CLOSE RHR-1A, RCS Loop A Supply to RHR Pumps <u>AND</u> RHR-1B, RCS Loop B Supply to RHR Pumps.
  - d. CHECK if RXCPs should be stopped:
    - 1. IF #1 Seal  $\Delta P$  <200 psig, STOP affected RXCP.
    - 2. IF #1 Seal leakoff flow <0.2 gpm, STOP affected RXCP.

### CONTINUED

| WISCONSIN PUR                         | BLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>NO.</b> A-RHR-34                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                         |  |  |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--|--|
| KEWAUNER                              | E NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TITLE Abnormal Residual Heat Removal<br>System Operation                                                                                                                                                                                                                                                                                                                             |                                                                                                                                         |  |  |
| OPERA                                 | ATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | DATE FEB 19 2004                                                                                                                                                                                                                                                                                                                                                                     | PAGE 7 of 13                                                                                                                            |  |  |
| 4.3.7<br><u>CONTINUED</u><br>e.<br>f. | <ul> <li>VERIFY RCS level and pressent.</li> <li>ALIGN Safety Injection</li> <li>OPEN SI-208/MV-32131 and To RWST.</li> <li>START Safety Injection</li> <li>VERIFY adequate SI Flow A. RCS level stable on ANI B. RCS temperature states</li> <li>CLOSE SI-300A/MV-32111 to RHR Pump A and B.</li> <li>ISOLATE RCS leak.</li> <li>STOP Safety Injection I.</li> <li>VERIFY RCS level can be START Safety Injection</li> <li>WHEN SI is no longer require Safety Injection Pump(s):</li> <li>RESET Containment Isolation.</li> <li>RESTORE RHR cooling, Grave and the state of the state of the state of the state.</li> </ul> | DATE FEB 19 2004<br>ure stable or increasing<br>Pump to RWST.<br>nd SI-209/MV-32130. SI I<br>Pump and ESTABLISH flow<br>w:<br>r increasing.<br>2<br>able or decreasing.<br><u>AND</u> SI-300B/MV-32112, I<br>Pump.<br>e maintained with Chargi<br>Pump(s).<br>red for RCS inventory co<br>ation.<br>etdown to maintain RCS T<br>ing >30° F.<br><u>0 TO</u> Step 4.7. <u>IF</u> RHR ( | PAGE 7 of 13<br>9, IF NOT:<br>Recirculation<br>w to RCS.<br>RWST Supply<br>ing. IF NOT.<br>ontrol. STOP<br>level, and if<br>Cooling can |  |  |

| WISCO | DNSIN PUBLIC SERVICE CORPORATION                                                                                        | NO.                    | A-RHR-34                                              |                   |              |  |
|-------|-------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------|-------------------|--------------|--|
| KI    | KEWAUNEE NUCLEAR POWER PLANT                                                                                            |                        | TITLE Abnormal Residual Heat Removal System Operation |                   |              |  |
|       | OPERATING PROCEDURE                                                                                                     | DATE                   | FEB 19 2004                                           | PAGE 8            | <b>of</b> 13 |  |
|       |                                                                                                                         |                        |                                                       |                   |              |  |
| 4.4   | RCS Overpressure:                                                                                                       |                        |                                                       |                   |              |  |
|       | 1. VERIFY RCS temperature stable of RCS cooling.                                                                        | or decre               | asing, <u>IF NOT</u> , 1                              | NCREASE           |              |  |
|       | 2. VERIFY RCS Pressure <425 psig,                                                                                       | <u>IF</u> <u>NOT</u> , | STOP RHR pumps.                                       |                   |              |  |
|       | 3. REDUCE RCS Pressure to normal t                                                                                      | for exis               | ting plant condi                                      | tions:            |              |  |
|       | <ul> <li>Przr Heaters, OFF</li> <li>Use normal spray</li> <li>Use auxiliary spray</li> <li>INCREASE Cooldown</li> </ul> |                        |                                                       |                   |              |  |
|       | <ul> <li>DECREASE Charging Flow</li> <li>INCREASE Letdown Flow</li> </ul>                                               |                        |                                                       |                   |              |  |
|       | 4. VERIFY RCS Temperature stable of                                                                                     | or decre               | asing, <u>IF NOT, (</u>                               | <u>60 TO</u> 4.6. |              |  |
| 4.5   | Loss_of_Air:                                                                                                            |                        |                                                       |                   |              |  |
|       | 1. STOP RHR Pumps.                                                                                                      |                        |                                                       |                   |              |  |
|       | 2. <u>GO TO</u> Attachment B.                                                                                           |                        |                                                       |                   |              |  |
|       |                                                                                                                         |                        |                                                       |                   |              |  |
|       |                                                                                                                         |                        |                                                       |                   |              |  |
|       |                                                                                                                         |                        |                                                       |                   |              |  |
|       |                                                                                                                         |                        |                                                       |                   |              |  |
|       |                                                                                                                         |                        |                                                       |                   |              |  |
|       |                                                                                                                         |                        |                                                       |                   |              |  |
|       |                                                                                                                         |                        |                                                       |                   |              |  |
|       |                                                                                                                         |                        |                                                       |                   |              |  |
|       |                                                                                                                         |                        |                                                       |                   |              |  |
|       |                                                                                                                         |                        |                                                       |                   |              |  |

| LIC SERVICE COM ORAHOM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | TITLE Abnormal Resid                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | lual Heat Removal<br>ion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| TING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | DATE FEB 19 2004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PAGE 9 of 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| TING PROCEDURE<br>CS is intact. AND Steam Ger<br>owing, IF NOT, GO TO Step<br>PRESSURIZE RCS TO 370-380 p<br>C: IF RXCPs are stopped, RC<br>only indicate a trend.<br>ESTABLISH conditions and S<br>OR<br>IF a RXCP can NOT be started<br>VERIFY RCS temperature stalfollowing:<br>1. INCREASE dumping steam<br>NOTE: IF operable. it is r<br>Steam Generators at<br>2. MAINTAIN S/G Narrow Rat<br>CS is NOT intact. OR Steam<br>ESTABLISH maximum charging<br>WHEN RCS temperature is ≥20<br>VERIFY required make up flo<br>1. ALIGN Safety Injection<br>2. OPEN SI-208/MV-32131 at<br>TO RWST.<br>3. START Safety Injection<br>4. CLOSE SI-300A/MV-32111<br>to RHR Pump A and B.<br>VERIFY RCS temperature <200<br>SI Flow to core.<br>WHEN RWST level is ≤37%, PI<br>1. UNLOCK and PLACE to ON<br>• RHR-299B/MV-32135 at<br>2. CO TO 55 1 2 | DATE FEB 19 2004<br>nerators are available,<br>4.6.2.<br>psig.<br>CS Hot Leg temperatures<br>TART one RXCP,<br>ed, VERIFY natural circulations<br>ble or decreasing, <u>IF NG</u><br>more effective to feed to<br>once.<br>nge Level 4-50%.<br>Generators <u>NOT</u> available<br>flow.<br>D0° F, OPEN Przr PORVS.<br>ow per Attachment A, <u>IE</u><br>Pump to RWST.<br>nd SI-209/MV-32130, SI F<br>Pump and ESTABLISH flow<br><u>AND</u> SI-300B/MV-32112, F<br>O° F and decreasing. <u>IF</u><br>ERFORM the following:<br>the following breakers:<br>MCC-52E(D4)<br>MCC-62H(1JM) | PAGE 9 of 13 PERFORM Ulation. DT, PERFORM ooth le: NOT: Recirculation v to RCS. RWST Supply NOT, VERIFY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | NUCLEAR POWER PLANT<br>FING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | NUCLEAR POWER PLANT         TITLE       Abnormal Resid<br>System Operation         TING PROCEDURE       DATE       FEB 19 2004         Le Decay Heat Removal:       DATE       FEB 19 2004         LCS is intact. AND Steam Generators are available.       owing. IF NOT. GO TO Step 4.6.2.         PRESSURIZE RCS TO 370-380 psig.          LF RXCPs are stopped. RCS Hot Leg temperatures<br>only indicate a trend.         ESTABLISH conditions and START one RXCP.         OR         IF a RXCP can NOT be started. VERIFY natural circut<br>VERIFY RCS temperature stable or decreasing. IF NOT<br>following:         1. INCREASE dumping steam.         NOTE:       IF operable. it is more effective to feed to<br>Steam Generators at once.         2. MAINTAIN S/G Narrow Range Level 4-50%.         RCS is NOT intact. OR Steam Generators NOT available         ESTABLISH maximum charging flow.         WHEN RCS temperature is ≥200°F. OPEN Przr PORVs.         VERIFY required make up flow per Attachment A. IE         1. ALIGN Safety Injection Pump to RWST.         2. OPEN SI-208/MV-32131 and SI-209/MV-32130, SI for RWST.         3. START Safety Injection Pump and ESTABLISH flow         4. CLOSE SI-300A/MV-32111 AND SI-300B/MV-32112. For NWST.         3. START Safety Injection Pump and ESTABLISH flow         4. CLOSE SI-300A/MV-32131 and SI-209/MV-3212. For NWST. |

| WISCONSI         | N PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                   | NO.                                                   | A-RHR-34               |               |  |  |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|------------------------|---------------|--|--|
| KEWA             | UNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                       | TITLE Abnormal Residual Heat Removal System Operation |                        |               |  |  |
| Ol               | OPERATING PROCEDURE DATE FEB 19 2004 PAGE 10 of                                                                                                                                                                                                |                                                       |                        |               |  |  |
|                  |                                                                                                                                                                                                                                                |                                                       |                        |               |  |  |
| <u>NOTE</u> : S  | tep 4.7 is used to restore RHR (<br>condition has been corrected.                                                                                                                                                                              | cooling                                               | only after abnor       | rmal          |  |  |
| 4.7 <u>Re</u>    | store RHR Cooling:                                                                                                                                                                                                                             |                                                       |                        |               |  |  |
| 1.               | VERIFY RCS pressure <425 psig.                                                                                                                                                                                                                 |                                                       |                        |               |  |  |
| 2.               | VERIFY Component Cooling to RH                                                                                                                                                                                                                 | R Heat E                                              | kchangers.             |               |  |  |
| 3.               | OPEN following:                                                                                                                                                                                                                                |                                                       |                        |               |  |  |
|                  | <ul> <li>RHR-1A/MV-32116, RCS Loop A Supply to RHR Pumps</li> <li>RHR-2A/MV-32117, RCS Loop A Supply to RHR Pumps</li> <li>RHR-2B/MV-32133, RCS Loop B Supply to RHR Pumps</li> <li>RHR-1B/MV-32132, RCS Loop B Supply to RHR Pumps</li> </ul> |                                                       |                        |               |  |  |
| 4.               | VERIFY RHR suction pressure >8 psig.                                                                                                                                                                                                           |                                                       |                        |               |  |  |
| 5.               | VERIFY RCS level stable or increasing.                                                                                                                                                                                                         |                                                       |                        |               |  |  |
| 6.               | 6. CLOSE RHR-101/CV-31116, RHR Flow Control Bypass.                                                                                                                                                                                            |                                                       |                        |               |  |  |
| 7.               | 7. CLOSE RHR-8A/CV-31114 <u>AND</u> RHR-8B/CV-31115, RHR Flow Control Hx A/B<br>Outlet.                                                                                                                                                        |                                                       |                        |               |  |  |
| 8.               | OPEN RHR-11/MV-32118, RHR Discharge to RCS Loop B                                                                                                                                                                                              |                                                       |                        |               |  |  |
|                  | CAUTI                                                                                                                                                                                                                                          | <u></u>                                               |                        | <del>,_</del> |  |  |
| Starti<br>trappe | ng RHR Pump may reduce RCS leve<br>d air being vented to RCS.                                                                                                                                                                                  | l due to                                              | collapsing void        | is and∕or     |  |  |
| 9.               | START RHR Pump A or B and VERI                                                                                                                                                                                                                 | FY norma                                              | l operation.           |               |  |  |
| 10.              | ESTABLISH RHR flow OF ≤2000 gpm per train.                                                                                                                                                                                                     |                                                       |                        |               |  |  |
| NOTE             | NOTE: IF RXCPs are stopped, RCS Hot Leg temperatures only indicate a trend.                                                                                                                                                                    |                                                       |                        |               |  |  |
| 11.              | VERIFY RCS temperature stable (                                                                                                                                                                                                                | or decrea                                             | asing, <u>IF NOT</u> : |               |  |  |
|                  | a. INCREASE cooling.                                                                                                                                                                                                                           |                                                       |                        |               |  |  |
| 12.              | <u>IF</u> required, RESTORE Charging                                                                                                                                                                                                           | and Letd                                              | own.                   |               |  |  |
| 13.              | <u>IF</u> RHR-33-1, LTOP Relief Valve<br>Containment Sump B.                                                                                                                                                                                   | lifted,                                               | INITIATE inspec        | ction of      |  |  |



| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                    | <b>NO.</b> A-RHR-34                                                                                         |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                            | <b>TITLE</b> Abnormal Residual Heat Removal System Operation                                                |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                     | DATE FEB 19 2004 PAGE 13 of 13                                                                              |  |  |  |  |
|                                                                                                                                                         |                                                                                                             |  |  |  |  |
| 3. <u>WHEN</u> problem is corrected, RE                                                                                                                 | STORE normal RHR System control.                                                                            |  |  |  |  |
| <ul> <li>VERIFY controller for affected</li> </ul>                                                                                                      | valve(s), CLOSED.                                                                                           |  |  |  |  |
| <u>NOTE</u> : RHR-8A/B are OPEN when han<br>RHR-101 is CLOSED when han                                                                                  | dwheels are FULL OUT.<br>dwheel is FULL OUT.                                                                |  |  |  |  |
| <ul> <li>Locally CLOSE the affected valve</li> <li>CLOSE air bleed off petcocks for<br/>regulator.</li> <li>OPEN instrument air supply isol</li> </ul>  | e(s).<br>r affected valve(s) at associated air<br>ation valves for affected valve(s)                        |  |  |  |  |
| and RESTORE control power.                                                                                                                              |                                                                                                             |  |  |  |  |
| <ul> <li>Locally POSITION handwheel of a</li> <li>Tighten jam nut on valve stem a</li> <li>In the Control Room, position a system operation.</li> </ul> | ffected valve(s) to FULL OUT.<br>gainst actuator of affected valve(s).<br>ffected valve(s) for required RHR |  |  |  |  |
|                                                                                                                                                         |                                                                                                             |  |  |  |  |
|                                                                                                                                                         |                                                                                                             |  |  |  |  |
|                                                                                                                                                         |                                                                                                             |  |  |  |  |
|                                                                                                                                                         |                                                                                                             |  |  |  |  |
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|                                                                                                                                                         |                                                                                                             |  |  |  |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                         |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | NO. A-SER-52B REV C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| VER PLANT                                                                                                                                                                                    | TITLE Abnormal Sequential Event Recorder,<br>Annunciator, and Status Panel Syst                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
| DURE                                                                                                                                                                                         | <b>DATE</b> D                                                                                                                                                                                                  | EC 14 1999                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | PAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1 <b>of</b> 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |
|                                                                                                                                                                                              | APPRO                                                                                                                                                                                                          | VRD BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
| PORC REVIEW<br>REQUIRED                                                                                                                                                                      | ORC REVIEW YES SRO APPROVAL OF SEQUIRED NO REQUIRED                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
| 1.0 <u>INTRODUCTION</u> 1.1 Procedure provides guidance in the event of a partial or complete loss of the Plant Sequential Event Recorder, Annunciator, or Status Panel System. 2.0 SYMPTONS |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
| annunciators                                                                                                                                                                                 | fail to res                                                                                                                                                                                                    | pond properl                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | у.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |
| ndicates a los:                                                                                                                                                                              | s of input,                                                                                                                                                                                                    | or fails to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | respond                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |
| Panels indicato                                                                                                                                                                              | e a loss of                                                                                                                                                                                                    | power, or f                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ail to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
| SER Points.                                                                                                                                                                                  |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
|                                                                                                                                                                                              |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
| <u>ailure:</u>                                                                                                                                                                               |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
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| SER Printer a                                                                                                                                                                                | nd CRT tran                                                                                                                                                                                                    | sfer to Trai                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | n B.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
| 2. <u>Operator:</u>                                                                                                                                                                          |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
|                                                                                                                                                                                              |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
|                                                                                                                                                                                              |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
|                                                                                                                                                                                              |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
|                                                                                                                                                                                              |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |
|                                                                                                                                                                                              | XORPORATION<br>VER PLANT<br>DURE<br>PORC REVIEW<br>REQUIRED<br>uidance in the<br>ial Event Reco<br>annunciators<br>ndicates a los<br>Panels indicate<br>ight test.<br>SER Points.<br>ailure:<br>SER Printer an | XORPORATION       NO. A-S         VER PLANT       TITLE A         DURE       DATE       D         PORC REVIEW       APPROV         PORC REVIEW       YES         REQUIRED       NO         uidance in the event of a       NO         nuidance in the event of a       NO         annunciators fail to res       NO         Annunciators       NO         Annunciators       NO         Annunciators       NO         Required       NO         Annunciators       NO     < | NO.       A-SER-52B         VER PLANT       TITLE       Abnormal Seque<br>Annunciator,         DURE       DATE       DEC 14 1999          APPROVED BY          PORC REVIEW       YES<br>REQUIRED       SRO APPROV<br>TEMPORARY<br>REQUIRED         widance in the event of a partial or<br>ial Event Recorder, Annunciator, or S         annunciators fail to respond properl<br>ndicates a loss of input, or fails to         Panels indicate a loss of power, or f<br>ight test.         SER Points.         ailure:         SER Printer and CRT transfer to Trai | NO.       A-SER-52B       REV         VER PLANT       TITLE       Abnormal Sequential Ev         DURE       DATE       DEC 14 1999       PAGE          APPROVED BY          PORC REVIEW       YES       SRO APPROVAL OF         TEMPORARY CHANGES       NO       REQUIRED         widance in the event of a partial or complete       ial Event Recorder, Annunciator, or Status Pan         annunciators fail to respond properly.         ndicates a loss of input, or fails to respond         Panels indicate a loss of power, or fail to         ight test.         SER Points.         ailure:         SER Printer and CRT transfer to Train B. |  |  |

| WISCONSI                                                                                      | N PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | NO.                                                                                                                                                                                                    | A-SER-52B                                                                                                                                                                                                                                                                                         |                                                                                                                                                                   |             |  |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--|
| KEWA                                                                                          | UNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | TITLE Abnormal Sequential Event Recorder,<br>Annunciator, and Status Panel Syst                                                                                                                        |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                   |             |  |
| OF                                                                                            | PERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | DATE                                                                                                                                                                                                   | DEC 14 1999                                                                                                                                                                                                                                                                                       | PAGE 2                                                                                                                                                            | <b>of</b> 6 |  |
| 4.0 <u>SUBSEQUE</u><br><u>NOTE</u> : T<br>R<br>4.1 <u>Err</u><br>1.<br>] 2.<br>3.<br>4.<br>5. | <ul> <li>INT ACTIONS</li> <li>Throughout Subsequent Actions, Encocedures should be reviewed to Response Organization should be a coneous Actuation or Loss of Content Stop testing or maintenance act affected systems.</li> <li>REFER to Tech Spec 3.5, and 3.1 Frequently MONITOR the followin affected systems: <ul> <li>Control board indications</li> <li>Local control panel indication</li> <li>Local control panel indication</li> <li>Local control panel indication</li> <li>SER CRT</li> <li>Control Room status panels</li> </ul> </li> <li>VERIFY Control Room SER Printer follows: <ul> <li>a. In RR-189, Printer Transfer Sw</li> <li>DETERMINE power supply status a</li> <li>a. VERIFY BRA-113 Ext, Ckt 1, breaker, ON.</li> <li>b. VERIFY BRB-113 Ext, Ckt 4, breaker, ON.</li> <li>C. VERIFY BRB-113 Ext, Ckt 4, breaker, ON.</li> <li>C. VERIFY BRB-113 Ext, Ckt 6, breaker, ON.</li> <li>C. VERIFY RR-174, Fug 42 red i 47033 and 47034.</li> </ul> </li> </ul> | nergency<br>evaluate<br>activated<br>trol Room<br>tivities<br>10.<br>ng to id<br>ons<br>een<br>and CR<br>backup 1<br>as follow<br>Annuncia<br>RR-189.<br>Annuncia<br>RR-151.<br>or off. a<br>indicatio | Plan Implementi<br>e if Emergency<br>d.<br><u>m Train A Annunc</u><br>that could adve<br>entify a change<br>T transferred to<br>kup B red indicating<br>ws:<br>ator Lights Trai<br>SER/ANN System<br>ator Lights Trai<br>SER/ANN System<br>attempt to CLOSE<br>ng light ON for<br>rective action. | ing<br><u>ciators:</u><br>ersely impact<br>in status of<br>o Train B as<br>ating<br>g light, ON.<br>in A<br>Train A<br>in B<br>Train B<br>E breaker.<br>TLA panel |             |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                      | NO. A-SER-52B                                                                   |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                              | TITLE Abnormal Sequential Event Recorder,<br>Annunciator, and Status Panel Syst |
| OPERATING PROCEDURE                                                                                                                                       | DATE DEC 14 1999 PAGE 3 of 6                                                    |
|                                                                                                                                                           |                                                                                 |
| 4.2 Loss of SER_Printer or CRT functio                                                                                                                    | ns:                                                                             |
| 1. CONTACT Nuclear Computer Group                                                                                                                         | for corrective action.                                                          |
| 4.3 Loss of Control Room Status Panels                                                                                                                    | <u>:</u>                                                                        |
| <ol> <li>Frequently MONITOR the followi<br/>affected systems:</li> </ol>                                                                                  | ng to identify a change in status of                                            |
| <ul> <li>Control board indications an</li> <li>Honeywell computer alarm scr</li> <li>Sequential Events Recorder</li> <li>Local instrumentation</li> </ul> | d annunciators<br>een                                                           |
| 2. <u>IF</u> status panels 44901, 44905,<br>lost, DETERMINE power supply s                                                                                | 44906, 44909, 44910 and 44911 are<br>tatus as follows:                          |
| a. VERIFY BRA-127, Ckt 8, SI<br>Lts Auto Xfer Sw breaker,                                                                                                 | Ready/Bypass/Permissive Status Pnl<br>ON.                                       |
| b. VERIFY BRB-127, Ckt 16, SI<br>Lts Auto Xfr Sw breaker, O                                                                                               | Ready/Bypass/Permissive Status Pnl<br>N.                                        |
| c. <u>IF</u> either breaker is tripp                                                                                                                      | ed or off, attempt to CLOSE breaker.                                            |
| 3. <u>IF</u> individual channels on stat<br>DETERMINE power supply status                                                                                 | us panels 44907 or 44908 are lost,<br>as follows:                               |
| a. Protection Status Panel 44                                                                                                                             | 907:                                                                            |
| 1. Red Channel - VERIFY B<br>Lights Xfmrs #1 and #2                                                                                                       | RA-113, Ckt 17, Protection Status<br>breaker, ON.                               |
| 2. White Channel - VERIFY<br>Lights Xfmrs #3 and #4                                                                                                       | BRB-113, Ckt 17, Protection Status<br>breaker, ON.                              |
| 3. Blue Channel - VERIFY<br>Lights Xfmrs #5 and #6                                                                                                        | BRB-114, Ckt 17, Protection Status<br>breaker, ON.                              |
| <ol> <li>Yellow Channel - VERIF<br/>Lights Xfmrs #7 and #8</li> </ol>                                                                                     | Y BRA-114. Ckt 17, Protection Status<br>breaker, ON.                            |
| b. Safeguards Status Panel 44                                                                                                                             | 908:                                                                            |
| 1. Red Channel - VERIFY B<br>Lights Xfmr #1 breaker<br><u>CONTINU</u>                                                                                     | RA-113, Ckt 18, Safeguards Status<br>, ON.<br><u>ED</u>                         |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                   | NO. A-SER-52B                                                                   |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                           | TITLE Abnormal Sequential Event Recorder,<br>Annunciator, and Status Panel Syst |  |  |  |  |
| OPERATING PROCEDURE                                                                    | DATE DEC 14 1999 PAGE 4 of 6                                                    |  |  |  |  |
|                                                                                        |                                                                                 |  |  |  |  |
|                                                                                        |                                                                                 |  |  |  |  |
| 4.3.3.b<br><u>CONTINUED</u>                                                            |                                                                                 |  |  |  |  |
| 2. White Channel - VERIFY<br>Lights Xfmr #2 breaker                                    | BRB-113, Ckt 18, Safeguards Status<br>, ON.                                     |  |  |  |  |
| 3. Blue Channel - VERIFY<br>Lights Xfmr #3 breaker                                     | BRB–114, Ckt 18, Safeguards Status<br>, ON.                                     |  |  |  |  |
| 4. Yellow Channel - VERIF<br>Lights Xfmr #4 breaker                                    | Y BRA-114, Ckt 18, Safeguards Status<br>, ON.                                   |  |  |  |  |
| c. <u>IF</u> any of the above breake<br>CLOSE breaker.                                 | rs are tripped or off, attempt to                                               |  |  |  |  |
| 4. INITIATE Work Request to ident                                                      | ify and correct problem.                                                        |  |  |  |  |
| 4.4 <u>Beta System_Abnormal_SER_Points</u>                                             |                                                                                 |  |  |  |  |
| <ol> <li><u>IF</u> the following SER points ar group for corrective action:</li> </ol> | e received, CONTACT Nuclear computer                                            |  |  |  |  |
| 1089 Beta SER Train A Power                                                            | Failure                                                                         |  |  |  |  |
| 1090 Beta SER Train B Power                                                            | Failure                                                                         |  |  |  |  |
| 1091 Beta SER Train B Watchd                                                           | og Failure                                                                      |  |  |  |  |
| 1092 Beta SER Train A Failur                                                           | e ST/P4/Watchdog/Power Failure                                                  |  |  |  |  |
| 1094 Beta SER Train B Failur                                                           | e ST/P4                                                                         |  |  |  |  |
| 1409 Beta Windowbox 1 Train                                                            | A or B Power Failure                                                            |  |  |  |  |
| 1411 Beta Windowbox 2 Train                                                            | A or B Power Failure                                                            |  |  |  |  |
| 1413 Beta Windowbox 3 Train                                                            | A or B Power Failure                                                            |  |  |  |  |
| 1415 Beta Windowbox 4 Train                                                            | A or B Power Failure                                                            |  |  |  |  |
| 1417 Beta Windowbox 5 Train                                                            | A or B Power Failure                                                            |  |  |  |  |
| 1419 Beta Windowbox 6 Train                                                            | A or B Power Failure                                                            |  |  |  |  |
| 1421 Beta Windowbox 7 Train<br><u>CONTINU</u>                                          | A or B Power Failure<br><u>ED</u>                                               |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                           | NO. A-SER-52B                                                                          |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                   | <b>TITLE</b> Abnormal Sequential Event Recorder,<br>Annunciator, and Status Panel Syst |
| OPERATING PROCEDURE                                                                                            | DATE DEC 14 1999 PAGE 5 of 6                                                           |
|                                                                                                                |                                                                                        |
|                                                                                                                |                                                                                        |
| 4.4<br><u>CONTINUED</u>                                                                                        |                                                                                        |
| 1423 Beta Windowbox 8 Train                                                                                    | A or B Power Failure                                                                   |
| 1425 Beta Windowbox 9 Train                                                                                    | A or B Power Failure                                                                   |
| 1427 Beta Windowbox 10 Train                                                                                   | A or B Power Failure                                                                   |
| <ol> <li><u>IF</u> any of the following SER Po<br/>annunciator lamp test on the r<br/>faulty lamps:</li> </ol> | ints are received, PERFORM an espective windowbox and REPLACE any                      |
| 1410 Beta Windowbox 1 Train                                                                                    | A Abnormal                                                                             |
| 1412 Beta Windowbox 2 Train                                                                                    | A Abnormal                                                                             |
| 1414 Beta Windowbox 3 Train                                                                                    | A Abnormal                                                                             |
| 1416 Beta Windowbox 4 Train                                                                                    | A Abnormal                                                                             |
| 1418 Beta Windowbox 5 Train                                                                                    | A Abnormal                                                                             |
| 1420 Beta Windowbox 6 Train                                                                                    | A Abnormal                                                                             |
| . 1422 Beta Windowbox 7 Train                                                                                  | A Abnormal                                                                             |
| 1424 Beta Windowbox 8 Train                                                                                    | A Abnormal                                                                             |
| 1426 Beta Windowbox 9 Train                                                                                    | A Abnormal                                                                             |
| 1428 Beta Windowbox 10 Train                                                                                   | A Abnormal                                                                             |
| 1429 Beta Windowbox 1 Train                                                                                    | B Abnormal                                                                             |
| 1430 Beta Windowbox 2 Train                                                                                    | B Abnormal                                                                             |
| 1431 Beta Windowbox 3 Train                                                                                    | B Abnormal                                                                             |
| 1432 Beta Windowbox 4 Train                                                                                    | B Abnormal                                                                             |
| 1433 Beta Windowbox 5 Train                                                                                    | B Abnormal                                                                             |
| 1434 Beta Windowbox 6 Train                                                                                    | B Abnormal                                                                             |
| <u>CONTINU</u>                                                                                                 | <u>ED</u>                                                                              |

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| WISCONSIN PUBLIC SERVICE CORPORATION NO. A-SER-52B |                                                               |                                                                                                 |                 |            |  |  |
|----------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------|------------|--|--|
| KEWA                                               | UNEE NUCLEAR POWER PLANT                                      | TITLEAbnormal Sequential Event Record<br>Annunciator, and Status PanelDATEDEC 14 1999PAGE 6OfOf |                 |            |  |  |
| 0                                                  | PERATING PROCEDURE                                            |                                                                                                 |                 |            |  |  |
|                                                    |                                                               |                                                                                                 |                 |            |  |  |
| 4.4<br><u>CONTINUED</u>                            |                                                               |                                                                                                 |                 |            |  |  |
|                                                    | 1435 Beta Windowbox 7 Train A                                 | B Abnorma                                                                                       | 1               |            |  |  |
|                                                    | 1436 Beta Windowbox 8 Train B                                 | B Abnorma                                                                                       | 1               |            |  |  |
|                                                    | 1437 Beta Windowbox 9 Train f                                 | B Abnorma                                                                                       | 1               |            |  |  |
|                                                    | 1438 Beta Windowbox 10 Train                                  | B Abnorm                                                                                        | al              |            |  |  |
| 3.                                                 | <u>IF</u> NO faulty lamps are detected for corrective action. | d, CONTAC                                                                                       | T Nuclear Compu | iter Group |  |  |
|                                                    |                                                               |                                                                                                 |                 |            |  |  |
|                                                    |                                                               |                                                                                                 |                 |            |  |  |
|                                                    |                                                               |                                                                                                 |                 |            |  |  |
|                                                    |                                                               |                                                                                                 |                 |            |  |  |
|                                                    |                                                               |                                                                                                 |                 |            |  |  |

| WISCONSIN PUBLIC SERVICE C                                                                                                     | ORPORATION                                                                  | NO. A-S                                                                    | ;FP-21                                                       | REV T                               |  |  |
|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------|-------------------------------------|--|--|
| KEWAUNEE NUCLEAR POW                                                                                                           | ER PLANT                                                                    | <b>TITLE</b> Abnormal Spent Fuel Pool Cooling and Cleanup System Operation |                                                              |                                     |  |  |
| OPERATING PROCED                                                                                                               | URE                                                                         | DATE 0                                                                     | OCT 14 2004                                                  | PAGE 1 of 10                        |  |  |
| REVIEWED BY James J                                                                                                            | Brown                                                                       | APPROVED BY Phillip A Short                                                |                                                              |                                     |  |  |
| NUCLEAR X YES<br>SAFETY RELATED NO                                                                                             | PORC REVIEW<br>REQUIRED                                                     | W S YES SRO APPROVAL OF S YE<br>TEMPORARY CHANGES<br>NO REQUIRED NO        |                                                              |                                     |  |  |
| 1.0 <u>INTRODUCTION</u><br>1.1 Procedure describes a                                                                           | actions taken                                                               | for pump tr                                                                | ip, abnormal                                                 | level, high                         |  |  |
| temperature and low l<br>1.2 (CAS) indicates a "Co<br>of long duration and<br><u>OR</u> the step requires<br>performed.        | heat exchanger<br>ontinuous Actio<br>does <u>NOT</u> have<br>a certain plan | differenti<br>on Statemen<br>to be comp<br>nt conditio                     | al pressure.<br>ht." It sign<br>leted before<br>n prior to b | ifies a step<br>continuing,<br>eing |  |  |
| 2.0 <u>SYMPTOMS</u>                                                                                                            |                                                                             |                                                                            |                                                              |                                     |  |  |
| 2.1 Control Room Annuncia                                                                                                      | ators:                                                                      |                                                                            |                                                              |                                     |  |  |
| • SPENT FUEL POOL ABI                                                                                                          | NORMAL (47055-1                                                             | N)                                                                         |                                                              |                                     |  |  |
| 2.2 Local Indications:                                                                                                         |                                                                             |                                                                            |                                                              | i                                   |  |  |
| <ul> <li>Spent Fuel Pool hea</li> <li>Spent Fuel Pool hea</li> <li>Spent Fuel Pool log</li> <li>Substantial leakage</li> </ul> | at exchanger o<br>at exchanger le<br>cal discharge p<br>e from any Spe      | utlet tempe<br>ocal outlet<br>pressure in<br>nt Fuel Poo                   | erature contr<br>temperature<br>dicators<br>l component      | ro1<br>2                            |  |  |
| 3.0 AUTOMATIC ACTIONS                                                                                                          |                                                                             |                                                                            |                                                              |                                     |  |  |
| 3.1 <u>IF</u> Spent Fuel Pool Po                                                                                               | ump breaker op                                                              | ens, <u>THEN</u> s                                                         | tandby pump                                                  | starts.                             |  |  |
|                                                                                                                                |                                                                             |                                                                            |                                                              |                                     |  |  |
|                                                                                                                                |                                                                             |                                                                            |                                                              |                                     |  |  |
|                                                                                                                                |                                                                             |                                                                            |                                                              |                                     |  |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                      | <b>NO.</b> A-SFP-21                                                                                                      |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                              | TITLE ABNORMAL SPENT FUEL POOL COOLING<br>AND CLEANUP SYSTEM OPERATION                                                   |  |  |  |  |  |
| OPERATING PROCEDURE                                                                                                       | DATE OCT 14 2004 PAGE 2 of 10                                                                                            |  |  |  |  |  |
|                                                                                                                           |                                                                                                                          |  |  |  |  |  |
| STEP OPERATOR ACTIONS                                                                                                     | CONTINGENCY ACTIONS                                                                                                      |  |  |  |  |  |
| 4.0 <u>DETAILED PROCEDURE</u>                                                                                             |                                                                                                                          |  |  |  |  |  |
| CAU                                                                                                                       | ΓΙΟΝ                                                                                                                     |  |  |  |  |  |
| Low level in SFP results in higher radia Figure 1 for estimated dose rate.                                                | ation levels in SFP area. Refer to                                                                                       |  |  |  |  |  |
|                                                                                                                           |                                                                                                                          |  |  |  |  |  |
| 1 Check If SFP Level Is Low:                                                                                              | <u>GO TO</u> Step 8.                                                                                                     |  |  |  |  |  |
| a. SER 159, Spent Fuel Pool A<br>Level Low - ON                                                                           |                                                                                                                          |  |  |  |  |  |
| <u>OR</u>                                                                                                                 |                                                                                                                          |  |  |  |  |  |
| b. SER 160, Spent Fuel Pool B<br>Level Low - ON                                                                           |                                                                                                                          |  |  |  |  |  |
| . <u>OR</u>                                                                                                               |                                                                                                                          |  |  |  |  |  |
| c. Local level indication -<br>GREATER THAN 3'4" BELOW FLOOR                                                              |                                                                                                                          |  |  |  |  |  |
| <u>NOTE</u> : If South Pool Transfer Canal gate<br>and Spent Fuel Pools will equalize<br>with radiation levels increasing | seal has failed completely, SFP canal<br>e at approximately 9' below the floor<br>less than 0.01 mr/hr above background. |  |  |  |  |  |
| 2 (CAS) Verify Emergency Makeup -<br><u>NOT</u> REQUIRED                                                                  | <u>IF</u> R-5 High Radiation Alarm is received <u>OR</u> SFP level continues to lower after equalizing with canal        |  |  |  |  |  |
| <ul> <li>Check R-5 High Radiation Alarm</li> </ul>                                                                        | - level, <u>THEN</u> perform the following:                                                                              |  |  |  |  |  |
| Check SFP level - GREATER THAN     OR FOULD TO CANAL LEVEL                                                                | a. Announce event on Gai-Tronics.                                                                                        |  |  |  |  |  |
| <u>UN</u> EQUAL TO CANAL LEVEL                                                                                            | b. Notify Radiation Protection to evacuate area.                                                                         |  |  |  |  |  |
|                                                                                                                           | c. Establish emergency makeup to SFP per ATTACHMENT A.                                                                   |  |  |  |  |  |
|                                                                                                                           |                                                                                                                          |  |  |  |  |  |
|                                                                                                                           | ,                                                                                                                        |  |  |  |  |  |

| WISCO         | NSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                      | NC   | ).                                                                                               | A-SFP-21                                                                                                       |                                                 |                        |           |     |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------------------|-----------|-----|
| KE            | WAUNEE NUCLEAR POWER PLANT                                                                                                                                                                           | T    | (TL                                                                                              | ABNORMAL SPENT<br>AND CLEANUP SY                                                                               | FUEL PO<br>STEM OPE                             | OL CO<br>RATIO         | OLIN<br>N | G   |
|               | OPERATING PROCEDURE                                                                                                                                                                                  | DZ   | TE                                                                                               | OCT 14 2004                                                                                                    | PAGE                                            | 3                      | of        | 10  |
|               |                                                                                                                                                                                                      | _    |                                                                                                  |                                                                                                                |                                                 |                        |           | L   |
| STEP          | OPERATOR ACTIONS                                                                                                                                                                                     |      |                                                                                                  | CONTINGEN                                                                                                      |                                                 | DNS                    |           | ן נ |
| <u>NOTE</u> : | If Fuel Transfer System Gate Valve is open and Containment Integrity<br>is set, a pressure difference between containment and Aux Bldg may<br>result in SFP level change.                            |      |                                                                                                  |                                                                                                                |                                                 |                        |           |     |
| 3             | Check Fuel Transfer System Gate<br>Valve - CLOSED                                                                                                                                                    |      | L<br>G                                                                                           | ocally close Fue<br>ate Valve.                                                                                 | el Transf                                       | er Sy                  | stem      | i   |
| 4             | At Sample Acquisition Panel In<br>High Rad Sample Room, Verify<br>FPC-51 - CLOSED                                                                                                                    |      |                                                                                                  |                                                                                                                |                                                 |                        |           |     |
| 5             | Check Aux Bldg Vent Exhaust<br>Radiation Monitors - RADIATION<br>NORMAL<br>• R-13<br>• R-14                                                                                                          |      | 1<br>7<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1<br>1 | <u>F</u> R-13 <u>OR</u> R-14 I<br>ctuates, <u>THEN</u> ve<br>entilation Isola<br>hile continuing<br>procedure. | ligh Alar<br>erify Aux<br>ation per<br>with thi | m<br>Bldg<br>A-RM<br>s | -45       |     |
| <u>NOTE</u> : | Do <u>NOT</u> pressurize injection lines                                                                                                                                                             | and  | cha                                                                                              | nnels greater th                                                                                               | han 125 p                                       | sig.                   |           |     |
| <u>NOTE</u> : | If SFP leak detection system indidetermine location.                                                                                                                                                 | cate | s SF                                                                                             | P leakage, dye r                                                                                               | nay be us                                       | ed to                  |           |     |
| 6             | Determine Cause Of SFP Low Level                                                                                                                                                                     |      |                                                                                                  |                                                                                                                |                                                 |                        |           |     |
|               | <ul> <li>Locally inspect South Pool<br/>Transfer Canal gate, pumps,<br/>valves, and piping</li> <li>Locally monitor SFP leak<br/>detection system</li> <li>Evaluate for signs of evaporat</li> </ul> | ion  |                                                                                                  |                                                                                                                |                                                 |                        |           |     |
|               |                                                                                                                                                                                                      |      |                                                                                                  |                                                                                                                |                                                 |                        |           |     |

| WISCO         | NSIN PUBLIC SERVICE CORPORATION                                                                       | NO.                    | A-SFP-21                              |                               |              |
|---------------|-------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------|-------------------------------|--------------|
| KE            | WAUNEE NUCLEAR POWER PLANT                                                                            | TITLE                  | ABNORMAL SPENT<br>AND CLEANUP SY      | F FUEL POOL C<br>STEM OPERATI | OOLING<br>ON |
|               | OPERATING PROCEDURE                                                                                   | DATE                   | OCT 14 2004                           | PAGE 4                        | <b>of</b> 10 |
|               | · · · · · · · · · · · · · · · · · · ·                                                                 | I                      |                                       |                               |              |
| STEP          | OPERATOR ACTIONS                                                                                      |                        | CONTINGEN(                            | CY ACTIONS                    |              |
|               | <u>CAU</u>                                                                                            | <u>TION</u>            | • • • • • • • • • • • • • • • • • • • |                               | • • • • •    |
| Ensur         | e Refueling Boron Concentration pe                                                                    | r the CO               | LR is maintained                      | d in SFP.                     | I            |
| •••••         | •••••                                                                                                 | *******                |                                       |                               | ****         |
| 7             | Establish SFP Level between 2°2"<br>and 3'4" Below Floor Per N-SFP-2                                  | 1                      |                                       |                               |              |
| 8             | Check If SFP Level Is High:                                                                           | . <u>G</u>             | <u>0 TO</u> Step 13.                  |                               | ļ            |
|               | a. SER 155, Spent Fuel Pool A<br>Level High – ON                                                      |                        |                                       |                               |              |
| l             | OR                                                                                                    |                        |                                       |                               |              |
|               | b. SER 156, Spent Fuel Pool B<br>Level High - ON                                                      |                        |                                       |                               |              |
|               | OR                                                                                                    |                        |                                       |                               |              |
|               | c. Local level indication - LESS<br>THAN 2'2" BELOW FLOOR                                             |                        |                                       |                               |              |
| <u>NOTE</u> : | If Fuel Transfer System Gate Valv<br>is set, a pressure difference bet<br>result in SFP level change. | e is open<br>ween cont | n and Containmen<br>tainment and Aux  | nt Integrity<br>k Bldg may    |              |
| 9             | Check Fuel Transfer System Gate<br>Valve - CLOSED                                                     | Lo<br>Gi               | ocally close Fue<br>ate Valve.        | el Transfer S                 | System       |
| 10            | Identify And Isolate Source Of<br>In-Leakage:                                                         |                        |                                       |                               |              |
| ł             | a. RWST Purification System                                                                           |                        |                                       |                               |              |
| l             | b. Rx Makeup Water System                                                                             |                        |                                       |                               |              |
|               | c. Service Water System                                                                               |                        |                                       |                               |              |

| WISCO         | NSIN PUBLIC SERVICE CORPORATION                                                | NO.              | A-SFP-21                                                                                                                                  |
|---------------|--------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| KE            | WAUNEE NUCLEAR POWER PLANT                                                     | TITI             | ABNORMAL SPENT FUEL POOL COOLING<br>AND CLEANUP SYSTEM OPERATION                                                                          |
|               | OPERATING PROCEDURE                                                            | DATI             | Z OCT 14 2004 PAGE 5 of 10                                                                                                                |
|               |                                                                                |                  | []                                                                                                                                        |
| STEP          | OPERATOR ACTIONS                                                               |                  | CONTINGENCY ACTIONS                                                                                                                       |
| <u>NOTE</u> : | Activation of SER 161, Spent Fuel<br>Secondary DP Low, may indicate SF         | Pool I<br>P heat | leat Exchanger Primary to exchanger tube leakage.                                                                                         |
| 11            | Check SFP Heat Exchanger Tubes -<br>INTACT                                     |                  | <u>IF</u> SFP Heat Exchanger tube leakage<br>is suspected, <u>THEN</u> place RHR Heat<br>Exchanger 1A in service per<br>N-SFP-21.         |
| 12            | Establish SFP Level between 2°2"<br>and 3°4" Below Floor Per N-SFP-2           | 1                |                                                                                                                                           |
| 13            | Check Spent Fuel Pool Pumps:                                                   |                  | Perform the following:                                                                                                                    |
|               | <ul> <li>Standby pump - OFF</li> <li>Previously running pump - RUNN</li> </ul> | ING              | a. <u>IF</u> previously running pump has<br>tripped, <u>THEN</u> contact<br>Maintenance to determine why<br>pump has tripped.             |
|               |                                                                                |                  | b. <u>IF</u> no SFP pumps are running,<br><u>THEN</u> verify power available to<br>pumps:                                                 |
|               |                                                                                |                  | <ul> <li>MCC 1-52B(B3), SFP Pump A</li> <li>MCC 1-62E(G1), SFP Pump B</li> </ul>                                                          |
|               |                                                                                |                  | c. Start SFP pumps as necessary to<br>establish at least one running.                                                                     |
| 14            | Check Service Water - AVAILABLE SFP COOLING SYSTEM                             | то               | <u>IF</u> SFP temperature increasing in<br>an uncontrolled manner, <u>THEN</u> place<br>RHR Heat Exchanger 1A in service<br>per N-SFP-21. |
| Į             |                                                                                |                  |                                                                                                                                           |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                             | NO.                                                                    | A-SFP-21                             |                  |              |  |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------|------------------|--------------|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                     | TITLE ABNORMAL SPENT FUEL POOL COOLING<br>AND CLEANUP SYSTEM OPERATION |                                      |                  |              |  |
| OPERATING PROCEDURE                                                              | DATE                                                                   | OCT 14 2004                          | PAGE 6           | <b>of</b> 10 |  |
| STEP OPERATOR ACTIONS                                                            |                                                                        | CONTINGENO                           | CY ACTIONS       |              |  |
| <u>NOTE</u> : The setpoint for SER 157 and SER temporarily be set to a higher va | 158 is no<br>lue durin                                                 | ormally 100°F, b<br>ng refueling out | out may<br>Lage. |              |  |
| 15 Check If SFP Temperature Is High                                              | : <u>60</u>                                                            | <u>) TO</u> Step 17.                 |                  |              |  |
| a. SER 157, Spent Fuel Pool A<br>Temperature High – ON                           |                                                                        |                                      |                  |              |  |
| <u>OR</u>                                                                        |                                                                        |                                      |                  |              |  |
| b. SER 158, Spent Fuel Pool B<br>Temperature High – ON                           |                                                                        |                                      |                  |              |  |
| <u>OR</u>                                                                        |                                                                        |                                      |                  |              |  |
| c. Local temperature indication<br>GREATER THAN SER 157 AND SER<br>158 SETPOINT  | -                                                                      |                                      |                  |              |  |
|                                                                                  |                                                                        |                                      |                  |              |  |
|                                                                                  |                                                                        |                                      |                  |              |  |
|                                                                                  |                                                                        |                                      |                  |              |  |
|                                                                                  |                                                                        |                                      |                  |              |  |
|                                                                                  |                                                                        |                                      |                  | .:           |  |
|                                                                                  |                                                                        |                                      |                  |              |  |
|                                                                                  |                                                                        |                                      |                  | i            |  |
|                                                                                  |                                                                        |                                      |                  |              |  |
|                                                                                  |                                                                        |                                      |                  |              |  |
|                                                                                  |                                                                        |                                      |                  |              |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                       | NO.   | A-SFP-21                                                                                       |                                                                               |          |
|----------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------|
| KEWAUNEE NUCLEAR POWER PLANT                                               | TITLE | ABNORMAL SPENT FUEL POOL COOLING<br>AND CLEANUP SYSTEM OPERATION                               |                                                                               |          |
| OPERATING PROCEDURE                                                        | DATE  | OCT 14 2004                                                                                    | PAGE 7 of                                                                     | 10       |
| STEP OPERATOR ACTIONS                                                      |       | CONTINGENCY ACTIONS                                                                            |                                                                               |          |
| 16 Locally Reduce SFP Temperature:                                         |       |                                                                                                |                                                                               |          |
| a. Verify high temperature alarm<br>using local temperature<br>indicators: |       |                                                                                                |                                                                               |          |
| • TI 12007<br>• TI 12012                                                   |       |                                                                                                |                                                                               |          |
| b. Verify Service Water to Spent<br>Fuel Pool Heat Exchanger               |       |                                                                                                |                                                                               |          |
| c. Verify operation of<br>SW-1601/CV-31086, SW to SFP H<br>Temp CV         | x     |                                                                                                |                                                                               | :        |
| d. Verify Spent Fuel Pool Filter:<br>- <u>NOT</u> plugged                  | S     |                                                                                                |                                                                               |          |
| e. Start standby Spent Fuel Pool<br>Pump                                   |       |                                                                                                |                                                                               |          |
| f. Verify SFP temperature – STAB<br><u>OR</u> DECREASING                   | LE f  | <ul> <li><u>IF</u> SFP temper<br/>in an uncontr<br/>place RHR Hea<br/>service per N</li> </ul> | ature increasing<br>olled manner, <u>THE</u><br>t Exchanger 1A in<br>-SFP-21. | <u>N</u> |
| g. Check Spent Fuel Pool<br>Temperature Alarm is cleared.                  | g     | <ul> <li><u>WHEN</u> SFP temp<br/>restored to n<br/>locally press<br/>pushbutton</li> </ul>    | erature is<br>ormal, <u>THEN</u><br>alarm reset                               |          |
|                                                                            |       |                                                                                                |                                                                               |          |
|                                                                            |       |                                                                                                |                                                                               |          |
|                                                                            |       |                                                                                                |                                                                               |          |
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| WISCON | NSIN PUBLIC SERVICE CORPORATION                                                   | NO.                                         | A-SFP-21                                                                                 |                                                                       |                                                                                                               |  |  |
|--------|-----------------------------------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--|--|
| KEV    | WAUNEE NUCLEAR POWER PLANT                                                        | TITLE                                       | ABNORMAL SPENT FUEL POOL COOLING<br>AND CLEANUP SYSTEM OPERATION                         |                                                                       |                                                                                                               |  |  |
|        | OPERATING PROCEDURE                                                               | DATE                                        | OCT 14 2004                                                                              | PAGE 8 O                                                              | <b>E</b> 10                                                                                                   |  |  |
| STEP   | STEP OPERATOR ACTIONS                                                             |                                             |                                                                                          | CONTINGENCY ACTIONS                                                   |                                                                                                               |  |  |
| 17     | Check If Spent Fuel Pool Primary<br>To Secondary Pressure Is Low:                 |                                             |                                                                                          | ţ                                                                     | ·                                                                                                             |  |  |
|        | a. Check SFP Primary To Secondary<br>pressure - LESS THAN 5 PSI                   | ya.                                         | . <u>GO TO</u> Step 18                                                                   | •                                                                     |                                                                                                               |  |  |
|        | 1) SER 161, Spent Fuel Pool<br>Heat Exchanger Primary to<br>Secondary DP Low - ON |                                             |                                                                                          |                                                                       |                                                                                                               |  |  |
|        | <u>OR</u>                                                                         |                                             |                                                                                          |                                                                       |                                                                                                               |  |  |
|        | 2) Local indication, DPI-1105                                                     | 5                                           |                                                                                          |                                                                       |                                                                                                               |  |  |
|        | b. Check service water pressure NORMAL                                            | - b.                                        | , <u>IF</u> SW pressure is low, <u>THEN</u><br>start additional SW pumps per<br>N-SW-02. |                                                                       |                                                                                                               |  |  |
|        | c. Check service water temperatur<br>- NORMAL                                     | heck service water temperature c.<br>NORMAL |                                                                                          |                                                                       | <u>IF</u> SW temperature is elevated.<br><u>THEN</u> adjust temp controller for<br>SW-1601 to a higher value. |  |  |
| 1      | d. Check SFP heat exchanger tubes<br>- INTACT                                     | s d.                                        | . <u>IF</u> SFP Heat E<br>leakage is su<br>place RHR Hea<br>service per N                | xchanger tube<br>spected, <u>THEN</u><br>t Exchanger 1A i<br>-SFP-21. | n                                                                                                             |  |  |
| 18     | Return To Procedure And Step In<br>Effect                                         |                                             |                                                                                          |                                                                       |                                                                                                               |  |  |
| -END-  |                                                                                   |                                             |                                                                                          |                                                                       |                                                                                                               |  |  |
| ·      |                                                                                   |                                             |                                                                                          |                                                                       |                                                                                                               |  |  |
|        |                                                                                   |                                             |                                                                                          |                                                                       |                                                                                                               |  |  |
|        |                                                                                   |                                             |                                                                                          |                                                                       |                                                                                                               |  |  |
|        |                                                                                   |                                             |                                                                                          |                                                                       |                                                                                                               |  |  |
|        |                                                                                   |                                             |                                                                                          |                                                                       |                                                                                                               |  |  |
|        |                                                                                   |                                             |                                                                                          |                                                                       |                                                                                                               |  |  |
| WISCO          | DNSIN PUBLIC SERVICE CORPORATION                                                                                                | NO. A-SFP-21                                                  |                                          |
|----------------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------------------------------|
| K              | EWAUNEE NUCLEAR POWER PLANT                                                                                                     | TITLE Abnormal Spe<br>and Cleanup                             | nt Fuel Pool Cooling<br>System Operation |
|                | OPERATING PROCEDURE                                                                                                             | DATE OCT 14 2004                                              | <b>PAGE</b> 9 of 10                      |
|                | <u>ATTACHMENT A - EMERGI</u><br>(Page 1                                                                                         | NCY MAKE UP TO SFP<br>of 1)                                   | · ·                                      |
| <u>NOTE</u>    | Throughout the subsequent actions<br>to evaluate if the ERO should be                                                           | s, EPIPs should be rev<br>activated.                          | iewed                                    |
| A.1            | STOP BOTH SFP pumps.                                                                                                            |                                                               |                                          |
|                | CAUTIO                                                                                                                          | <br>)N                                                        |                                          |
| Up<br>Sy<br>co | ening SW-1497 places a large addition<br>stem which may affect other componen<br>oling.                                         | onal load on the Servi<br>its utilizing service               | ce Water<br>water for                    |
| A.2            | DISPATCH AO with a portable radiat<br>SW-1497, Emergency Service Water To                                                       | ion monitor to SFP Hx<br>o SFP Isol.                          | Room to open                             |
| A.3            | <u>WHEN</u> SFP level has recovered suffic<br>Alarm on R-5, Fuel Handling Area Mo<br>has been isolated, <u>THEN</u> CLOSE SW-14 | ciently to reset High<br>onitor, <u>AND</u> source of<br>197. | Radiation<br>system leakage              |
| A.4            | RAISE SFP boron to at least the Re<br>COLR <u>AND</u> ESTABLISH SFP level betwee<br>N-CVC-35A.                                  | Fueling Boron Concentr<br>en 2'2" and 3'4" below              | ation of the<br>SFP floor per            |
| A.5            | <u>WHEN</u> SFP level is 4 feet below the following:                                                                            | SFP floor, <u>THEN</u> perfo                                  | rm the                                   |
|                | 1. ADJUST SFP skimmer plates.                                                                                                   |                                                               |                                          |
|                | 2. START one SFP pump.                                                                                                          |                                                               |                                          |
|                | 3. PLACE standby SFP pump in AUTO                                                                                               |                                                               |                                          |
|                | 4. MONITOR A & B SFP Filter D/P.                                                                                                |                                                               |                                          |
| A.6            | NOTIFY plant support groups for act<br>Cooling and Cleanup System to norma                                                      | tions necessary to ret                                        | urn SFP                                  |
| A.7            | Return to procedure and step in eff                                                                                             | fect.                                                         |                                          |
|                |                                                                                                                                 |                                                               |                                          |
|                |                                                                                                                                 |                                                               |                                          |
|                |                                                                                                                                 |                                                               |                                          |
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| WISCONSIN PUBLIC SERVICE CORPORATION       NO.       BKG FR-C.2       REV       B         KEWAUNEE NUCLEAR POWER PLANT       TITLE RESPONSE TO DEGRADED CORE CO         IPEOP BACKGROUND DOCUMENT       DATE       MAR 21 2004       PAGE 1 of         REVIEWED BY | OLIN |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| KEWAUNEE NUCLEAR POWER PLANT       TITLE RESPONSE TO DEGRADED CORE CO         IPEOP BACKGROUND DOCUMENT       DATE       MAR 21 2004       PAGE 1 of         REVIEWED BY                                                                                           | OLIN |
| IPEOP BACKGROUND DOCUMENT       DATE       MAR 21 2004       PAGE 1 of         REVIEWED BY                                                                                                                                                                         | _    |
| REVIEWED BY APPROVED BY<br>Background Document For<br>FR-C.2<br>Response To Degraded Core Cooling                                                                                                                                                                  | 3    |
| Background Document For<br>FR-C.2<br>Response To Degraded Core Cooling                                                                                                                                                                                             |      |
| Background Document For<br>FR-C.2<br>Response To Degraded Core Cooling                                                                                                                                                                                             |      |
| FR-C.2<br>Response To Degraded Core Cooling                                                                                                                                                                                                                        |      |
| Response To Degraded Core Cooling                                                                                                                                                                                                                                  |      |
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#### 1. INTRODUCTION

Function Restoration Procedure FR-C.2. RESPONSE TO DEGRADED CORE COOLING. has been developed to address the symptoms for degraded core cooling. These symptoms are: 1) core exit TC temperatures greater than 700°F, or 2) core exit TC temperatures less than 700°F and a RVLIS RXCPs OFF indication less than 0%, i.e., below the bottom of the hot leg nozzles.

This procedure is entered from CSF Status Tree F-0.2. on an ORANGE priority. The major actions to be performed in this procedure include:

1 Reinitiation of high pressure safety injection

2 Controlled secondary depressurization

These actions are to be performed sequentially. Success, as indicated by improved core cooling, is evaluated prior to performing the next action in the sequence if no RXCP is running. If, for example, the operator is successful in restoring core cooling via high pressure safety injection, then he is returned to the procedure and step in effect. If not, he continues with this procedure. Once core cooling has been restored and adequate makeup flow has been established and verified, the operator is directed to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, Step 17. Since the KNPP RVLIS VOID FRACTION indication cannot be used for a quantitative value of RCS voiding and core exit TCs will not indicate superheated conditions when RXCPs are running, the operator is directed to continue with the second actions if any RXCP is running when this procedure is entered.

#### 2. DESCRIPTION

Degraded core cooling is caused by a substantial loss of primary coolant. The RXCPs may or may not be running when degraded core cooling is indicated. If the RXCPs are not running, the degraded core cooling symptoms indicate the core is partially uncovered. If the RXCPs are running, the symptoms indicate that the potential for core uncovery exists should the RXCPs fail or be manually tripped. Operator action is required to restore RCS inventory in either case.

Reinitiation of high pressure safety injection is the most effective method to restore RCS inventory and core cooling. If some form of high pressure injection cannot be established or is ineffective in restoring core cooling, then the operator must take actions to reduce the RCS pressure in order for the SI accumulators and low-head SI (RHR) pumps to inject. A controlled secondary depressurization is an effective method for achieving this, while at the same time avoiding a rapid RCS cooldown that could cause problems with pressurized thermal shock.

The expected system response to both of the recovery techniques listed above, will be described below.

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## 2.1 <u>Reinitiation of High Pressure Safety Injection</u>

This procedure uses the trends in core exit TC temperatures and indicated vessel level to determine appropriate operation actions. When no RXCP is running, the effectiveness of safety injection in restoring core cooling is determined by the trend in core exit TC temperatures. If the RXCPs are off and core exit TC temperatures are decreasing, no further action may be necessary. Core exit TC temperatures less than 700°F with no RXCP running indicates success in restoring core cooling. allowing the operator to return to the procedure and step in effect. The expected system response from reinitiation of high pressure safety injection with RXCPs either tripped or running is given below.

### RXCPs Tripped

The introduction of subcooled safety injection will cause steam in the cold legs to condense. Steam flow throughout the RCS will increase as a result of this condensation effect. Superheated steam forced out of the core may initially cause the core exit TC temperatures to increase. As the vessel begins to refill, heat transfer from the fuel will cause the fluid entering the core to boil vigorously. This will create a frothy two phase mixture which will eventually recover the entire core and cause the core exit TC temperatures to quickly decrease to the saturation temperature of the RCS. The RVLIS indication, which is an indirect measure of vessel level based on local pressure differences within the vessel, may fluctuate as the core recovers; however, the general trend in RVLIS indication should increase as the vessel is refilled.

### RXCPs\_Running

The only indication of degraded core cooling with the RXCPs running is the RVLIS VOID FRACTION reading. The RVLIS VOID FRACTION indication provides an indirect measure of relative vessel void fraction. When safety injection is reinitiated, the actual vessel void fraction and the RVLIS VOID FRACTION indication should decrease. The KNPP RVLIS VOID FRACTION indication has been determined to be usable only for trending and should not be used as a quantitative indication of actual percent void fraction in the RCS: therefore, RVLIS VOID FRACTION indication decreasing and RCS subcooling are used to determine if RCS inventory is being restored.

If a degraded core cooling condition is reached with RXCPs running, then the RXCPs should not be stopped, even if RXCP support requirements are lost or if RXCP pump trip criteria are met.

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### 2.2 Secondary Depressurization

If attempts to reinitiate high pressure safety injection were unsuccessful. or were ineffective in restoring core cooling, then a controlled SG depressurization, similar to the one in ES-1.2. POST LOCA COOLDOWN AND DEPRESSURIZATION. must be performed. A controlled secondary depressurization will increase primary-to-secondary heat transfer and cause steam in the primary side of the steam generator U-tubes to condense. When the condensation rate exceeds the steam creation rate, the RCS will begin to depressurize. The continued RCS depressurization will eventually cause SI accumulator injection. To prevent nitrogen injection from the SI accumulators, the operator must isolate them when the RCS pressure reaches approximately 210 psig.

After the SI accumulators have been isolated and the RXCPs have been tripped, the secondary should be depressurized to atmospheric pressure. The RCS pressure should follow secondary pressure until the RHR pumps begin to inject. Adequate core cooling has been restored and preparations for long term plant recovery can be started, once RHR flow has been established and the core is completely recovered.

### 3. <u>RECOVERY/RESTORATION\_TECHNIQUES</u>

The objective of the recovery/restoration technique incorporated into IPEOP FR-C.2 is directed toward preventing core damage due to degraded core cooling as detected by the Core Cooling Status Tree.

### 3.1 <u>High Level Action Summary</u>

A summary of the high level actions performed in FR-C.2 is given in the following subsections.

### 3.1.1 Establish Safety Injection Flow to the RCS

The operator must properly align emergency SI valves. start the SI pumps. and then check for flow through the SI lines to the RCS. If no RXCP is running, core exit TC temperatures are checked to determine the effectiveness of safety injection in restoring core cooling and vessel inventory. If a RXCP is running, the operator must continue in the procedure to SG depressurization because the KNPP RVLIS VOID FRACTION indication cannot be used for a quantitative value of RCS inventory on which to base a decision of restored core cooling.

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## 3.1.2 <u>Initiate a Controlled SG Depressurization to Cool Down and</u> <u>Depressurize the RCS</u>

The operator must maintain a 100°F/hr cooldown of the RCS by dumping steam or opening the SG PORVs while maintaining adequate feedwater to the SGs. The SI accumulators must be isolated and the RXCPs tripped once the SGs have been depressurized to the point where the RCS has been depressurized to 210 psig. The RCS cooldown and depressurization is continued until low-head safety injection (RHR) flow to the RCS has been established and verified. RCS Hot Leg temperatures and the RVLIS RXCPs OFF indication are checked to determine the effectiveness of accumulator and/or low-head safety injection in restoring core cooling and vessel inventory.

### 4. DETAILED\_DESCRIPTION OF STEPS, NOTES, AND CAUTIONS

This section contains a one-page (or more) step description table for each separate procedure step, note, and caution. Notes and cautions are always presented relative to the step they precede.

The Step Description Tables for the steps and associated notes and cautions of IPEOP FR-C.2 are presented on the following pages.

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| STEP DESCRIPTION TA                                                                                                                                                                                                                                                                                                               | BLE FOR FR-C.2                                                                                                                                                                                | STEP 1 -CAUTION 1                                                     |
| <u>CAUTION</u> : If RWST level decreases to less<br>should be aligned for recirculat<br>TO CONTAINMENT SUMP RECIRCULATION                                                                                                                                                                                                         | than 37%, the SI System<br>ion using ES-1.3, TRANSE<br>N.                                                                                                                                     | ER                                                                    |
| <u>PURPOSE</u> : To guarantee coolant flow to the<br>recirculation if the RWST level<br>setpoint                                                                                                                                                                                                                                  | core by switching to co<br>decreases below the swit                                                                                                                                           | ld leg<br>chover                                                      |
| BASIS:                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                               |                                                                       |
| If the switchover level in the RWST is re-<br>time during the course of procedure FR-C.<br>RCS inventory losses, the operator should<br>TRANSFER TO CONTAINMENT SUMP RECIRCULATION<br>the core. When RWST level decreases to 3<br>water available in the recirculation sump<br>the SI pumps. The remainder of RWST wate<br>usage. | ached, which could happe<br>2 depending upon the amo<br>immediately go to ES-1.<br>N, to maintain coolant f<br>7%, there should be suff<br>to switch the suction s<br>r is reserved for spray | en at any<br>punt of<br>3.<br>Flow to<br>Ficient<br>supply to<br>pump |
| ACTIONS:                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                               |                                                                       |
| Determine if RWST level decreases to less                                                                                                                                                                                                                                                                                         | than 37%                                                                                                                                                                                      |                                                                       |
| INSTRUMENTATION:                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                               |                                                                       |
| RWST level indication                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                               |                                                                       |
| <u>CONTROL/EQUIPMENT</u> :                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                               |                                                                       |
| N/A                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                               |                                                                       |
| KNOWLEDGE:                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                               |                                                                       |
| N/A                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                               |                                                                       |
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| STEP DESCRIPTION TAI                                                                                                                                                                                                                                                           | BLE FOR FR-C.2 STEP 1 -NOTE 1                                                                                                                                                                          |
| <u>NOTE</u> : Normal conditions for running RX(<br>should not be tripped if normal o<br>established or maintained.                                                                                                                                                             | CPs are desired, but RXCPs<br>conditions can not be                                                                                                                                                    |
| <u>PURPOSE</u> : To prevent the operator from trip                                                                                                                                                                                                                             | oping the RXCPs                                                                                                                                                                                        |
| BASIS:                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                        |
| If the RXCPs are running, they will contin<br>two-phase flow through the core to keep it<br>cause an inadequate core cooling condition<br>the RXCPs until this procedure instructs h<br>RXCP trip criteria do not apply. See the<br>the Generic Issues section of the Executiv | nue to provide forced single or<br>c cool. Tripping the RXCPs may<br>n. The operator should not trip<br>nim to do so. Therefore, the<br>document RCP TRIP/RESTART in<br>we Volume for more discussion. |
| ACTIONS:                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                        |
| N/A                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                        |
| INSTRUMENTATION:                                                                                                                                                                                                                                                               |                                                                                                                                                                                                        |
| N/A                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                        |
| <u>CONTROL/EQUIPMENT</u> :                                                                                                                                                                                                                                                     |                                                                                                                                                                                                        |
| N/A                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                        |
| KNOWLEDGE:                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                        |
| Significance of not tripping the RXCPs at                                                                                                                                                                                                                                      | this time.                                                                                                                                                                                             |
|                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                        |
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| STEP DESCRIPTION TA                                                                         | BLE FOR FR-C.2           | STEP 1              |
| <u>STEP</u> : Verify SI Valve Alignment - PROP                                              | ER EMERGENCY ALIGNMENT   |                     |
| <u>PURPOSE</u> : To verify proper emergency SI va                                           | lve alignment            |                     |
| <u>BASIS</u> :                                                                              |                          |                     |
| In order to provide SI flow to the RCS. S<br>properly.                                      | I valves must be positio | oned                |
| ACTIONS:                                                                                    |                          | :                   |
| <ul> <li>Determine if SI valves are in proper</li> <li>Align valves as necessary</li> </ul> | emergency alignment      |                     |
| INSTRUMENTATION:                                                                            |                          |                     |
| SI valve position indication                                                                |                          |                     |
| <u>CONTROL/EQUIPMENT</u> :                                                                  |                          |                     |
| SI valve switches                                                                           |                          |                     |
| KNOWLEDGE:                                                                                  |                          |                     |
| N/A                                                                                         |                          |                     |
|                                                                                             |                          |                     |
|                                                                                             |                          |                     |
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| STEP DESCRIPTION TAI                                                                                                                                                                                                                                                  | BLE FOR_FR-C.2                                                        | STEP 2               |
| <u>STEP</u> : Verify SI Flow In Both Trains:                                                                                                                                                                                                                          |                                                                       |                      |
| <u>PURPOSE</u> : To verify delivery of SI flow to                                                                                                                                                                                                                     | the RCS                                                               |                      |
| BASIS:                                                                                                                                                                                                                                                                |                                                                       |                      |
| or establish maximum SI flow to the RCS.<br>verified, the operator should establish an<br>flow to the RCS.<br><u>ACTIONS</u> :                                                                                                                                        | If SI flow to the RCS on<br>ny other high pressure d                  | annot be<br>njection |
| <ul> <li>Determine if SI pump flow indicators</li> <li>Determine if RCS pressure is less than</li> <li>Determine if RHR pump flow indicators</li> <li>Align valves and start pumps as necess</li> <li>Try to establish any other high pressure</li> </ul>             | indicate flow<br>n 150 psig<br>indicate flow<br>sary<br>ure injection |                      |
| INSTRUMENTATION:                                                                                                                                                                                                                                                      |                                                                       |                      |
| <ul> <li>SI pump flow indicators</li> <li>RHR pump flow indicators</li> <li>SI pump status indication</li> <li>RCS pressure indication</li> <li>RHR pump status indication</li> <li>SI valves position indication</li> <li>Charging pump status indication</li> </ul> |                                                                       |                      |
| CONTROL/EQUIPMENT:                                                                                                                                                                                                                                                    |                                                                       |                      |
| • Switches for:                                                                                                                                                                                                                                                       |                                                                       |                      |
| <ul> <li>SI pumps</li> <li>RHR pumps</li> <li>SI valves</li> <li>CVCS valves</li> <li>Charging pumps</li> </ul>                                                                                                                                                       |                                                                       |                      |
| KNOWLEDGE:                                                                                                                                                                                                                                                            |                                                                       |                      |
| N/A                                                                                                                                                                                                                                                                   |                                                                       |                      |
|                                                                                                                                                                                                                                                                       |                                                                       |                      |

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| STEP DESCRIPTION TAI                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | BLE_FOR_I                                                               | <u>FR-C.2</u>                                                                                                     |                                                           | STEP        |
| STEP: Check RCS Vent Paths:                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                         |                                                                                                                   |                                                           |             |
| <u>PURPOSE</u> : To try to terminate loss of RCS :                                                                                                                                                                                                                                                                                                                                                                                                                                         | inventory                                                               | y through RCS ve                                                                                                  | ent paths                                                 |             |
| BASIS:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                         |                                                                                                                   |                                                           |             |
| Any open, isolable RCS vent path should be<br>the loss of RCS inventory through that pat<br>particularly checks PRZR PORVs and block<br>Reactor Head and Pressurizer Head vent pat                                                                                                                                                                                                                                                                                                         | e closed<br>th. Then<br>valves in<br>ths.                               | to reduce or el<br>cefore. this ste<br>addition to th                                                             | liminate<br>ep<br>ne                                      |             |
| To ensure operability of the PRZR PORV blo<br>verified that power is available to them.<br>preclude the possibility of an undetected<br>block valve is left open to ensure availab<br>pressure excursions in the RCS (due to dep<br>desirable to have at least one PORV available<br>safety valves.                                                                                                                                                                                        | ock valve<br>PRZR P(<br>stuck op<br>bility of<br>graded co<br>able to p | es, it should be<br>DRVs are closed<br>oen valve. At 1<br>f at least one H<br>onditions). Als<br>preclude the use | to<br>to<br>least one<br>PORV for<br>so, it is<br>of PRZR |             |
| ACTIONS:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                         |                                                                                                                   |                                                           |             |
| <ul> <li>Determine if power is available to PRZ</li> <li>Determine if PRZR PORVs are closed</li> <li>Determine if PRZR PORV cannot be closed</li> <li>Determine if at least one block valve</li> <li>Determine if block valve was closed to</li> <li>Determine if other RCS vent paths are</li> <li>Restore power to block valves</li> <li>Close PRZR PORVs</li> <li>Close block valve for an open PRZR POI</li> <li>Open one block valve</li> <li>Close any open RCS vent path</li> </ul> | ZR block<br>ed<br>is open<br>o isolate<br>closed<br>RV                  | valves<br>e an open PORV                                                                                          |                                                           |             |
| INSTRUMENTATION:                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                         |                                                                                                                   |                                                           |             |
| <ul> <li>PRZR PORV and block valve position inc</li> <li>Indication of power available to PRZR</li> <li>Reactor Head and Pressurizer Head Vend</li> </ul>                                                                                                                                                                                                                                                                                                                                  | dication<br>block va<br>t valve p                                       | alves<br>position indicat                                                                                         | tion                                                      |             |
| CONTROL/EQUIPMENT:                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                         |                                                                                                                   |                                                           |             |
| <ul> <li>PRZR PORV and block valve switches</li> <li>Block valve power supply breakers</li> <li>RCS vent path valve switches</li> </ul>                                                                                                                                                                                                                                                                                                                                                    |                                                                         |                                                                                                                   |                                                           |             |
| KNOWLEDGE :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                         |                                                                                                                   |                                                           |             |
| N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                         |                                                                                                                   |                                                           |             |
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| STEP DESCRIPTION TAK                                                                                                                                                                    | BLE_FOR_FR-C.2                                                                                     | STEP 4                |
| STEP: Check RXCP Status:                                                                                                                                                                |                                                                                                    |                       |
| <u>PURPOSE</u> : To determine if RXCPs are running                                                                                                                                      | g                                                                                                  |                       |
| BASIS:                                                                                                                                                                                  |                                                                                                    |                       |
| support conditions for the operating RXCP<br>proper support conditions, potential damage<br>possible. Therefore, the operator should<br>minimum support conditions required to operator | (s) are available. With<br>ge to the operating RXCE<br>attempt to establish th<br>erate the RXCPs. | nout<br>P(s) is<br>ne |
| <u>ACTIONS</u> :                                                                                                                                                                        |                                                                                                    |                       |
| <ul> <li>Determine if at least one RXCP is runn</li> <li>Determine if support conditions for the available</li> <li>Try to establish support conditions for</li> </ul>                  | ning<br>he operating RXCP(s) are<br>or the operating RXCP(s)                                       | 2                     |
| INSTRUMENTATION:                                                                                                                                                                        |                                                                                                    |                       |
| <ul> <li>RXCP status indication</li> <li>Instrumentation to determine if RXCP ;</li> </ul>                                                                                              | support conditions are a                                                                           | vailable              |
| CONTROL/EQUIPMENT:                                                                                                                                                                      |                                                                                                    |                       |
| Controls/equipment to establish RXCP suppo                                                                                                                                              | ort conditions                                                                                     |                       |
| KNOWLEDGE :                                                                                                                                                                             |                                                                                                    |                       |
| N/A                                                                                                                                                                                     |                                                                                                    |                       |
|                                                                                                                                                                                         |                                                                                                    |                       |
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WISCONSIN PUBLIC SERVICE CORPORATION

**KEWAUNEE NUCLEAR POWER PLANT** 

TITLE RESPONSE TO DEGRADED CORE COOLING

IPEOP BACKGROUND DOCUMENT

DATE MAR 21 2004

BKG FR-C.2

NO.

STEP 5

of 34

**PAGE** 13

STEP: Check Core Cooling:

<u>PURPOSE</u>: To check if an RCS inventory condition symptomatic of a degraded core cooling condition still exists

STEP DESCRIPTION TABLE FOR FR-C.2

**BASIS**:

KNPP RVLIS Void Fraction indication does not have the same capabilities as the WOG generic RVLIS and can not be used for a quantitative value. Therefore, the step is modified from the WOG ERG to monitor KNPP-RVLIS Void Fraction for trends and RCS subcooling.

The trend in RVLIS RCS Void Fraction % is used to check the effectiveness of safety injection in restoring RCS inventory. If void fraction percent is decreasing and RCS subcooling based on core exit TCs is greater than 30°F [65°F for adverse containment], then safety injection has been successful in restoring RCS inventory and core cooling. This step will then transfer the operator to procedure and step in effect. This guidance is consistant with addressing the entry conditions for FR-C.2 from Status Tree F-0.2.

In the event RCS Void Fraction % is decreasing, but subcooling requirements are not met, no further actions may be necessary. The operator is instructed to return to the beginning of this procedure and repeat the initial procedure steps until the subcooling requirements are met.

If the RVLIS Void Fraction % is not decreasing, then the operator must continue with this procedure.

ACTIONS:

- o
- Determine if RVLIS Void Fraction % is decreasing Determine if RCS subcooling is greater than 30°F[65°F for adverse 0 containment]

**INSTRUMENTATION:** 

**RVLIS Void Fraction % indication** RCS subcooling

CONTROL/EQUIPMENT:

N/A

KNOWLEDGE:

Understanding of RVLIS Void Fraction % function and interpretation

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                             | NO. BKG FR-C.2                                                                                                  |                               |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------------------------|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                     | NUCLEAR POWER PLANT TITLE RESPONSE TO DEGRADED CORE COOLIN                                                      |                               |  |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                                        | <b>DATE</b> MAR 21 2004                                                                                         | PAGE 14 of 3                  |  |
| STEP_DESCRIPTION_TAP                                                                                                                                                                                                             | BLE_FOR_FR-C.2                                                                                                  | STEP                          |  |
| STEP: Check If One RXCP Should Be Stopp                                                                                                                                                                                          | ped:                                                                                                            |                               |  |
| <u>PURPOSE</u> : To reserve one RXCP for future us                                                                                                                                                                               | Se                                                                                                              |                               |  |
| BASIS:                                                                                                                                                                                                                           |                                                                                                                 |                               |  |
| Since RXCP damage may result from continuo<br>voided RCS conditions, it is desirable to<br>future use. Since loop B contains the pres<br>protect the loop B RXCP. However, the ope<br>loop B only if both RXCPs are already runn | ous operation under hig<br>have one RXCP reserved<br>ssurizer it is desirabl<br>erator should stop the<br>ning. | hly<br>for<br>e to<br>RXCP in |  |
| ACTIONS:                                                                                                                                                                                                                         |                                                                                                                 |                               |  |
| <ul> <li>Determine if both RXCPs are running</li> <li>Stop the RXCP in loop B</li> </ul>                                                                                                                                         |                                                                                                                 |                               |  |
| INSTRUMENTATION:                                                                                                                                                                                                                 |                                                                                                                 |                               |  |
| RXCP status indication                                                                                                                                                                                                           |                                                                                                                 |                               |  |
| CONTROL/EQUIPMENT:                                                                                                                                                                                                               |                                                                                                                 |                               |  |
| RXCP switches                                                                                                                                                                                                                    |                                                                                                                 |                               |  |
| KNOWLEDGE:                                                                                                                                                                                                                       |                                                                                                                 |                               |  |
| N/A                                                                                                                                                                                                                              |                                                                                                                 |                               |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                        | NO. BKG FR-C.2                 |                      |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                | TITLE RESPONSE TO D            | EGRADED CORE COOLING |  |  |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                                                                                                                                                                                                                                                   | DATE MAR 21 2004 PAGE 15 of 34 |                      |  |  |
| STEP DESCRIPTION TA                                                                                                                                                                                                                                                                                                                                                                                                                         | BLE FOR FR-C.2                 | STEP 7               |  |  |
| STEP: Check Core Cooling:                                                                                                                                                                                                                                                                                                                                                                                                                   |                                |                      |  |  |
| <u>PURPOSE</u> : To determine if symptoms of degra<br>when the RXCPs are not running                                                                                                                                                                                                                                                                                                                                                        | aded core cooling still        | exist                |  |  |
| BASIS:                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                |                      |  |  |
| The core exit TC temperatures are used to check the effectiveness of<br>safety injection in restoring core cooling when the RXCPs are not<br>running. If the trend in core exit TC temperatures is decreasing, then<br>no further action may be necessary. The operator is instructed to return<br>to the beginning of the procedure and repeat the initial procedure steps<br>until the the core exit TC temperatures are less than 700°F. |                                |                      |  |  |
| If core exit TC temperatures are less than 700°F, safety injection has been successful in restoring RCS inventory and core cooling. This step will transfer the operator to the procedure and step in effect.                                                                                                                                                                                                                               |                                |                      |  |  |
| If core exit TC temperatures are greater than 700°F and not decreasing,<br>then the operator must continue with this procedure in order to perform<br>the alternative action for restoring core cooling.                                                                                                                                                                                                                                    |                                |                      |  |  |
| ACTIONS:                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                |                      |  |  |
| <ul> <li>Determine if core exit TC temperatures are less than 700°F</li> <li>Determine if core exit TC temperatures are decreasing</li> <li>Return to procedure and step in effect</li> </ul>                                                                                                                                                                                                                                               |                                |                      |  |  |
| INSTRUMENTATION:                                                                                                                                                                                                                                                                                                                                                                                                                            |                                |                      |  |  |
| • Core exit TC temperature indication                                                                                                                                                                                                                                                                                                                                                                                                       |                                |                      |  |  |
| CONTROL/EQUIPMENT:                                                                                                                                                                                                                                                                                                                                                                                                                          |                                |                      |  |  |
| N/A                                                                                                                                                                                                                                                                                                                                                                                                                                         | N/A                            |                      |  |  |
| KNOWLEDGE:                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                |                      |  |  |

N/A

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                 | NO. BKG FR-C.2                                                        |                      |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                         | TITLE RESPONSE TO DE                                                  | EGRADED CORE COOLING |  |  |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                                                            | DATE MAR 21 2004 PAGE 16 of 34                                        |                      |  |  |
| STEP DESCRIPTION TA                                                                                                                                                                                                                                  | BLE FOR FR-C.2                                                        | STEP 8               |  |  |
| STEP: Check SI-20A And B, Accumulator                                                                                                                                                                                                                | A And B Isolation Valves                                              | s - OPEN             |  |  |
| <u>PURPOSE</u> : To ensure that the SI accumulato                                                                                                                                                                                                    | r isolation valves are o                                              | open                 |  |  |
| BASIS:                                                                                                                                                                                                                                               |                                                                       |                      |  |  |
| The accumulator isolation valves should be<br>may be required to recover the core. It :<br>injection has not previously occurred.                                                                                                                    | e open. Accumulator inj<br>is assumed that accumula                   | jection<br>itor      |  |  |
| ACTIONS:                                                                                                                                                                                                                                             |                                                                       |                      |  |  |
| <ul> <li>Determine if isolation valves are open</li> <li>Determine if accumulators have been di</li> <li>Determine if power is available to SI</li> <li>Restore power to isolation valves</li> <li>Open isolation valves unless closed at</li> </ul> | n<br>ischarged<br>accumulator isolation v<br>fter accumulator dischar | valves<br>rge        |  |  |
| INSTRUMENTATION:                                                                                                                                                                                                                                     |                                                                       |                      |  |  |
| <ul> <li>Accumulator isolation valve position indication</li> <li>Accumulator isolation valve power supply indication</li> </ul>                                                                                                                     |                                                                       |                      |  |  |
| CONTROL/EQUIPMENT:                                                                                                                                                                                                                                   |                                                                       |                      |  |  |
| <ul> <li>Accumulator isolation valve switches</li> <li>Accumulator isolation valve power supply controls</li> </ul>                                                                                                                                  |                                                                       |                      |  |  |
| KNOWLEDGE:                                                                                                                                                                                                                                           |                                                                       |                      |  |  |
| N/A                                                                                                                                                                                                                                                  |                                                                       |                      |  |  |
|                                                                                                                                                                                                                                                      |                                                                       |                      |  |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                         | NO. BKG FR-C.2                                      |                      |  |  |  |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                 | TITLE RESPONSE TO DE                                | GRADED CORE COOLING  |  |  |  |
| IPEOP BACKGROUND DOCUMENT                                                                                    | DATE MAR 21 2004                                    | <b>PAGE</b> 17 of 34 |  |  |  |
| STEP DESCRIPTION TA                                                                                          | STEP DESCRIPTION TABLE FOR FR-C.2 STEP 9 -CAUTION 1 |                      |  |  |  |
| <u>CAUTION</u> : If CST level decreases to less t<br>water sources for AFW pumps will                        | han 8%, use of alternate<br>be necessary per A-FW-C | 5B.                  |  |  |  |
| <u>PURPOSE</u> : To alert the operator that CST 1<br>that an alternate supply may be                         | evel should be monitored<br>necessary.              | , and                |  |  |  |
| BASIS:                                                                                                       |                                                     |                      |  |  |  |
| If CST level decreases below 8%, inadequa<br>may result in AFW pump damage. An altern<br>should be provided. | te suction pressure<br>ate suction source           |                      |  |  |  |
| ACTIONS:                                                                                                     |                                                     |                      |  |  |  |
| Determine if CST level decreases to less                                                                     | than 8%                                             | 1                    |  |  |  |
| INSTRUMENTATION:                                                                                             |                                                     |                      |  |  |  |
| CST level indication                                                                                         |                                                     |                      |  |  |  |
| <u>CONTROL/EQUIPMENT</u> :                                                                                   |                                                     |                      |  |  |  |
| N/A                                                                                                          |                                                     |                      |  |  |  |
| KNOWLEDGE:                                                                                                   |                                                     |                      |  |  |  |
| PCR009150                                                                                                    |                                                     |                      |  |  |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                     | NO. BKG FR-C.2                                                                                                                      |                                               |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                             | TITLE RESPONSE TO DE                                                                                                                | GRADED CORE COOLING                           |  |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                                                                | DATE MAR 21 2004                                                                                                                    | <b>PAGE</b> 18 of 34                          |  |
| <u>STEP DESCRIPTION TA</u><br><u>CAUTION</u> : A faulted or ruptured SG should<br>steps unless no intact SG is ava                                                                                                                                       | <u>BLE_FOR_FR-C.2</u><br>not be used in subsequer<br>ilable.                                                                        | STEP 9 -CAUTION 2                             |  |
| <u>PURPOSE</u> : To minimize potential radioactive<br>during the subsequent RCS cooldo                                                                                                                                                                   | e releases to the atmosp<br>wn                                                                                                      | bhere                                         |  |
| BASIS:                                                                                                                                                                                                                                                   |                                                                                                                                     | Ŷ                                             |  |
| Depressurizing a ruptured SG may create a<br>release of radioactive materials. In add<br>already depressurized. Therefore, to obta<br>depressurization, intact SGs should be us<br>SGs are available, this caution permits th<br>or steam a ruptured SG. | path to the atmosphere<br>ition, a faulted SG has<br>ain the most effective F<br>ed if available. If no<br>he operator to feed a fa | for<br>probably<br>CCS<br>intact<br>sulted SG |  |
| ACTIONS:                                                                                                                                                                                                                                                 |                                                                                                                                     |                                               |  |
| Determine if an intact SG is available                                                                                                                                                                                                                   |                                                                                                                                     |                                               |  |
| INSTRUMENTATION:                                                                                                                                                                                                                                         |                                                                                                                                     |                                               |  |
| <ul> <li>SG narrow range level indication</li> <li>SG pressure indication</li> <li>Feed flow indication</li> </ul>                                                                                                                                       |                                                                                                                                     |                                               |  |
| CONTROL/EQUIPMENT:                                                                                                                                                                                                                                       |                                                                                                                                     |                                               |  |
| N/A                                                                                                                                                                                                                                                      |                                                                                                                                     |                                               |  |
| KNOWLEDGE:                                                                                                                                                                                                                                               |                                                                                                                                     |                                               |  |
| N/A                                                                                                                                                                                                                                                      |                                                                                                                                     |                                               |  |
|                                                                                                                                                                                                                                                          |                                                                                                                                     |                                               |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                       | NO. BKG FR-                        | C.2                  |                     |              |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                               | TITLE RESPO                        | NSE TO DE            | GRADED CORE         | COOLIN       |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                  | DATE MAR 2                         | 1 2004               | PAGE 19             | <b>of</b> 34 |
| STEP DESCRIPTION TAP                                                                                                                                                                                       | BLE FOR FR-C.2                     |                      |                     | STEP 9       |
| STEP: Check Intact Steam Generator Leve                                                                                                                                                                    | els:                               |                      |                     |              |
| <u>PURPOSE</u> : To ensure adequate feed flow or S<br>sink requirements                                                                                                                                    | G inventory fo                     | r seconda            | ry heat             |              |
| BASIS:                                                                                                                                                                                                     |                                    |                      |                     |              |
| Narrow range level is reestablished in all<br>symmetric cooling of the RCS. The control<br>inventory with level readings on span.                                                                          | intact SGs to<br>range ensures     | maintain<br>adequate | 1                   |              |
| ACTIONS:                                                                                                                                                                                                   |                                    |                      |                     |              |
| <ul> <li>Increase total feed flow to restore na<br/>4% [15% for adverse containment]</li> <li>Control feed flow to maintain narrow a<br/>adverse containment] and 50%</li> <li>INSTRIMENTATION.</li> </ul> | arrow range lev<br>cange level bet | el greate<br>ween 4% | er than<br>[15% for |              |
| INSTRUMENTATION:                                                                                                                                                                                           |                                    |                      |                     |              |
| <ul> <li>SG narrow range level indication</li> <li>Total feed flow indication</li> <li>Feed flow control valve position indic</li> </ul>                                                                   | ation                              |                      |                     |              |
| CONTROL/EQUIPMENT:                                                                                                                                                                                         |                                    |                      |                     |              |
| Feed flow control valves                                                                                                                                                                                   |                                    |                      |                     |              |
| KNOWLEDGE:                                                                                                                                                                                                 |                                    |                      |                     |              |
| This step is a continuous action step.                                                                                                                                                                     |                                    |                      |                     |              |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                    | NO. BKG FR-C.2                                                                                                                                                                                 |                                                           |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                            | TITLE RESPONSE TO D                                                                                                                                                                            | EGRADED CORE COOLING                                      |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                                                                                                                                                                               | <b>DATE</b> MAR 21 2004                                                                                                                                                                        | <b>PAGE</b> 20 of 34                                      |
| STEP DESCRIPTION TAK                                                                                                                                                                                                                                                                                                                                                    | BLE FOR FR-C.2                                                                                                                                                                                 | STEP 10 -CAUTION 1                                        |
| <u>CAUTION</u> : The following step will cause Acc<br>may cause a red path condition in<br>Tree. This procedure should be c<br>to FR-P.1, RESPONSE TO IMMINENT H<br>CONDITION.                                                                                                                                                                                          | cumulator injection which<br>n F-0.4, INTEGRITY State<br>completed before transit<br>PRESSURIZED THERMAL SHOO                                                                                  | ch<br>15<br>Cion<br>CK                                    |
| <u>PURPOSE</u> : To alert the operator to complete<br>if a red path occurs in the Integ                                                                                                                                                                                                                                                                                 | e entire procedure FR-C<br>grity Status Tree, F-O.4                                                                                                                                            | .2 even<br>4.                                             |
| BASIS:                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                |                                                           |
| Pressurized Thermal Shock Condition, is re<br>Status Tree F-0.4. The operator would sto<br>FR-P.1. While the operator is allowing th<br>the core will continue to boil away the ir<br>begin to uncover once again. Eventually,<br>exist which would require the operator to<br>Inadequate Core Cooling, via FR-P.1 and st<br>soaking, a degraded core cooling condition | equired via the red path<br>op the cooldown after en<br>the thermal shock to soal<br>njected accumulator wate<br>core exit temperatures<br>transfer to FR-C.1. Res<br>topping the cooldown and | n of<br>ntering<br>c out,<br>er and<br>could<br>sponse to |
| deteriorate to an inadequate core cooling<br>caution will require the operator to compl<br>cooling even if a red path condition occur<br>F-0.4.                                                                                                                                                                                                                         | condition. Therefore,<br>lete FR-C.2 to ensure co<br>rs in the Integrity Stat                                                                                                                  | this<br>bre<br>cus Tree,                                  |
| deteriorate to an inadequate core cooling<br>caution will require the operator to compl<br>cooling even if a red path condition occur<br>F-0.4.<br><u>ACTIONS</u> :                                                                                                                                                                                                     | condition. Therefore,<br>lete FR-C.2 to ensure co<br>rs in the Integrity Stat                                                                                                                  | this<br>ore<br>tus Tree,                                  |
| deteriorate to an inadequate core cooling<br>caution will require the operator to compl<br>cooling even if a red path condition occur<br>F-0.4.<br><u>ACTIONS</u> :<br>N/A                                                                                                                                                                                              | condition. Therefore,<br>lete FR-C.2 to ensure co<br>rs in the Integrity Stat                                                                                                                  | this<br>ore<br>cus Tree,                                  |
| deteriorate to an inadequate core cooling<br>caution will require the operator to compl<br>cooling even if a red path condition occur<br>F-0.4.<br><u>ACTIONS</u> :<br>N/A<br><u>INSTRUMENTATION</u> :                                                                                                                                                                  | condition. Therefore,<br>lete FR-C.2 to ensure co<br>rs in the Integrity Stat                                                                                                                  | this<br>ore<br>cus Tree,                                  |
| deteriorate to an inadequate core cooling<br>caution will require the operator to compl<br>cooling even if a red path condition occur<br>F-0.4.<br><u>ACTIONS</u> :<br>N/A<br><u>INSTRUMENTATION</u> :<br>N/A                                                                                                                                                           | condition. Therefore,<br>lete FR-C.2 to ensure co<br>rs in the Integrity Stat                                                                                                                  | this<br>ore<br>cus Tree,                                  |
| deteriorate to an inadequate core cooling<br>caution will require the operator to compl<br>cooling even if a red path condition occur<br>F-0.4.<br><u>ACTIONS</u> :<br>N/A<br><u>INSTRUMENTATION</u> :<br>N/A<br><u>CONTROL/EQUIPMENT</u> :                                                                                                                             | condition. Therefore,<br>lete FR-C.2 to ensure co<br>rs in the Integrity Stat                                                                                                                  | this<br>bre<br>cus Tree,                                  |
| deteriorate to an inadequate core cooling<br>caution will require the operator to compl<br>cooling even if a red path condition occur<br>F-0.4.<br><u>ACTIONS:</u><br>N/A<br><u>INSTRUMENTATION:</u><br>N/A<br><u>CONTROL/EQUIPMENT:</u><br>N/A                                                                                                                         | condition. Therefore,<br>lete FR-C.2 to ensure cors in the Integrity Stat                                                                                                                      | this<br>bre<br>cus Tree,                                  |
| deteriorate to an inadequate core cooling<br>caution will require the operator to compl<br>cooling even if a red path condition occur<br>F-0.4.<br><u>ACTIONS</u> :<br>N/A<br><u>INSTRUMENTATION</u> :<br>N/A<br><u>CONTROL/EQUIPMENT</u> :<br>N/A<br><u>KNOWLEDGE</u> :                                                                                                | condition. Therefore,<br>lete FR-C.2 to ensure co<br>rs in the Integrity Stat                                                                                                                  | this<br>ore<br>cus Tree,                                  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                              | NO.                                                                                        | BKG FR-C.2                                                                                                                                                   |                                                                            |              |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                      | TITLE                                                                                      | RESPONSE TO DE                                                                                                                                               | GRADED CORE                                                                | COOLING      |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                                                                                                                                                                                                         | DATE                                                                                       | MAR 21 2004                                                                                                                                                  | PAGE 21                                                                    | <b>of</b> 34 |
| STEP DESCRIPTION TA                                                                                                                                                                                                                                                                                                                                                                               | BLE FOR                                                                                    | FR-C.2                                                                                                                                                       | Ş                                                                          | STEP 10      |
| STEP: Depressurize All Intact Steam Gen                                                                                                                                                                                                                                                                                                                                                           | nerators                                                                                   | To Depressurize                                                                                                                                              | • The RCS:                                                                 |              |
| <u>PURPOSE</u> : To re-cover the core via SI accu                                                                                                                                                                                                                                                                                                                                                 | mulator                                                                                    | injection                                                                                                                                                    |                                                                            |              |
| BASIS:                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                            |                                                                                                                                                              |                                                                            |              |
| The controlled secondary depressurization<br>POST LOCA COOLDOWN AND DEPRESSURIZATION, 1<br>effective way to reduce RCS pressure. RCS<br>order for the SI accumulator and low-head                                                                                                                                                                                                                 | . simila<br>has been<br>S pressu<br>SI (RHR                                                | r to the one in<br>shown to be an<br>re must be reduc<br>) pumps to injec                                                                                    | ES-1.2.<br>ed in<br>et.                                                    |              |
| To prevent accumulator nitrogen injection<br>secondary depressurization when RCS press<br>psig. This limit is set to preclude sign<br>the RCS. To determine the RCS pressure 1:<br>calculation was performed based on nominal<br>initial accumulator pressure ( $P_1 = 765$ ps<br>( $V_1 = 750$ ft <sup>3</sup> ), and final nitrogen gas volume<br>nitrogen gas volume is the total accumulation | , the op<br>ure is 1<br>ificant<br>imit. an<br>l plant<br>ia). ini<br>lume (V2<br>tor tank | erator should st<br>ess than or equa<br>nitrogen injecti<br>ideal gas expar<br>specific values<br>tial nitrogen ga<br>= 2000 ft <sup>3</sup> ). T<br>volume. | top the<br>al to 210<br>ion into<br>nsion<br>for<br>as volume<br>The final |              |
| The RCS pressure at empty accumulator compsig (224.4 psia) rounded to 210 psig) as                                                                                                                                                                                                                                                                                                                | ditions<br>determi                                                                         | (P2) is 210 psigned from:                                                                                                                                    | g (209.7                                                                   |              |
| $P_1V_1y = P_2V_2y$                                                                                                                                                                                                                                                                                                                                                                               |                                                                                            |                                                                                                                                                              |                                                                            |              |
| where $y = 1.25$ for ideal gas expansion.<br>included in the determination of the RCS plas toward either having more accumulate<br>or having less nitrogen injected into the                                                                                                                                                                                                                      | Instrume<br>pressure<br>or water<br>e RCS.                                                 | nt uncertainties<br>limit to preclu<br>injected into t                                                                                                       | s are not<br>ide a<br>the RCS                                              |              |
| ACTIONS:                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                            |                                                                                                                                                              |                                                                            |              |
| <ul> <li>Determine if RCS pressure is less that</li> <li>Maintain cooldown rate in RCS cold less</li> </ul>                                                                                                                                                                                                                                                                                       | n or equ                                                                                   | al to 210 psig<br>than 100°F/hr                                                                                                                              |                                                                            |              |

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- RCS Wide Range Pressure indication Position indication for 0
- o
  - Steam dump valves \_

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                    | NO. BKG FR-C.2                       |                      |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                            | TITLE RESPONSE TO DEGRADED CORE COOL |                      |  |
| IPEOP BACKGROUND DOCUMENT                                                                                                                               | DATE MAR 21 2004                     | <b>PAGE</b> 22 of 34 |  |
| STEP DESCRIPTION TABLE<br>- SG PORVS<br><u>CONTROL/EQUIPMENT</u> :<br>• Switches for:<br>- Steam dump valves<br>- SG PORVS<br><u>KNOWLEDGE</u> :<br>N/A | <u>FOR FR-C.2</u> (cont)             | STEP 10              |  |
|                                                                                                                                                         |                                      |                      |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                    | NO. BKG FR-C.2                                                                                                                                                   |                                                                       |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                            | TITLE RESPONSE TO DE                                                                                                                                             | GRADED CORE COOLING                                                   |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                                                                                               | DATE MAR 21 2004                                                                                                                                                 | <b>PAGE</b> 23 of 34                                                  |
| STEP DESCRIPTION TA                                                                                                                                                                                                                                                                     | BLE FOR FR-C.2                                                                                                                                                   | STEP 11 -CAUTION 1                                                    |
| <u>CAUTION</u> : RHR Pumps should <u>NOT</u> be operated<br>RHR Heat Exchangers out of servic<br>temperature is greater than 200°                                                                                                                                                       | with Component Cooling<br>ce if RHR System<br>F.                                                                                                                 | to                                                                    |
| <u>PURPOSE</u> : To prevent damage to the RHR pum                                                                                                                                                                                                                                       | ps                                                                                                                                                               |                                                                       |
| BASIS:                                                                                                                                                                                                                                                                                  |                                                                                                                                                                  |                                                                       |
| The RHR pumps utilize seal coolers and the<br>pump heat. The seal coolers and RHR heat<br>by CC. If the RCS pressure is above the sl<br>RHR System temperature is greater than 200<br>the injection mode for an extended period<br>coolers and the RHR heat exchangers, they<br>heatup. | e RHR heat exchangers to<br>exchangers are, in turn<br>nutoff head of the RHR p<br>D°F and these pumps are<br>of time without CC to t<br>may be damaged due to e | o remove<br>a, cooled<br>oumps and<br>run in<br>che seal<br>excessive |
| ACTIONS:                                                                                                                                                                                                                                                                                |                                                                                                                                                                  |                                                                       |
| <ul> <li>Determine if there is CC to the RHR he</li> <li>Determine RHR System temperature</li> </ul>                                                                                                                                                                                    | eat exchangers                                                                                                                                                   |                                                                       |
| INSTRUMENTATION:                                                                                                                                                                                                                                                                        |                                                                                                                                                                  |                                                                       |
| <ul> <li>CC to RHR heat exchangers flow indica</li> <li>RHR temperature indication</li> </ul>                                                                                                                                                                                           | tion                                                                                                                                                             |                                                                       |
| CONTROL/EQUIPMENT:                                                                                                                                                                                                                                                                      |                                                                                                                                                                  |                                                                       |
| N/A                                                                                                                                                                                                                                                                                     |                                                                                                                                                                  |                                                                       |
| KNOWLEDGE:                                                                                                                                                                                                                                                                              |                                                                                                                                                                  |                                                                       |
| N/A                                                                                                                                                                                                                                                                                     |                                                                                                                                                                  |                                                                       |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                              | NO. BKG FR-C.2                                                                                             |                                  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                      | TITLE RESPONSE TO D                                                                                        | EGRADED CORE COOLING             |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                         | DATE MAR 21 2004                                                                                           | <b>PAGE</b> 24 of 34             |
| STEP DESCRIPTION TAN                                                                                                                                                                                              | BLE FOR FR-C.2                                                                                             | STEP 11                          |
| STEP: Check RHR Pumps - RUNNING                                                                                                                                                                                   |                                                                                                            |                                  |
| <u>PURPOSE</u> : To check if RHR pumps are running                                                                                                                                                                | g                                                                                                          |                                  |
| BASIS:                                                                                                                                                                                                            |                                                                                                            |                                  |
| In this step the operator checks if the RI<br>running and, if not, starts them since low<br>used to restore long-term core cooling. I<br>pressure is decreased below their shutoff<br>secondary depressurization. | HR (low-head SI) pumps a<br>w-head safety injection<br>The RHR pumps will injec<br>head as a result of the | are<br>will be<br>ct if RCS<br>e |
| ACTIONS:                                                                                                                                                                                                          |                                                                                                            |                                  |
| <ul> <li>Determine if the RHR pumps are running</li> <li>Start RHR pumps</li> </ul>                                                                                                                               | g                                                                                                          |                                  |
| INSTRUMENTATION:                                                                                                                                                                                                  |                                                                                                            |                                  |
| RHR pumps status indication                                                                                                                                                                                       |                                                                                                            |                                  |
| <u>CONTROL/EQUIPMENT</u> :                                                                                                                                                                                        |                                                                                                            |                                  |
| RHR pumps switches                                                                                                                                                                                                |                                                                                                            |                                  |
| KNOWLEDGE:                                                                                                                                                                                                        |                                                                                                            |                                  |
| N/A                                                                                                                                                                                                               |                                                                                                            |                                  |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                              | NO. BKG FR-C.2                                  |                      |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                      | TITLE RESPONSE TO DEGRADED CORE COOLING         |                      |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                                                                                         | <b>DATE</b> MAR 21 2004                         | <b>PAGE</b> 25 of 34 |
| STEP DESCRIPTION TA                                                                                                                                                                                                                                                               | BLE FOR FR-C.2                                  | STEP 12 -CAUTION 1   |
| <u>CAUTION</u> : If offsite power is lost after S<br>be required to restart safeguard                                                                                                                                                                                             | I reset, manual action m<br>s equipment.        | bay                  |
| <u>PURPOSE</u> : To alert the operator of a possi<br>not provide automatic start of s                                                                                                                                                                                             | ble configuration which<br>afeguards equipment. | would                |
| BASIS:                                                                                                                                                                                                                                                                            |                                                 |                      |
| With the SI signal reset, no further automatic signal will be generated<br>to restart safeguards equipment. Normal sequencing of safeguards loads<br>onto the emergency bus after Diesel-Generator startup will not occur.<br>However, a "blackout" sequencer action is possible. |                                                 |                      |
| ACTIONS:                                                                                                                                                                                                                                                                          |                                                 |                      |
| Determine if offsite power is lost after                                                                                                                                                                                                                                          | SI is reset                                     |                      |
| INSTRUMENTATION:                                                                                                                                                                                                                                                                  |                                                 |                      |
| N/A                                                                                                                                                                                                                                                                               |                                                 |                      |
| <u>CONTROL/EQUIPMENT</u> :                                                                                                                                                                                                                                                        |                                                 |                      |
| N/A                                                                                                                                                                                                                                                                               |                                                 |                      |
| KNOWLEDGE:                                                                                                                                                                                                                                                                        |                                                 |                      |
| N/A                                                                                                                                                                                                                                                                               |                                                 |                      |
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WISCONSIN PUBLIC SERVICE CORPORATION

KEWAUNEE NUCLEAR POWER PLANT

IPEOP BACKGROUND DOCUMENT

DATE MAR 21 2004 PAGE 26

TITLE RESPONSE TO DEGRADED CORE COOLING

BKG FR-C.2

NO.

STEP 12

**of** 34

## STEP DESCRIPTION TABLE FOR FR-C.2

<u>STEP</u>: Isolate SI Accumulators:

<u>PURPOSE</u>: To prevent nitrogen injection to the RCS

# **BASIS**:

SI accumulators are isolated to prevent nitrogen injection into the RCS after the RCS pressure criterion has been satisfied. Nitrogen could collect in the high places and produce either a "hard" PRZR bubble or cause gas binding and reduced heat transfer in the SG U-tubes. Venting the nitrogen gas also prevents injection. If it is necessary to vent the nitrogen, the operators should open the vent line and then continue with the procedure.

## ACTIONS:

- Determine if power is available to SI accumulator isolation valves
- Restore power to isolation valves
- Reset SI
- Close all SI accumulator isolation valves
- Place control switches for LD-4A, LD-4B, and LD-4C to CLOSE
- Reset Containment Isolation
- Verify instrument air to Containment
- Vent any unisolated accumulators

# **INSTRUMENTATION:**

- SI accumulator isolation valve power supply indication
- SI signal indication
- SI accumulator isolation valve position indication
- LD orifice valve position indication
- Containment Isolation status
- Air pressure indications
- SI accumulator vent valve position indication

## CONTROL/EQUIPMENT:

- SI accumulator isolation valve power supply controls
- SI reset pushbuttons
- SI accumulator isolation valve switches
- ° Control switches for LD-4A, LD-4B, and LD-4C
- Containment Isolation reset pushbuttons
- Air compressor control switches
- SI accumulator vent valve switches

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| WISCONSIN PUBLIC SERVICE CORPORATION        | NO. BKG FR-C.2                        |                     |
| KEWAUNEE NUCLEAR POWER PLANT                | TITLE RESPONSE TO DE                  | GRADED CORE COOLING |
| IPEOP BACKGROUND DOCUMENT                   | DATE MAR 21 2004                      | PAGE 27 of 34       |
| <u>STEP_DESCRIPTION_TABLE</u><br>KNOWLEDGE: | <u>FOR FR-C.2</u> (cont)              | STEP 12             |
| N/A                                         |                                       |                     |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                | NO. BKG FR-C.2                                            |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                        | TITLE RESPONSE TO DEGRADED CORE COOLING                   |  |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                                                           | DATE MAR 21 2004 PAGE 28 of 34                            |  |
| STEP DESCRIPTION TAN                                                                                                                                                                                                                                | BLE FOR FR-C.2 STEP 13 -CAUTION 1                         |  |
| <u>CAUTION</u> : During subsequent steps, if Core<br>FR-C.1, RESPONSE TO INADEQUATE CO<br>implemented.                                                                                                                                              | Exit TCs exceed 1200°F,<br>DRE COOLING, should be         |  |
| <u>PURPOSE</u> : To alert the operator to closely<br>inadequate core cooling while co                                                                                                                                                               | monitor the symptoms for<br>ntinuing with this procedure. |  |
| BASIS:                                                                                                                                                                                                                                              |                                                           |  |
| When the RXCPs are stopped in the next step, the loss of forced flow<br>through the core will cause core cooling to decrease. Core cooling will<br>continue to degrade until some form of low pressure injection flow to the<br>RCS is established. |                                                           |  |
| ACTIONS:                                                                                                                                                                                                                                            |                                                           |  |
| N/A                                                                                                                                                                                                                                                 |                                                           |  |
| INSTRUMENTATION:                                                                                                                                                                                                                                    |                                                           |  |
| N/A                                                                                                                                                                                                                                                 |                                                           |  |
| CONTROL/EQUIPMENT:                                                                                                                                                                                                                                  |                                                           |  |
| N/A                                                                                                                                                                                                                                                 |                                                           |  |
| KNOWLEDGE:                                                                                                                                                                                                                                          |                                                           |  |
| N/A                                                                                                                                                                                                                                                 |                                                           |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                    | NO. BKG FR-C.2          |                      |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                            | TITLE RESPONSE TO DE    | GRADED CORE COOLING  |  |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                                               | <b>DATE</b> MAR 21 2004 | <b>PAGE</b> 29 of 34 |  |
| STEP DESCRIPTION TA                                                                                                                                                                                                                     | BLE FOR FR-C.2          | STEP 13              |  |
| STEP: Stop Both RXCPs                                                                                                                                                                                                                   |                         |                      |  |
| <u>PURPOSE</u> : To verify both RXCPs have been s                                                                                                                                                                                       | topped                  |                      |  |
| BASIS:                                                                                                                                                                                                                                  |                         |                      |  |
| In preparation for the subsequent depressurization of the SGs to<br>atmospheric pressure, the RXCPs are stopped due to the anticipated loss<br>of Number 1 seal requirements. Continued operation may result in damage<br>to the RXCPs. |                         |                      |  |
| ACTIONS:                                                                                                                                                                                                                                |                         |                      |  |
| Stop both RXCPs                                                                                                                                                                                                                         |                         |                      |  |
| INSTRUMENTATION:                                                                                                                                                                                                                        |                         |                      |  |
| RXCP status indication                                                                                                                                                                                                                  |                         |                      |  |
| CONTROL/EQUIPMENT:                                                                                                                                                                                                                      |                         |                      |  |
| RXCP switches                                                                                                                                                                                                                           |                         |                      |  |
| KNOWLEDGE:                                                                                                                                                                                                                              |                         |                      |  |
| N/A                                                                                                                                                                                                                                     |                         |                      |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | NO. BKG FR-C.2                                                                |                      |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | TITLE RESPONSE TO DE                                                          | EGRADED CORE COOLING |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DATE MAR 21 2004                                                              | <b>PAGE</b> 30 of 34 |
| STEP DESCRIPTION TA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | BLE FOR FR-C.2                                                                | STEP 14              |
| STEP: Depressurize All Intact Steam Gen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | nerators To Atmospheric                                                       | Pressure:            |
| <u>PURPOSE</u> : To re-cover the core via low-head                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | l safety injection                                                            |                      |
| BASIS:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                               |                      |
| With continued SG depressurization, RCS property of the RHI low-head safety injection should begin to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ressure should follow se<br>R pumps is reached. The<br>refill the RCS.        | econdary<br>en.      |
| ACTIONS:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                               |                      |
| <ul> <li>Maintain cooldown rate in RCS cold least of the second s</li></ul> | gs less than 100°F/hr<br>heric pressure by dumpin<br>heric pressure by manual | ng steam<br>lly or   |
| INSTRUMENTATION:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                               |                      |
| <ul> <li>RCS cold leg temperatures indication</li> <li>SG pressure indication</li> <li>Position indication for:</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                               |                      |
| <ul> <li>SG PORVs</li> <li>Steam dump valves</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                               |                      |
| CONTROL/EQUIPMENT:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                               |                      |
| • Switches for:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                               |                      |
| - SG PORVs<br>- Steam dump valves                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                               |                      |
| KNOWLEDGE:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                               |                      |
| N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                               |                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                               |                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                               |                      |
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| ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                               |                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                               |                      |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                   | NO. BKG FR-C.2                                                                  |                          |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                           | PLANT TITLE RESPONSE TO DEGRADED CORE COOLING                                   |                          |  |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                                              | DATE MAR 21 2004                                                                | <b>PAGE</b> 31 of 34     |  |
| STEP DESCRIPTION TAI                                                                                                                                                                                                                   | BLE FOR FR-C.2                                                                  | STEP 15                  |  |
| STEP: Verify SI/RHR Flow:                                                                                                                                                                                                              |                                                                                 |                          |  |
| <u>PURPOSE</u> : To verify SI flow delivery to the                                                                                                                                                                                     | e RCS                                                                           |                          |  |
| BASIS:                                                                                                                                                                                                                                 |                                                                                 |                          |  |
| the shutoff head of the RHR pumps. This s<br>injection. This step verifies SI flow to 1<br>verified, then any other source of make-up<br>established.                                                                                  | should cause low-head sa<br>the RCS. If SI flow car<br>o flow to the RCS should | afety<br>nnot be<br>1 be |  |
| <ul> <li>Determine if SI pump flow indicators if</li> <li>Determine if RHR pump flow indicators</li> <li>Continue efforts to establish SI flow</li> <li>Try to establish any other sources of</li> </ul>                               | indicate flow<br>indicate flow<br>make-up flow to the RCS                       | 5                        |  |
| <ul> <li>SI pumps flow indicators</li> <li>RHR pumps flow indicators</li> <li>SI pump status indication</li> <li>RHR pump status indication</li> <li>SI valves position indication</li> <li>Charging pump status indication</li> </ul> |                                                                                 |                          |  |
| CONTROL/EQUIPMENT:                                                                                                                                                                                                                     |                                                                                 |                          |  |
| • Switches for:                                                                                                                                                                                                                        |                                                                                 |                          |  |
| <ul> <li>SI pumps</li> <li>RHR pumps</li> <li>SI valves</li> <li>Charging pumps</li> </ul>                                                                                                                                             |                                                                                 |                          |  |
| KNOWLEDGE:                                                                                                                                                                                                                             |                                                                                 |                          |  |
| N/A                                                                                                                                                                                                                                    |                                                                                 |                          |  |
|                                                                                                                                                                                                                                        |                                                                                 |                          |  |
|                                                                                                                                                                                                                                        |                                                                                 |                          |  |
|                                                                                                                                                                                                                                        |                                                                                 |                          |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                           | NO. BKG FR-C.2                          |                      |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                   | TITLE RESPONSE TO DEGRADED CORE COOLING |                      |  |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                                                                                                                                                                                                                                      | DATE MAR 21 2004                        | <b>PAGE</b> 32 of 34 |  |
| STEP DESCRIPTION TA                                                                                                                                                                                                                                                                                                                                                                                                            | BLE FOR FR-C.2                          | STEP 16              |  |
| STEP: Check Core Cooling:                                                                                                                                                                                                                                                                                                                                                                                                      |                                         |                      |  |
| <u>PURPOSE</u> : To check if core cooling has been                                                                                                                                                                                                                                                                                                                                                                             | n restored                              |                      |  |
| <u>BASIS</u> :                                                                                                                                                                                                                                                                                                                                                                                                                 |                                         |                      |  |
| In order to exit this FRP. RCS hot leg temperatures must be less than<br>350°F to ensure RCS pressure is less than the shutoff head of the RHR<br>pumps. Core cooling has been restored when the above conditions have been<br>met and SI flow or other make-up flow has been established. Note, these<br>conditions are more stringent than earlier transition conditions since<br>the RCS should now be fully depressurized. |                                         |                      |  |
| ACTIONS:                                                                                                                                                                                                                                                                                                                                                                                                                       |                                         |                      |  |
| • Determine if RCS hot leg temperatures are less than 350°F                                                                                                                                                                                                                                                                                                                                                                    |                                         |                      |  |
| <u>INSTRUMENTATION</u> :                                                                                                                                                                                                                                                                                                                                                                                                       | INSTRUMENTATION:                        |                      |  |
| • RCS hot leg temperatures indication                                                                                                                                                                                                                                                                                                                                                                                          |                                         |                      |  |
| <u>CONTROL/EQUIPMENT</u> :                                                                                                                                                                                                                                                                                                                                                                                                     |                                         |                      |  |
| N/A                                                                                                                                                                                                                                                                                                                                                                                                                            |                                         |                      |  |
| KNOWLEDGE:                                                                                                                                                                                                                                                                                                                                                                                                                     |                                         |                      |  |
| Per ERG Background Document, RVLIS check is deleted for this step. KNPP<br>RVLIS is not used due to 0% level being at the bottom of the hot legs<br>versus 0% on WOG reference plant RVLIS being at the top of active fuel in<br>the core. For a large break LOCA, achieving KNPP RLVIS level greater<br>than 0% may not occur.                                                                                                |                                         |                      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                |                                         |                      |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                |                                         |                      |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                  | NO.                                                                                                                                                                                                                         | BKG FR-C.2                           |                        |                |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------|----------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                          | KEWAUNEE NUCLEAR POWER PLANT TITLE RESPONSE TO DEGRADED CORE COOLING                                                                                                                                                        |                                      | E COOLING              |                |
| IPEOP BACKGROUND DOCUMENT                                                                                                             | DATE                                                                                                                                                                                                                        | MAR 21 2004                          | PAGE 3                 | 3 <b>of</b> 34 |
| STEP DESCRIPTION TAI                                                                                                                  | BLE FOR                                                                                                                                                                                                                     | FR-C.2                               |                        | STEP 17        |
| <u>STEP</u> : GO TO E-1, LOSS OF REACTOR OR SEC<br>NOTE PRIOR TO E-1, LOSS OF REACTO                                                  | CONDARY<br>OR OR SE                                                                                                                                                                                                         | COOLANT, Step 17<br>CONDARY COOLANT, | 7. OBSERVE<br>Step 17. | :              |
| <u>PURPOSE</u> : To provide a transition to the op<br>procedure.                                                                      | ptimal l                                                                                                                                                                                                                    | ong-term plant m                     | recovery               |                |
| BASIS:                                                                                                                                |                                                                                                                                                                                                                             |                                      |                        |                |
| Transition to E-1, LOSS OF REACTOR OR SEC<br>operator to check the overall plant status<br>leakage and availability of equipment need | Transition to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, will allow the operator to check the overall plant status with respect to radioactivity leakage and availability of equipment needed for long term plant recovery. |                                      |                        |                |
| ACTIONS:                                                                                                                              |                                                                                                                                                                                                                             |                                      |                        |                |
| Transfer to E-1, LOSS OF REACTOR OR SECONDARY COOLANT, at the indicated step.                                                         |                                                                                                                                                                                                                             |                                      |                        |                |
| INSTRUMENTATION:                                                                                                                      |                                                                                                                                                                                                                             |                                      |                        |                |
| N/A                                                                                                                                   |                                                                                                                                                                                                                             |                                      |                        |                |
| <u>CONTROL/EQUIPMENT</u> :                                                                                                            |                                                                                                                                                                                                                             |                                      |                        |                |
| N/A                                                                                                                                   |                                                                                                                                                                                                                             |                                      |                        |                |
| KNOWLEDGE:                                                                                                                            |                                                                                                                                                                                                                             |                                      |                        |                |
| N/A                                                                                                                                   |                                                                                                                                                                                                                             |                                      |                        |                |
|                                                                                                                                       |                                                                                                                                                                                                                             |                                      |                        |                |
|                                                                                                                                       |                                                                                                                                                                                                                             |                                      |                        |                |
|                                                                                                                                       |                                                                                                                                                                                                                             |                                      |                        | I              |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                           | NO. BKG FR-C.2                          |  | | | |
|---|---|---|---|---|---|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                   | TITLE RESPONSE TO DEGRADED CORE COOLING |  |
| IPEOP BACKGROUND DOCUMENT                                                                                                                                                                                                                                                      | DATE MAR 21 2004 PAGE 34 of 34          |  |
| 5. FREQUENT QUESTIONS                                                                                                                                                                                                                                                          |                                         |  |
| The following is a question which has been FR-C.2, RESPONSE TO DEGRADED CORE COOLING                                                                                                                                                                                           | n frequently asked about procedure      |  |
| Q. For a small LOCA event, if high pressure SI fails to operate, does the<br>operator wait until a degraded core cooling condition has been reached<br>before taking action to cool down and depressurize the RCS in order for<br>the SI accumulators and RHR pumps to inject? |                                         |  |
| A. No, IPEOP ES-1.2, POST LOCA COOLDOWN AND DEPRESSURIZATION, provides<br>actions to cool down and depressurize the RCS in order for the SI<br>accumulators and RHR pumps to inject prior to reaching a degraded core<br>cooling condition.                                    |                                         |  |
|                                                                                                                                                                                                                                                                                |                                         |  |
|                                                                                                                                                                                                                                                                                |                                         |  |
|                                                                                                                                                                                                                                                                                |                                         |  |
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|                                                                                                                                                                                                                                                                                |                                         |  |
| WISCONSIN PUBLIC SERVICE O                                                                                                                                                                                                                      | ORPORATION                                                                                                                                            | <b>NO.</b> E-0                                                                                                     | -06                                                                                                                           | REV                                                                                  | W               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------|
| KEWAUNEE NUCLEAR POV                                                                                                                                                                                                                            | KEWAUNEE NUCLEAR POWER PLANT                                                                                                                          |                                                                                                                    | TITLE FIRE IN ALTERNATE FIRE ZONE                                                                                             |                                                                                      |                 |
| OPERATING PROCEI                                                                                                                                                                                                                                | DURE                                                                                                                                                  | DATE SEP 15 2004 PAGE 1 of                                                                                         |                                                                                                                               |                                                                                      | 1 <b>of</b> 54  |
| REVIEWED BY James J                                                                                                                                                                                                                             | Brown                                                                                                                                                 | APPROVED BY Phillip A Short                                                                                        |                                                                                                                               |                                                                                      | Short           |
| NUCLEAR SAFETY RELATED NO                                                                                                                                                                                                                       | PORC REVIEW<br>REQUIRED                                                                                                                               | ⊠ YES<br>□ NO                                                                                                      | SRO APPROV<br>TEMPORARY<br>REQUIRED                                                                                           | AL OF<br>Changes                                                                     | ⊠ YES<br>□ NO   |
| 1.0 <u>INTRODUCTION</u><br>1.1 The purpose of this<br>and cooldown to Cold<br>the event a fire rem<br>operation from the C<br>controlled from the<br>be inoperable or unr<br>procedure. Offsite<br>controls/instrumenta<br>inaccurate and/or un | procedure is t<br>Shutdown usin<br>oves the abili<br>ontrol Room.<br>Dedicated Shut<br>eliable and th<br>power will be<br>tion routed th<br>reliable. | o place the<br>g the Dedic<br>ty to monit<br>Only train<br>down Panel.<br>erefore is<br>lost or unr<br>rough the r | e plant in Ho<br>cated Shutdow<br>or or contro<br>"A" equipmen<br>Train "B" e<br>deenergized<br>reliable and<br>relay room wi | t Shutdow<br>n System,<br>l plant<br>t can be<br>quipment<br>by this<br>all<br>ll be | n<br>in<br>will |
| 2.1 A fire that causes t<br>parameters from the<br>RCS pressure, temper                                                                                                                                                                         | he inability to<br>Control Room no<br>ature, power lo                                                                                                 | o monitor o<br>ecessary fo<br>evel, press                                                                          | er control ma<br>er safe shutd<br>surizer level                                                                               | jor plant<br>own. (i.<br>, etc.)                                                     | e.,             |
| 3.0 AUTOMATIC ACTIONS                                                                                                                                                                                                                           | be entered tro                                                                                                                                        | m E-FP-U8.                                                                                                         |                                                                                                                               |                                                                                      |                 |
| 3.1 <u>NO</u> automatic actions                                                                                                                                                                                                                 | are assumed t                                                                                                                                         | 0 OCCUr.                                                                                                           |                                                                                                                               |                                                                                      | Υ.              |
|                                                                                                                                                                                                                                                 |                                                                                                                                                       |                                                                                                                    |                                                                                                                               |                                                                                      |                 |

| WISC           | ONSIN PUBLIC SERVICE CORPORATION                                                                   | NO.                    | E-0-06                               |                          |              |
|----------------|----------------------------------------------------------------------------------------------------|------------------------|--------------------------------------|--------------------------|--------------|
| к              | EWAUNEE NUCLEAR POWER PLANT                                                                        | TITLE                  | FIRE IN ALTER                        | NATE FIRE ZON            | E            |
| EN             | MERGENCY OPERATING PROCEDURES                                                                      | DATE                   | SEP 15 2004                          | PAGE 2                   | <b>of</b> 54 |
|                |                                                                                                    |                        |                                      |                          |              |
| STEP           | OPERATOR ACTIONS                                                                                   |                        | CONTINGEN                            | CY ACTIONS               |              |
| 4.0 <u>D</u>   | ETAILED_PROCEDURE                                                                                  |                        |                                      |                          |              |
| •••••          | <u>CAU</u>                                                                                         | <u>TION</u>            |                                      |                          | ****         |
| A hyd<br>syste | rogen fire/explosion hazard may ex                                                                 | ist at ge              | enerator due to                      | loss of seal             | oil          |
|                |                                                                                                    | *****                  |                                      |                          | *****        |
| <u>NOTE</u> :  | The Emergency Plan Implementing Pl<br>evaluate if the emergency response                           | rocedures<br>e organiz | s should be revi<br>cation should be | iewed to<br>e activated. |              |
| 1              | ANNOUNCE CONTROL ROOM EVACUATION<br><u>AND</u> DECLARATION OF SITE EMERGENCY                       | Ŷ                      |                                      |                          |              |
| 2              | MANUALLY TRIP REACTOR:                                                                             |                        |                                      |                          |              |
|                | <ul> <li>Reactor Trip and Bypass<br/>Breakers - OPEN</li> <li>Neutron flux - DECREASING</li> </ul> |                        |                                      |                          |              |
| 3              | VERIFY TURBINE TRIP:                                                                               |                        |                                      |                          |              |
|                | • Both Turbine Stop Valves - CLO                                                                   | SED                    |                                      |                          |              |
| 4              | INITIATE TRAIN A <u>AND</u> TRAIN B MAIN<br>STEAM ISOLATION                                        | N                      |                                      |                          |              |
|                | a. MS-1A(B), SG A(B) Main Steam<br>Isolation Valves - CLOSED                                       |                        |                                      |                          | ·            |
|                | b. MS-2A(B), SG A(B) MSIV Bypass<br>Valves - CLOSED                                                |                        |                                      |                          |              |
| 5              | CLOSE BT-3A <u>AND</u> BT-3B, S/G<br>Blowdown isolation valves                                     |                        |                                      |                          |              |

| wisco | ONSIN PUBLIC SERVICE CORPORATION                                                                              | NO.  | E-0-06      |            |    |    |
|-------|---------------------------------------------------------------------------------------------------------------|------|-------------|------------|----|----|
| KE    | KEWAUNEE NUCLEAR POWER PLANT TITLE FIRE IN ALTERNATE FIRE ZONE                                                |      |             | IE         |    |    |
| EM    | ERGENCY OPERATING PROCEDURES                                                                                  | DATE | SEP 15 2004 | PAGE 3     | of | 54 |
| STED  | OPERATOR ACTIONS                                                                                              | r    | CONTINCEN   | TY ACTTONS |    | ר  |
| 6     | STOP BOTH RXCPs <u>AND</u> PLACE IN<br>PULLOUT                                                                | J L  |             |            |    |    |
| 7     | PLACE CONTROL SWITCHES FOR<br>EMERGENCY DIESEL GENERATORS A AN<br>B IN PULLOUT                                | D    |             |            |    |    |
| 8     | OBTAIN EMERGENCY KEY RINGS FROM<br>CAS OPERATOR (Control Room<br>Supervisor)                                  |      |             |            |    |    |
|       | a. DISTRIBUTE key rings and two way radios                                                                    |      |             |            |    |    |
|       | b. VERIFY channel "AUX 1" select                                                                              | ed   |             |            |    |    |
| 9     | EVACUATE CONTROL ROOM                                                                                         |      |             |            |    |    |
| 10    | PROCEED TO RESPECTIVE AREAS:                                                                                  |      |             |            |    |    |
|       | a. Shift Manager: TSC, for<br>Emergency Plan implementation                                                   |      |             |            |    |    |
|       | b. Control Room Supervisor:<br><u>GO TO</u> Steps 14, 15, 18, and 2                                           | 8    |             |            |    |    |
|       | c. Control Operator A:<br>(Senior Control Operator)<br><u>GO TO</u> Steps 11, 13, 16, 17,<br>19-27, and 29-38 |      |             |            |    |    |
|       | d. Control Operator B:<br>(Junior Control Operator)<br><u>GO TO</u> Step 12                                   |      |             |            |    |    |
|       |                                                                                                               |      |             |            |    |    |

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| WISCONSIN PUBLIC SERVICE CORPORATION                           | NO.   | E-0-06        |               |              |
|----------------------------------------------------------------|-------|---------------|---------------|--------------|
| KEWAUNEE NUCLEAR POWER PLANT                                   | TITLE | FIRE IN ALTER | NATE FIRE ZON | E            |
| EMERGENCY OPERATING PROCEDURES                                 | DATE  | SEP 15 2004   | PAGE 4        | <b>of</b> 54 |
|                                                                | r     |               |               |              |
| STEP OPERATOR ACTIONS                                          |       | CONTINGEN     | CY ACTIONS    |              |
| 11 PERFORM FOLLOWING LOCAL ACTIONS<br>(Control Operator A):    |       |               |               |              |
| a. REMOVE fuses in RR-171:                                     | a.    | OPEN BRA-104, | Ckt 13 Bkr.   |              |
| 1) Ckt 13 (PR-2B norm control                                  | )     |               |               |              |
| b. REMOVE fuses in RR-174:                                     | b.    | OPEN BRD-103, | Ckt 15 Bkr.   |              |
| 1) Ckt 9 (LD-300)                                              |       |               |               |              |
| 2) Ckt 27 (SI-101A/B)                                          |       |               |               |              |
| c. REMOVE fuses in RR-176:                                     | c.    | OPEN BRB-104, | Ckt 12 Bkr.   |              |
| 1) Ckt 6 (PR-2B alt control)                                   |       |               |               |              |
| 2) Ckt 12 (PR-2A)                                              |       |               |               |              |
| 3) Ckt 37 (RC-45B)                                             |       |               |               |              |
| 4) Ckt 38 (PR-33B)                                             |       |               |               |              |
| 5) Ckt 39 (RC-49)                                              |       |               |               |              |
| d. OPEN bkrs in Battery Room A:                                |       |               |               |              |
| 1) BRA-104, Ckt 21 (BT-3B)                                     |       |               |               |              |
| 2) BRA-113, Ckt 12 (NI Rack)                                   |       |               |               |              |
| e. OPEN bkrs on Main Security<br>Power Panel in Battery Room B | :     |               |               |              |
| 1) Ckt 3 (MUX-2)                                               |       |               |               |              |
| 2) Ckt 5 (MUX-3)                                               |       |               |               |              |
| 3) Ckt 6 (MUX-4)                                               |       |               |               |              |
| 4) Ckt 8 (MUX-1)                                               |       |               |               |              |
| f. <u>GO</u> <u>TO</u> Step 13                                 |       |               |               |              |
|                                                                |       |               |               |              |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                       | NO.     | E-0-06                                                                 |                                                                                     |                          |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------|----|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                               | TITLE   | FIRE IN ALTER                                                          | NATE FIRE ZON                                                                       | IE                       |    |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                             | DATE    | SEP 15 2004                                                            | PAGE 6                                                                              | of                       | 54 |
|                                                                                                                                                                                            |         |                                                                        |                                                                                     |                          |    |
| STEP OPERATOR ACTIONS                                                                                                                                                                      |         | CONTINGEN                                                              | CY ACTIONS                                                                          |                          | J  |
| 12                                                                                                                                                                                         |         |                                                                        |                                                                                     |                          |    |
| <u>CONTINUED</u>                                                                                                                                                                           |         |                                                                        |                                                                                     |                          |    |
| g. ISOLATE RXCP seal injection:                                                                                                                                                            |         |                                                                        |                                                                                     |                          |    |
| 1) CLOSE CVC-201A and CVC-201<br>Seal Water Injection Filte<br>1A/1B Inlet (Filter room)                                                                                                   | B,<br>r | 1) CLOSE CVC-<br>Seal Water<br>1A/1B Outle                             | 202A and CVC<br>Injection Fi<br>et (Filter ro                                       | 2028,<br>1ter<br>50m).   |    |
| 2) NOTIFY Control Operator A seal injection is isolated                                                                                                                                    |         |                                                                        |                                                                                     |                          |    |
| h. DE-ENERGIZE buses 1 and 2:                                                                                                                                                              |         |                                                                        |                                                                                     |                          |    |
| <ol> <li>PERFORM substeps a-e for<br/>each Bus 1 and 2 Source<br/>Breaker:</li> </ol>                                                                                                      |         |                                                                        |                                                                                     |                          |    |
| <ul> <li>Bkr 1-101, RAT Supply<br/>to Bus 1</li> <li>Bkr 1-104, MAT Supply<br/>to Bus 1</li> <li>Bkr 1-201, RAT Supply<br/>to Bus 2</li> <li>Bkr 1-204, MAT Supply<br/>to Bus 2</li> </ul> |         |                                                                        |                                                                                     |                          |    |
| a) POSITION breaker contro<br>switch to TRIP                                                                                                                                               | 1       | a) <u>IF</u> breal<br><u>THEN</u> COI<br>Step 12<br>breaker<br>perform | ker does <u>NOT</u><br>NTINUE with<br>.h.1.b and VI<br>TRIPS after<br>ing Step 12.1 | TRIP,<br>ERIFY<br>1.1.d. |    |
| b) OPEN Close knife switch                                                                                                                                                                 |         |                                                                        |                                                                                     |                          |    |
| c) OPEN Pump Motor knife<br>switch                                                                                                                                                         |         |                                                                        |                                                                                     |                          |    |
| d) Discharge closing sprin<br>by ROTATING lever to<br>RACKING POSITION                                                                                                                     | g       |                                                                        |                                                                                     |                          |    |
|                                                                                                                                                                                            |         |                                                                        |                                                                                     |                          |    |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                           | NO. E-0-06                                                                                  |
|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                   | TITLE FIRE IN ALTERNATE FIRE ZONE                                                           |
| EMERGENCY OPERATING PROCEDURES                                                                 | DATE SEP 15 2004 PAGE 7 of 54                                                               |
|                                                                                                |                                                                                             |
| STEP OPERATOR ACTIONS                                                                          | CONTINGENCY ACTIONS                                                                         |
| NOTE: SD-100 will <u>NOT</u> receive power unt<br>1-52.                                        | il Diesel Generator 1A is supplying Bus                                                     |
| 13 ACTIVATE DEDICATED SHUTDOWN PANE<br>(Control Operator A):                                   | -                                                                                           |
| a. POSITION all Local/Remote switches to LOCAL                                                 |                                                                                             |
| <pre>b. POSITION all On/Remote switch<br/>to ON (3 switches)</pre>                             | es                                                                                          |
| <u>NOTE</u> : The following step does <u>NOT</u> in<br>SD-101.                                 | clude ckts 6, 7, 13, 24, & 27-50 on                                                         |
| c. VERIFY all SD-101 indicating<br>lights ON                                                   | c. REPLACE fuses for circuits with<br>lights OFF on SD-101 (Source<br>from BRA-104, bkr 6). |
| d. VERIFY Service Water Pump 1A1<br>and 1A2 green lights ON                                    | d. PERFORM following at applicable supply breaker (1–506 and 1–507):                        |
|                                                                                                | <ol> <li>OPEN Close and Trip Control<br/>Power knife switches.</li> </ol>                   |
|                                                                                                | 2) REPLACE Close and Trip<br>control power fuses.                                           |
|                                                                                                | 3) CLOSE Close and Trip Control<br>Power knife switches.                                    |
| e. CLOSE Service Water Pump 1A1<br>breaker by HOLDING control<br>switch in START for 5 seconds |                                                                                             |
| f. ASSIST Control Room Superviso<br>until AC power is restored                                 | r                                                                                           |
|                                                                                                |                                                                                             |
|                                                                                                |                                                                                             |
|                                                                                                |                                                                                             |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                          | <b>NO.</b> E-0-06                                                                     |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                  | TITLE FIRE IN ALTERNATE FIRE ZONE                                                     |
| EMERGENCY OPERATING PROCEDURES                                                                                | DATE SEP 15 2004 PAGE 8 of 54                                                         |
|                                                                                                               |                                                                                       |
| STEP OPERATOR ACTIONS                                                                                         | CONTINGENCY ACTIONS                                                                   |
| <u>NOTE</u> : Positioning 4160V Local/Remote swi<br>breaker operation in response to t<br>particular breaker. | tches to Local will disable automatic<br>he voltage restoration logic for that        |
| 14 ISOLATE DEDICATED SHUTDOWN<br>ELECTRICAL SYSTEM<br>(Control Room Supervisor):                              |                                                                                       |
| a. POSITION following Local/Remot<br>switches to LOCAL:                                                       | e                                                                                     |
| 1) 1A Diesel Engine and<br>Governor (east wall)                                                               |                                                                                       |
| 2) Tertiary Aux Transformer<br>Bkr 1–501                                                                      |                                                                                       |
| 3) Reserve Aux Transformer<br>Bkr 1-503                                                                       |                                                                                       |
| 4) Station Service Transf 1-51<br>& 1-52 Bkr 1-505                                                            |                                                                                       |
| 5) Diesel Gen 1-A Bkr 1-509                                                                                   |                                                                                       |
| b. POSITION 1A Diesel Engine<br>control switch to STOP                                                        |                                                                                       |
| c. POSITION breaker control switc<br>to TRIP for following breakers                                           | ch c. <u>IF</u> breaker does <u>NOT</u> open, <u>THEN</u><br>: PERFORM the following: |
| 1) 1-509                                                                                                      | a) OPEN Trip Control Power                                                            |
| 2) 1-503                                                                                                      | b) REPLACE Trin control nower                                                         |
| 3) 1-501                                                                                                      | fuses                                                                                 |
|                                                                                                               | c) CLOSE Trip Control Power<br>knife switches                                         |
|                                                                                                               | d) POSITION breaker control switch to TRIP                                            |
| CONTI                                                                                                         | <u>lued</u>                                                                           |

| WISCONSIN PUBLIC SERVICE CORPORA                                                                                                | TION NO.                                                |    | E-0-06                                                                                  |                                                                  |    |
|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----|-----------------------------------------------------------------------------------------|------------------------------------------------------------------|----|
| KEWAUNEE NUCLEAR POWER PLAN                                                                                                     | TIT TI                                                  | LE | FIRE IN ALTERNATE FIRE ZONE                                                             |                                                                  |    |
| EMERGENCY OPERATING PROCEDURE                                                                                                   | es dat                                                  | E  | SEP 15 2004                                                                             | PAGE 9 of                                                        | 54 |
|                                                                                                                                 |                                                         | ſ  |                                                                                         |                                                                  |    |
| STEP OPERATOR ACTION                                                                                                            | 4S                                                      |    | CONTINGEN                                                                               | CY ACTIONS                                                       |    |
| 14                                                                                                                              |                                                         |    |                                                                                         |                                                                  |    |
| <u>CONTINUED</u>                                                                                                                |                                                         |    |                                                                                         |                                                                  |    |
| d. PERFORM substeps 1–5 fo<br>of the following Bus 5<br>• Main Aux Transforme<br>• Bus Tie Bkr to 1–60<br>• Safety Injection Pu | r each<br>breakers:<br>r /1-511<br>2 /1-510<br>mp/1-508 |    |                                                                                         |                                                                  |    |
| 1) POSITION breaker con<br>switch to TRIP                                                                                       | trol                                                    |    | 1) <u>IF</u> breaker<br><u>THEN</u> CONTIN<br>Step 14.d.2<br>TRIPS after<br>Step 14.d.4 | does <u>NOT</u> TRIP,<br>NE with<br>and VERIFY bkr<br>performing |    |
| 2) OPEN Close knife swi                                                                                                         | tch                                                     |    |                                                                                         |                                                                  |    |
| 3) OPEN Charge Motor kn<br>switch                                                                                               | ife                                                     |    |                                                                                         |                                                                  |    |
| 4) DISCHARGE closing sp<br>positioning lever to<br>Entry position.                                                              | ring by<br>Cell                                         |    |                                                                                         |                                                                  |    |
| 5) OPEN Trip knife swit                                                                                                         | ch                                                      |    |                                                                                         |                                                                  |    |
| e. POSITION Bkr 1-505, Sta<br>Service Transf 1-51 & 1<br>control switch to CLOSE                                                | tion<br>-52,                                            | e. | <u>IF</u> breaker doe<br><u>THEN</u> PERFORM 1                                          | es <u>NOT</u> close.<br>the following:                           |    |
|                                                                                                                                 |                                                         |    | 1) OPEN Close<br>Power knife                                                            | and Trip Control<br>switches                                     |    |
|                                                                                                                                 |                                                         |    | 2) REPLACE Clo<br>control pow                                                           | ose and Trip<br>Wer fuses                                        |    |
|                                                                                                                                 |                                                         |    | 3) CLOSE Close<br>Power knife                                                           | e and Trip Control<br>e switches                                 |    |
|                                                                                                                                 |                                                         |    | 4) POSITION br<br>switch to (                                                           | reaker control<br>CLOSE                                          |    |
|                                                                                                                                 | <u>CONTINUED</u>                                        |    |                                                                                         |                                                                  |    |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                    | NO.         | E-0-06                                            |                                                             |              |
|---------------------------------------------------------------------------------------------------------|-------------|---------------------------------------------------|-------------------------------------------------------------|--------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                            | TITLE       | FIRE IN ALTER                                     | NATE FIRE ZON                                               | E            |
| EMERGENCY OPERATING PROCEDURES                                                                          | DATE        | SEP 15 2004                                       | PAGE 12                                                     | <b>of</b> 54 |
|                                                                                                         |             |                                                   |                                                             | · .          |
| STEP OPERATOR ACTIONS                                                                                   |             | CONTINGEN                                         | CY ACTIONS                                                  |              |
| 15 ENERGIZE 4160V <u>AND</u> 480V DEDICATED<br>SHUTDOWN ELECTRICAL SYSTEM<br>(Control Room Supervisor): | D           |                                                   |                                                             |              |
| a. POSITION 1A Diesel Generator<br>Voltage Control Local/Remote<br>Switch to LOCAL                      |             |                                                   |                                                             |              |
| b. REPLACE following fuses:                                                                             |             |                                                   |                                                             |              |
| 1) Diesel Generator A Control<br>and Excitation Cabinet:                                                |             |                                                   |                                                             |              |
| a) Fuse F-4 (15 amp)                                                                                    |             |                                                   |                                                             |              |
| b) Fuse F-5 (15 amp)                                                                                    |             |                                                   |                                                             |              |
| 2) Diesel A Engine Control<br>Panel:                                                                    |             |                                                   |                                                             |              |
| a) Fuse F-1 (25 amp)                                                                                    |             |                                                   |                                                             |              |
| b) Fuse F-2 (25 amp)                                                                                    |             |                                                   |                                                             |              |
| c) Fuse F-4 (15 amp)                                                                                    |             |                                                   |                                                             |              |
| d) Fuse F-5 (15 amp)                                                                                    |             |                                                   |                                                             |              |
| c. VERIFY Diesel A Engine Control<br>Panel green Power On light, O                                      | lc.<br>N    | CHECK light bu<br>bulb is good,<br>breaker (BRA-1 | ulb. <u>IF</u> ligh<br><u>THEN</u> RESET s<br>104, ckt 10). | t<br>upply   |
| <u>NOTE</u> : Overspeed Trip is reset by movi<br>it latches.                                            | ing reset   | lever counter                                     | clockwise unt                                               | il           |
| <u>NOTE</u> : Detectors for Vibration and Hi reset before alarms will clear.                            | Crankcas    | e Pressure must                                   | t be manually                                               |              |
| d. PRESS Engine Control Panel<br>Failure Reset pushbutton to<br>clear any local alarms                  |             |                                                   |                                                             | ,            |
| CONTIN                                                                                                  | <u>NUED</u> |                                                   |                                                             |              |

| WISCONSIN PUBLIC SERVICE CORPORATIO                                                    | DN NO.                  | E-0-06                                   |                             |              |
|----------------------------------------------------------------------------------------|-------------------------|------------------------------------------|-----------------------------|--------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                           | TIT                     | LE FIRE IN ALTERN                        | ATE FIRE ZON                | E            |
| EMERGENCY OPERATING PROCEDURES                                                         | DAT                     | E SEP 15 2004                            | PAGE 13                     | <b>of</b> 54 |
|                                                                                        |                         |                                          |                             |              |
| STEP OPERATOR ACTIONS                                                                  |                         | CONTINGENO                               | CY ACTIONS                  |              |
| 15                                                                                     |                         |                                          |                             |              |
| <u>CONTINUED</u>                                                                       |                         |                                          |                             |              |
|                                                                                        |                         | • • • • • • • • • • • • • • • • • • • •  | *********                   | *****        |
| If cooling water is <u>NOT</u> established will occur.                                 | in 2-3 mi               | nutes after Diesel                       | start, dama                 | ge           |
|                                                                                        | ******                  |                                          |                             | ****         |
| <u>NOTE</u> : Control Operator A actions<br>per Step 13.e should be com                | to close :<br>pleted pr | Service Water Pump<br>ior to starting th | ) 1A1 breaker<br>1e diesel. |              |
| e. POSITION 1A Diesel Engine<br>Control switch to START                                |                         |                                          |                             |              |
| f. At Diesel A Generator Cont<br>and Excitation Cabinet:                               | rol                     |                                          |                             |              |
| 1) VERIFY output Frequency<br>60 Hz                                                    | -                       | 1) ADJUST usin<br>control swi            | ng Governor<br>itch.        |              |
| 2) VERIFY output Voltage -                                                             | 4160V                   | 2) ADJUST usin<br>control swi            | ng Voltage<br>itch.         |              |
| g. CLOSE Diesel Gen 1A Bkr 1-<br>using control switch on br<br>cubicle                 | 509<br>eaker            |                                          |                             |              |
| h. VERIFY SW-301A/CV-31088,<br>Service Water from Diesel<br>Generator A Heat Exchanger | , OPEN                  | h. Manually, OPEN                        | N SW-301A                   |              |
| i. REQUEST Control Operator A<br>equipment as necessary                                | load                    |                                          |                             |              |
|                                                                                        |                         |                                          |                             |              |
|                                                                                        |                         |                                          |                             |              |
|                                                                                        |                         |                                          |                             |              |
|                                                                                        |                         |                                          |                             |              |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                    | NO.                               | E-0-06                                                              |                                                                               |    |
|-----------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------|----|
| KEWAUNEE NUCLEAR POWER PLANT                                                            | TITLE FIRE IN ALTERNATE FIRE ZONE |                                                                     |                                                                               |    |
| EMERGENCY OPERATING PROCEDURES                                                          | DATE SEP 15 2004 PAGE 14 0        |                                                                     |                                                                               | 54 |
|                                                                                         | I                                 |                                                                     | ····                                                                          | ר  |
| STEP OPERATOR ACTIONS                                                                   |                                   | CONTINGEN                                                           | CY ACTIONS                                                                    | J  |
| 16 ESTABLISH SERVICE WATER<br>(Control Operator A):                                     |                                   |                                                                     |                                                                               |    |
| a. START Service Water Pump 1A2                                                         |                                   |                                                                     |                                                                               |    |
| b. VERIFY SW-3A/CV-31038, Service<br>Water Header 1A Isol CV CLOSE                      | 2)                                |                                                                     |                                                                               |    |
| c. VERIFY SW-4A/CV-31084, Service<br>Water Header 1A CV CLOSED                          | 5                                 |                                                                     |                                                                               |    |
| d. Complete activation of DSP:                                                          |                                   |                                                                     |                                                                               |    |
| <ol> <li>POSITION Annunciator Power<br/>switch to ON</li> </ol>                         |                                   |                                                                     |                                                                               |    |
| 2) TEST alarms                                                                          |                                   | 2) INSPECT so<br>(SD-100, cl                                        | urce fuse.<br>kts 12 & 13)                                                    |    |
| 3) VERIFY all indicating light<br>ON and ALIGNED per control<br>switch position         | ts                                | 3) Continue w<br>REPLACE fu<br>circuits w<br>(SD-100 sou<br>bkr 10) | ith step 16.e and<br>ses in SD-100 for<br>ith lights OFF.<br>urce is BRA-105, |    |
| <u>NOTE</u> : Key to operate MS-1A is located                                           | d in App                          | endix R Fuse Bo                                                     | x #1.                                                                         |    |
| e. POSITION MS-1A/CV-31015, Main<br>Steam Hdr 1A Isolation Valve,<br>key switch to TRIP |                                   |                                                                     |                                                                               |    |
| f. VERIFY SW-10A/MV-32011,<br>Auxiliary Building SW Header 1<br>MV OPEN                 | f                                 | . Locally OPEN S                                                    | SW-10A.                                                                       |    |
| g. OPEN SW-903A/MV-32060, Cont Fa<br>Coil Unit 1A SW Return MV                          | an g                              | . REQUEST Contro<br>locally OPEN                                    | ol Operator B<br>SW-903A.                                                     |    |
| h. OPEN SW-903B/MV-32061, Cont Fa<br>Coil Unit 1B SW Return MV                          | an h                              | . REQUEST Contro<br>locally OPEN                                    | ol Operator B<br>SW-903B.                                                     |    |
| i. START Containment Fan Coil Uni<br>1A                                                 | it                                |                                                                     |                                                                               |    |
| j. START Containment Fan Coil Uni<br>1B                                                 | it                                |                                                                     |                                                                               |    |
| k. VERIFY SW Hdr Press 1A greater<br>than 60 psig                                       | r k                               | . VERIFY Service<br>and 1A2 runnin<br>SW-3A and SW-4                | e Water Pumps 1A1<br>ng,<br><u>AND</u><br>4A CLOSED.                          |    |
|                                                                                         |                                   |                                                                     |                                                                               |    |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                | NO.       | E-0-06                                                                                                                                            |    |
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| KEWAUNEE NUCLEAR POWER PLANT                                        | TITLE     | S FIRE IN ALTERNATE FIRE ZONE                                                                                                                     |    |
| EMERGENCY OPERATING PROCEDURES                                      | DATE      | SEP 15 2004 PAGE 15 of                                                                                                                            | 54 |
|                                                                     | <b></b> _ |                                                                                                                                                   |    |
| STEP OPERATOR ACTIONS                                               |           | CONTINGENCY ACTIONS                                                                                                                               |    |
| <u>NOTE</u> : When AFW Pump 1A starts, the AFW F<br>automatically.  | Pump 1A   | Fan Coil Unit will start                                                                                                                          |    |
| 17 ESTABLISH AUX FEEDWATER<br>(Control Operator A):                 |           |                                                                                                                                                   |    |
| a. START Aux FW Pump 1A                                             | а         | a. REPLACE control power fuses at bkr 1-504:                                                                                                      |    |
|                                                                     |           | <ol> <li>OPEN Close and Trip Control<br/>Power knife switches.</li> </ol>                                                                         |    |
|                                                                     |           | <ol> <li>REPLACE Close and Trip<br/>control power fuses.</li> </ol>                                                                               |    |
|                                                                     |           | <ol> <li>CLOSE Close and Trip Control<br/>Power knife switches.</li> </ol>                                                                        |    |
|                                                                     |           | <ol> <li>START Aux FW Pump 1A using<br/>control switch on DSP.</li> </ol>                                                                         |    |
| b. VERIFY AFW-10A/MV-32027, Aux A<br>Pump 1A Crossover MV CLOSED    | FW b      | b. Locally CLOSE AFW-10A.                                                                                                                         |    |
| c. VERIFY AFW-2A/CV-31315, 1A AFW<br>Pump Flow CV, at 0% (full open | v c<br>1) | c. <u>IF</u> AFW-2A has failed closed,<br><u>THEN</u> perform the following:                                                                      |    |
| greater than 60%                                                    |           | <ol> <li>Fail open AFW-2A by removing<br/>instrument air:</li> </ol>                                                                              |    |
|                                                                     |           | a) CLOSE IA-31315-2.                                                                                                                              |    |
|                                                                     |           | b) BLEED OFF air at pressure regulator.                                                                                                           | 2  |
|                                                                     |           | c) VERIFY AFW-2A - OPEN                                                                                                                           |    |
|                                                                     |           | 2) After AFW-2A is open.<br>locally control flow as<br>follows:                                                                                   |    |
|                                                                     |           | a) LOOSEN jam nut on AFW-2A<br>valve stem.                                                                                                        |    |
|                                                                     |           | b) Manually POSITION AFW-2A<br>to control flow.                                                                                                   |    |
|                                                                     |           | c) <u>IF</u> local control of<br>AFW-2A is <u>NOT</u> available,<br><u>THEN</u> STOP and START AFW<br>Pump A as necessary to<br>control SG level. |    |
|                                                                     |           |                                                                                                                                                   |    |

| WISCONSIN PUBLIC SI                                      | ERVICE CORPO                                                                                                                                                                                                                | RATION                     | NO.                         | E-0-06   |                                                       |                                                           |                   |     | 1  |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------|----------|-------------------------------------------------------|-----------------------------------------------------------|-------------------|-----|----|
| KEWAUNEE NUCL                                            | KEWAUNEE NUCLEAR POWER PLANT TITLE FIRE IN ALTERNATE FIRE ZONE                                                                                                                                                              |                            |                             |          |                                                       |                                                           |                   |     |    |
| EMERGENCY OPER                                           | ATING PROCEDU                                                                                                                                                                                                               | RES                        | DATE                        | SEP 15   | 2004                                                  | PAGE                                                      | 16                | of  | 54 |
| STEP                                                     | STEP OPERATOR ACTIONS                                                                                                                                                                                                       |                            |                             |          | TINGENC                                               | Y ACTIO                                                   | ONS               |     | ]  |
| 18 ESTABLISH II<br>(Control Roo                          | 18 ESTABLISH INSTRUMENT AIR<br>(Control Room Supervisor):                                                                                                                                                                   |                            |                             |          |                                                       |                                                           |                   |     |    |
| The following<br>air accumulate<br><u>NOT</u> refill unt | <u>CAUTION</u><br>The following control valves are supplied with dedicated air via local<br>air accumulators and have limited air capacity. Accumulators will<br><u>NOT</u> refill until normal instrument air is restored. |                            |                             |          |                                                       |                                                           |                   |     |    |
| Dedicated<br>Accumulator                                 | Valve                                                                                                                                                                                                                       |                            |                             |          | Minimum                                               | Design                                                    | Cycle             | es  |    |
| 15 gallons                                               | LD-2 Leto<br>LD-3 Leto                                                                                                                                                                                                      | lown Isola<br>Iown Isola   | lation<br>lation            |          | 6 cycles of LD-2 <u>AND</u><br>6 cycles of LD-3       |                                                           | <u>)</u>          |     |    |
| 80 gallons                                               | CVC-11 Char<br>CVC-15 Pres                                                                                                                                                                                                  | ging Isola<br>ssurizer A   | ation<br>ux Spra<br>Isolati | y<br>on  | 5 cycle<br><u>0</u><br>5 cycle<br><u>A</u><br>5 cycle | s of CVC<br><u>R</u><br>s of CVC<br><u>ND</u><br>s of LD- | -11<br>-15<br>4A, |     |    |
|                                                          | LD-4B Ltdr<br>LD-4C Ltdr                                                                                                                                                                                                    | n Orifice :<br>n Orifice : | Isolati<br>Isolati<br>————  | on<br>on | LD-4B <u>O</u>                                        | <u>R</u> LD-4C                                            |                   |     |    |
| 18 gallons                                               | SW-4A Turl                                                                                                                                                                                                                  | Bldg Sw 1                  | Hdr Iso                     | lation   | 1 close                                               | /open cy                                                  | cle               |     |    |
| 40 gallons                                               | SW-30A1 SW S<br>SW-30A2 SW S                                                                                                                                                                                                | Strn 1A1 Ba<br>Strn 1A2 Ba | ackwash<br>ackwash          |          | 7 cycle<br>7 cycle                                    | s of SW-<br>s of SW-                                      | 30A1<br>30A2      | AND |    |

## <u>CONTINUED</u>

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| WISCONS                                                        | IN PUBLIC SERVICE CORPORATION                                                                 | NO.        | E-0-06      |               |              |
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| KEWAUNEE NUCLEAR POWER PLANT TITLE FIRE IN ALTERNATE FIRE ZONE |                                                                                               |            |             |               |              |
| EMER                                                           | GENCY OPERATING PROCEDURES                                                                    | DATE       | SEP 15 2004 | PAGE 17       | <b>of</b> 54 |
|                                                                | OPERATOR ACTIONS                                                                              | <b>_</b> ] | CONTITUCEN  | TY ACTITOUS   | —            |
|                                                                | OPERATOR ACTIONS                                                                              |            |             |               |              |
|                                                                | IFN                                                                                           |            |             |               |              |
| a                                                              | . At Air Compressor 1C:                                                                       |            |             |               |              |
|                                                                | 1) OPEN SA-70, 1 1/2" Dedicate<br>IA Hdr Isol                                                 | ed         |             |               |              |
|                                                                | 2) OPEN SA-71, 1 1/2" Dedicate<br>IA Hdr Fltr Outl                                            | ed         |             |               | l            |
|                                                                | 3) CLOSE SA-100B, Cmpr 1C Out<br>to IA Dyr 1B                                                 | l          |             |               | i            |
|                                                                | 4) CLOSE SA-2C, Cmpr 1C Rcvr<br>Outl                                                          |            |             |               | ł            |
|                                                                | 5) POSITION 1C Air Compressor<br>local control switch to CS                                   |            |             |               |              |
| b                                                              | <ul> <li>CLOSE IA-401, 1 1/2" Dedicated<br/>IA Isol<br/>(N of 1A TB Bsmt F/C Unit)</li> </ul> | đ          |             |               |              |
| с                                                              | :. VERIFY 1C Air Compressor<br>receiver pressure (PI-11344)<br>greater than 60 psig           | c          | COMPLETED.  | 18.a and 18.b | I            |
|                                                                |                                                                                               |            |             |               |              |
|                                                                |                                                                                               |            |             |               |              |
|                                                                |                                                                                               |            |             |               |              |
|                                                                | CONTI                                                                                         | NUED       |             |               |              |
|                                                                |                                                                                               |            |             |               |              |
|                                                                |                                                                                               |            |             |               |              |
|                                                                |                                                                                               |            |             |               |              |
|                                                                | CONTIN                                                                                        |            |             |               |              |

| WISCO | ONSIN PUBLIC SERVICE CORPORATION                                                                                                                        | NO.   | E-0-06                                                                     |                                                            |                      |        |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------|------------------------------------------------------------|----------------------|--------|
| к     | EWAUNEE NUCLEAR POWER PLANT                                                                                                                             | TITLE | FIRE IN ALTERN                                                             | ATE FIRE ZON                                               | IE                   |        |
| EN    | MERGENCY OPERATING PROCEDURES                                                                                                                           | DATE  | SEP 15 2004                                                                | PAGE 18                                                    | of                   | 54     |
| STEP  | OPERATOR ACTIONS                                                                                                                                        | ר ר   | CONTINGENO                                                                 | CY ACTIONS                                                 |                      | י<br>ר |
| 18    |                                                                                                                                                         |       |                                                                            |                                                            |                      |        |
| CONT  | INUED                                                                                                                                                   |       |                                                                            |                                                            |                      |        |
|       | d. <u>IF</u> air accumulators for valves<br>located inside Containment<br>become depleted, <u>THEN</u> ALIGN<br>Dedicated Air Header to<br>Containment: | 5     |                                                                            |                                                            |                      |        |
|       | <ol> <li>LOOSEN jam nut on handwheel<br/>for IA-101/CV-31309, IA to<br/>Cntmt Isol (BAST Room)</li> </ol>                                               | I     |                                                                            |                                                            |                      | i      |
|       | 2) Locally CLOSE IA-101                                                                                                                                 |       |                                                                            |                                                            |                      |        |
|       | 3) OPEN IA-101-1, Ded & Alt IA<br>Hdr to Cntmt Isol<br>(BAST Room)                                                                                      | A     |                                                                            |                                                            |                      |        |
|       | 4) OPEN IA-480, Dedicated IA<br>Hdr to Cntmt Isol<br>(Stairwell below SFP Hx Rm)                                                                        | )     |                                                                            |                                                            |                      |        |
| 19    | ESTABLISH S/G 1A PRESSURE CONTROI<br>(Control Operator A):                                                                                              | -     |                                                                            |                                                            |                      |        |
|       | a. VERIFY BT-2A/MV-32077. Stm Ger<br>1A Blowdown 1A1 MV CLOSED                                                                                          | 1     |                                                                            |                                                            |                      |        |
|       | b. VERIFY Reac Coolant LP A Cold<br>Leg Temp Ind - stable at or<br>trending to 550°F                                                                    | b.    | OPERATE SD-3A/<br>1A Pwr Op Rlf,<br>Cold Leg tempe                         | /CV-31170, St<br>to maintair<br>erature at 55              | m Gen<br>RCS<br>0°F. |        |
| 20    | CHECK PRESSURIZER LEVEL:<br>(Control Operator A)                                                                                                        |       |                                                                            |                                                            |                      |        |
|       | a. VERIFY PZR level Cold Cal Lvl<br>ind greater than 10%                                                                                                | а.    | <u>IF</u> level falls<br>POSITION Przr<br>Group 1A Norma<br>control switch | s below 10%,<br>Heater Backu<br>al Supply Bkr<br>a to OFF. | <u>THEN</u><br>IP    |        |

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|-------|------------------------------------------------------------------------------------|-------|-------------------------------|-----------------------------------|
| KE    | WAUNEE NUCLEAR POWER PLANT                                                         | TITLE | FIRE IN ALTER                 | NATE FIRE ZONE                    |
| EM    | ERGENCY OPERATING PROCEDURES                                                       | DATE  | SEP 15 2004                   | <b>PAGE</b> 19 of 54              |
| STEP  | OPERATOR ACTIONS                                                                   |       | CONTINGEN                     | CY ACTIONS                        |
| 21    | ESTABLISH COMPONENT COOLING FLOW<br>(Control Operator A):                          |       |                               |                                   |
|       | a. START Component Cooling Water<br>Pump 1A                                        | a.    | REPLACE contro<br>Bkr 15109:  | ol power fuses at                 |
|       |                                                                                    |       | 1) OPEN Close<br>Power knife  | and Trip Control<br>e switches.   |
|       |                                                                                    |       | 2) REPLACE Clo<br>control po  | ose and Trip<br>wer fuses.        |
|       |                                                                                    |       | 3) CLOSE Close<br>Power knife | e and Trip Control<br>e switches. |
|       |                                                                                    |       | 4) START CCW<br>control sw    | Pump 1A using<br>itch on DSP.     |
|       | b. RECORD Component Cooling Wate<br>Pump 1A start time                             | r     |                               |                                   |
|       | c. VERIFY CC-6A/MV-32121.<br>Component Clg Wtr Ht Exgr 1A<br>Otlt MV OPEN          | c.    | Locally OPEN (                | CC-6A.                            |
|       | d. VERIFY CC Hx CCW Return Flow<br>Indication indicates FLOW                       |       |                               |                                   |
|       | e. REQUEST Control Operator B to<br>FAIL OPEN SW-1306A, SW From C<br>Hx A Temp CV: | C     |                               |                                   |
|       | 1) CLOSE IA-31406, IA Supply<br>SW-1306A                                           | to    |                               |                                   |
|       | 2) BLEED OFF air pressure at<br>pressure regulator                                 |       |                               |                                   |
|       |                                                                                    |       |                               |                                   |
|       |                                                                                    |       |                               |                                   |
|       |                                                                                    |       |                               |                                   |
| 1     |                                                                                    |       |                               |                                   |

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|-----------------------------------------------------------------------------------|--------------------|-----------------|----------------|----|----|
| KEWAUNEE NUCLEAR POWER PLANT                                                      | TITLE              | FIRE IN ALTERN  | NATE FIRE ZONI | E  |    |
| EMERGENCY OPERATING PROCEDURES                                                    | DATE               | SEP 15 2004     | PAGE 20        | of | 54 |
| STEP OPERATOR ACTIONS                                                             | ז ר                |                 | ר              |    |    |
| 22 ESTABLISH CHARGING FLOW<br>(Control Operator A):                               | [                  |                 |                |    |    |
| a. VERIFY following:                                                              |                    |                 |                |    |    |
| 1) RXCP seal supply line valve<br>CLOSED per Step 12.g.                           | 25                 |                 |                |    |    |
| 2) CVC-301/MV-32056, Refueling<br>Water Reac Emerg Makeup LCV<br>OPEN             | 9<br>V             | 2) Locally OPE  | EN CVC-301.    |    |    |
| 3) CVC-1/MV-32057, Volume<br>Control Tank Otlt Isol Mv<br>CLOSED                  |                    | 3) Locally CLC  | DSE CVC-1.     |    |    |
| 4) CVC-7/CV-31103, Chg Line<br>Flow Cont Vlv OPEN                                 |                    | 4) Locally OPE  | EN CVC-7.      |    |    |
| <u>NOTE</u> : If CVC-11 does <u>NOT</u> open, CVC<br>will provide adequate flow p | C-14 Bypa<br>path. | ass check valve | around CVC-11  | 1  |    |
| 5) CVC-11/CV-31229, Chg Line t<br>Cold Leg LP-B RCS Isol Vlv<br>OPEN              | to                 |                 |                |    | i  |
| CONTIN                                                                            | NUED               |                 |                |    |    |
|                                                                                   |                    |                 |                |    |    |

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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                     | TITLE | NATE FIRE ZONE                                                                   |                                                                             |
| EMERGENCY OPERATING PROCEDURES                                                                                                   | DATE  | SEP 15 2004                                                                      | <b>PAGE</b> 21 of 54                                                        |
| STEP OPERATOR ACTIONS                                                                                                            |       | CONTINGEN                                                                        | CY ACTIONS                                                                  |
| 22                                                                                                                               |       |                                                                                  | J                                                                           |
| CONTINUED                                                                                                                        |       |                                                                                  |                                                                             |
| b. START Charging Pump 1C:                                                                                                       |       |                                                                                  |                                                                             |
| 1) CLOSE supply breaker by<br>POSITIONING Charging Pump 1<br>control switch to START                                             | 10    | 1) REPLACE con<br>at Bkr 1520                                                    | ntrol power fuses<br>)3:                                                    |
|                                                                                                                                  |       | a) OPEN Clo<br>Control<br>switches                                               | ose and Trip<br>Power knife<br>S.                                           |
|                                                                                                                                  |       | b) REPLACE<br>control                                                            | Close and Trip<br>power fuses.                                              |
|                                                                                                                                  |       | c) CLOSE C<br>Control<br>switches                                                | lose and Trip<br>Power knife<br>5.                                          |
|                                                                                                                                  |       | d) CLOSE bl<br>control                                                           | <r pump<br="" using="">switch on DSP.</r>                                   |
| 2) PRESS Reset pushbutton and<br>VERIFY annunciator, CHG PMI<br>1C DRIVE CONT TROUBLE<br>(87220-24), OFF                         | p     | 2) REQUEST Con<br>identify ca<br>fault monit<br>maintenance                      | ntrol Operator B<br>ause at local<br>tor <u>AND</u> initiate<br>e action.   |
| 3) START Charging Pump 1C by<br>POSITIONING control switch<br>to START                                                           |       | 3) REPLACE con<br>(SD-100, Cl                                                    | ntrol power fuses<br>kt 39 & 40).                                           |
| c. ADJUST Chg Pump 1C Speed<br>Control to increase Pzr Cold<br>Cal Level to 20–50%                                               |       |                                                                                  |                                                                             |
| d. REQUEST Control Operator B<br>VERIFY 195 gpm CC return flow<br>from each RXCP (FI-613/26620<br>and FI-609/26621 by 1B SI Pump | d.    | . OPEN CVC-201A<br>to establish s<br>flow to RXCPs<br>closed in step             | /B or CVC-202A/B<br>seal injection<br>(whichever were<br>p 12.g.)           |
|                                                                                                                                  |       | <u>IF</u> local flow<br>energized, <u>TH</u><br>to establish &<br>injection flow | indicators are<br><u>EN</u> THROTTLE CVC-7<br>B gpm seal<br>v to each RXCP. |
|                                                                                                                                  |       |                                                                                  |                                                                             |

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| к     | EWAUNEE NUCLEAR POWER PLANT                                       | TITLE FIRE IN ALTERNATE FIRE ZONE |             |                                         |                                    |                |           |    |
| EM    | ERGENCY OPERATING PROCEDURES                                      | DATE                              | SE          | P 15 2004                               | PAGE                               | 22             | of        | 54 |
|       |                                                                   |                                   |             | · · ·                                   |                                    |                |           |    |
| STEP  | OPERATOR ACTIONS                                                  |                                   |             | CONTINGEN                               | CY ACTI                            | ONS            |           |    |
| 23    | VERIFY RCS SUBCOOLING GREATER TH<br>50°F (Control Operator A)     | AN <u>G</u>                       | <u>0 to</u> | Step 19.                                |                                    |                |           | i  |
|       | a. Use Reac Coolant LP A Hot Leg<br>Temp Ind                      |                                   |             |                                         |                                    |                |           |    |
|       | b. REFER to Table E-0-06-1                                        |                                   |             |                                         |                                    |                |           |    |
| 24    | ESTABLISH PRESSURIZER WATER LEVE<br>CONTROL (Control Operator A): | L                                 |             |                                         |                                    |                |           |    |
|       | a. VERIFY Pzr Cold Cal Level                                      | а                                 | . PE        | RFORM follow                            | wing:                              |                |           |    |
|       | greater than 10%                                                  |                                   | 1)          | VERIFY Lete<br>SERVICE.                 | down, <u>NOT</u>                   | IN             |           |    |
|       |                                                                   |                                   | 2)          | VERIFY Prz<br>Group 1A No<br>control sw | r Heater<br>ormal Sup<br>itch, OFF | Backu<br>ply B | ip<br>Ikr |    |
|       |                                                                   |                                   | 3)          | INCREASE C                              | harging F                          | low.           |           |    |
|       | b. VERIFY Charging, IN SERVICE                                    | b                                 | . <u>GO</u> | <u>TO</u> Step 22                       | •                                  |                |           |    |
|       |                                                                   |                                   |             |                                         |                                    |                |           | :  |
|       |                                                                   |                                   |             |                                         |                                    |                |           |    |
|       |                                                                   |                                   |             |                                         |                                    |                |           |    |
|       |                                                                   |                                   |             |                                         |                                    |                |           |    |
|       |                                                                   |                                   |             |                                         |                                    |                |           |    |
|       |                                                                   |                                   |             |                                         |                                    |                |           |    |
|       |                                                                   |                                   |             |                                         |                                    |                |           |    |
|       |                                                                   |                                   |             |                                         |                                    |                |           |    |
|       |                                                                   |                                   |             |                                         |                                    |                |           |    |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                               | ю. E-0-06                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                       | TITLE FIRE IN ALTERNATE FIRE ZONE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| EMERGENCY OPERATING PROCEDURES                                                                                                                     | DATE SEP 15 2004 PAGE 23 of 54                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| STEP OPERATOR ACTIONS                                                                                                                              | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <ul> <li>25 CHECK PRESSURIZER PRESSURE - (Control Operator A):</li> <li>a. Reac Coolant PZR Press Ind stable at or trending to 235 psig</li> </ul> | <ul> <li>Perform the following:</li> <li>1. <u>IF</u> pressure is less than<br/>2235 psig and DECREASING, <u>THEN</u><br/>PERFORM the following: <ul> <li>a) CLOSE RC-46/SV-33663, Rx<br/>Head/Przr Vent to PRT.</li> <li>b) CLOSE PR-33A/SV-33660, Przr<br/>Head Vent Train A.</li> <li>c) CLOSE CVC-15/CV-31230, Chrg<br/>Line to Przr Aux Spray.</li> <li>d) <u>IF</u> Przr Cold Cal Level is<br/>greater than 10%, ENERGIZE<br/>Pressurizer Heater Backup<br/>Group 1A.</li> </ul> </li> <li>2. <u>IF</u> pressure is greater than<br/>2385 psig and INCREASING, <u>THEN</u><br/>PERFORM the following: <ul> <li>a) VERIFY Pressurizer Heater<br/>Backup Group 1A Normal<br/>Supply Bkr control switch,<br/>OFF.</li> <li>b) OPEN RC-46/SV-33663, Rx<br/>Head/Przr Vent to PRT.</li> <li>c) CYCLE OPEN PR-33A/SV-33660,<br/>Przr Head Vent Train A, to<br/>reduce RCS pressure.</li> </ul> </li> </ul> |

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|------------------------------|----------------------------------------------------------------------------------------------------------------------------|-----------|------------------------|---------------------------------------------------------------------|-------------------------------------|-----------------------------|----------------------------|----|
| KEWAUNEE NUCLEAR POWER PLANT |                                                                                                                            |           | 2                      | FIRE IN ALTERN                                                      | IATE FIRE                           | ZONE                        |                            |    |
| EM                           | ERGENCY OPERATING PROCEDURES                                                                                               | DATE      |                        | SEP 15 2004                                                         | PAGE                                | 24                          | of                         | 54 |
| STEP                         | OPERATOR ACTIONS                                                                                                           |           | Г                      | CONTINGENO                                                          | TY ACTIO                            | -<br>NS                     |                            |    |
| 26                           | CHECK S/G LEVEL<br>(Control Operator A):<br>a. VERIFY Stm Gen 1A WR Level                                                  | <b>]</b>  | <b>۱_</b>              | MAINTAIN maxim                                                      | um AFW fl                           | ow i                        | Intil                      |    |
|                              | b. THROTTLE AFW-2A to maintain Sf<br>Gen 1A WR Level greater than (                                                        | tm<br>50% |                        | than 60%.                                                           | Level gre                           | arer                        | :                          |    |
| 27                           | VERIFY CONDENSATE STORAGE TANKS<br>LEVEL - AT LEAST ONE GREATER THAN<br>OR EQUAL TO 8% (5640 gal)<br>(Control Operator A): | N 8       | [ <u>F</u><br>3%<br>Fo | level in both<br>(5640 gal), <u>Tŀ</u><br>lowing:                   | CSTs is 1<br>I <u>EN</u> PERFOR     | ess<br>M tł                 | than<br>Ie                 |    |
|                              | a. REQUEST Control Operator B<br>report levels from local<br>indicators LI-18053 and LI-180                                | )<br>055  |                        | LOCALLY OPEN D<br>Crossconnect 1<br><u>OR</u>                       | W-20, RMS<br>sol                    | T to                        | o CST                      | i  |
|                              |                                                                                                                            | 2         | 2.                     | Locally OPEN S<br>supply bkr (MC<br>OPEN SW-601A,<br>Aux FW Pump 1A | W-601A/MV<br>C-52C, B2<br>Service W | -32(<br>), <u>1</u><br>ater | )29<br><u>[HEN</u><br>` to |    |
|                              |                                                                                                                            |           |                        |                                                                     |                                     |                             |                            |    |
|                              |                                                                                                                            |           |                        |                                                                     |                                     |                             |                            |    |
|                              |                                                                                                                            |           |                        |                                                                     |                                     |                             |                            |    |
|                              |                                                                                                                            |           |                        |                                                                     |                                     |                             |                            |    |
|                              |                                                                                                                            |           |                        |                                                                     |                                     |                             |                            |    |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                         | NO. E-0-06                                                                                                                                      |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                 | TITLE FIRE IN ALTERNATE FIRE ZONE                                                                                                               |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                               | DATE SEP 15 2004 PAGE 25 of 54                                                                                                                  |
|                                                                                                                                                                                                              |                                                                                                                                                 |
| STEP OPERATOR ACTIONS                                                                                                                                                                                        | CONTINGENCY ACTIONS                                                                                                                             |
| 28 DE-ENERGIZE BUSES 3, 4, and 6<br>(Control Room Supervisor):                                                                                                                                               |                                                                                                                                                 |
| <u>NOTE</u> : Bus 1, 2, 3, 4 and 6 should<br>is performed by Plant Manage                                                                                                                                    | remain de-energized until an evaluation ment.                                                                                                   |
| a. POSITION 1B Diesel Engine<br>Control switch to STOP                                                                                                                                                       |                                                                                                                                                 |
| <ul> <li>b. PERFORM substeps 1-5 for ea<br/>of the following source<br/>breakers:</li> <li>1-301 MAT to Bus 3</li> <li>1-307 RAT to Bus 3</li> <li>1-401 MAT to Bus 4</li> <li>1-407 RAT to Bus 4</li> </ul> | ch                                                                                                                                              |
| 1) POSITION breaker control<br>switch to TRIP                                                                                                                                                                | 1) <u>IF</u> breaker does <u>NOT</u> TRIP,<br><u>THEN</u> CONTINUE with<br>Step 28.b.2 and VERIFY bkr<br>TRIPS after performing<br>Step 28.b.4. |
| 2) OPEN Close knife switch                                                                                                                                                                                   |                                                                                                                                                 |
| 3) OPEN Pump Motor knife sw                                                                                                                                                                                  | itch                                                                                                                                            |
| 4) Discharge closing spring<br>ROTATING lever to Cubicl<br>Entry Position.                                                                                                                                   | by<br>e                                                                                                                                         |
| 5) OPEN Trip knife switches                                                                                                                                                                                  |                                                                                                                                                 |
| CON                                                                                                                                                                                                          | <u>TINUED</u>                                                                                                                                   |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                           | NO. E-0-06                                                                                                                                                                 |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                   | TITLE FIRE IN ALTERNATE FIRE ZONE                                                                                                                                          |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                                 | DATE SEP 15 2004 PAGE 26 of 54                                                                                                                                             |
|                                                                                                                                                                                                                |                                                                                                                                                                            |
| STEP OPERATOR ACTIONS                                                                                                                                                                                          | CONTINGENCY ACTIONS                                                                                                                                                        |
| 28                                                                                                                                                                                                             |                                                                                                                                                                            |
| <u>CONTINUED</u>                                                                                                                                                                                               |                                                                                                                                                                            |
| c. Check Bus 6 - ACCESSIBLE                                                                                                                                                                                    | c. PERFORM the following:                                                                                                                                                  |
| <ul><li>Area free of smoke</li><li>Lighting available</li></ul>                                                                                                                                                | 1) OPEN Bus 61/62 source<br>breakers:                                                                                                                                      |
|                                                                                                                                                                                                                | <ul> <li>Bkr 16101, Bus 61 Supply</li> <li>Bkr 16201, Bus 62 Supply</li> </ul>                                                                                             |
|                                                                                                                                                                                                                | 2) VERIFY the following bus tie<br>breakers - OPEN:                                                                                                                        |
|                                                                                                                                                                                                                | <ul> <li>Bkr 15111, Bus 51 &amp; 61 Tie</li> <li>Bkr 16111, Bus 51 &amp; 61 Tie</li> <li>Bkr 15211, Bus 52 &amp; 62 Tie</li> <li>Bkr 16211, Bus 52 &amp; 62 Tie</li> </ul> |
|                                                                                                                                                                                                                | 3) CLOSE SI-7B, SI Pump 1B<br>Disch Isol.                                                                                                                                  |
| <ul> <li>d. PERFORM substeps 1-5 for each of the following Bus 6 source breakers:</li> <li>1-611 TAT to Bus 6</li> <li>1-610 MAT to Bus 6</li> <li>1-603 B D/G to Bus 6</li> <li>1-601 RAT to Bus 6</li> </ul> | - · ·                                                                                                                                                                      |
| 1) POSITION breaker control<br>switch to TRIP                                                                                                                                                                  | <ol> <li><u>IF</u> breaker does <u>NOT</u> TRIP,<br/><u>THEN</u> CONTINUE with<br/>Step 28.d.2 and VERIFY bkr<br/>TRIPS after performing<br/>Step 28.d.4.</li> </ol>       |
| 2) OPEN Close knife switch                                                                                                                                                                                     |                                                                                                                                                                            |
| 3) OPEN Charge Motor knife<br>switch                                                                                                                                                                           |                                                                                                                                                                            |
| 4) Discharge closing spring b<br>POSITIONING lever to Cell<br>Entry Position.                                                                                                                                  | у                                                                                                                                                                          |
| 5) OPEN Trip knife switches<br><u>CONTI</u>                                                                                                                                                                    | NUED                                                                                                                                                                       |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                       | <b>NO.</b> E-0        | -06                                     |                                                             |                               |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                               | TITLE FIR             | E IN ALTERN                             | ATE FIRE ZONE                                               |                               |
| EMERGENCY OPERATING PROCEDURES                                                                                                             | <b>DATE</b> SEP       | 15 2004                                 | PAGE 27                                                     | <b>of</b> 54                  |
|                                                                                                                                            |                       |                                         |                                                             |                               |
| STEP OPERATOR ACTIONS                                                                                                                      |                       | CONTINGENC                              | Y ACTIONS                                                   |                               |
| 28                                                                                                                                         |                       |                                         |                                                             |                               |
| CONTINUED                                                                                                                                  | •                     |                                         |                                                             |                               |
| e. REQUEST plant electrician OPE<br>G-1 Bkr and DE-ENERGIZE G-1<br>Control Power                                                           |                       |                                         |                                                             |                               |
| f. MONITOR status of each battery                                                                                                          | :                     |                                         |                                                             |                               |
| 1) VERIFY 1A Battery, <u>NOT</u><br>grounded                                                                                               | 1)                    | MAINTAIN po<br>INITIATE ac<br>ground.   | wer to SD-101<br>tion to clear                              | and                           |
| 2) VERIFY Battery Charger<br>BRA-108 OPERATING and 1A<br>Battery terminal voltage<br>greater than 105 VDC                                  | 2)                    | REQUEST mai<br>assistance.              | ntenance                                                    |                               |
| 3) VERIFY 1B Battery terminal<br>voltage greater than 105 VI                                                                               | 3) (<br>C             | REQUEST mai<br>to prevent               | ntenance acti<br>battery damag                              | on<br>Ie.                     |
| 29 VERIFY RXCP COMPONENT COOLING FLO<br><u>AND</u> ESTABLISH SEAL INJECTION FLO<br>(Control Operator A):                                   | W                     |                                         |                                                             |                               |
| a. REQUEST Control Operator B<br>VERIFY 195 gpm CC return flow<br>from each RXCP (FI-613/26620<br>and FI-609/26621 by 1B SI Pump           | a. <u>GO</u> ]<br>)   | <u>TO</u> step 29.                      | <b>c.</b>                                                   |                               |
| b. VERIFY CC flow to RXCP therma<br>barriers has been established<br>for 30 minutes                                                        | b. CON<br>30  <br>PER | TINUE with<br>minutes has<br>FORM Steps | procedure. <u>M</u><br>elapsed, <u>THE</u><br>29.c and 29.d | <u>IHEN</u><br><u>N</u><br>I. |
| c. REQUEST Control Operator B OP<br>CVC-201A/B or CVC-202A/B<br>(whichever were closed in<br>Step 12.g)                                    | N                     |                                         |                                                             |                               |
| d. <u>IF</u> local flow indicators are<br>ENERGIZED, <u>THEN</u> THROTTLE CVC-7<br>to establish 8 gpm seal<br>injection flow to each RXCP. |                       |                                         |                                                             |                               |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                      | NO. E-0-06                                                                                                                                                      |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                              | TITLE FIRE IN ALTERNATE FIRE ZONE                                                                                                                               |
| EMERGENCY OPERATING PROCEDURES                                                                            | DATE SEP 15 2004 PAGE 28 of 54                                                                                                                                  |
|                                                                                                           |                                                                                                                                                                 |
| STEP OPERATOR ACTIONS                                                                                     | CONTINGENCY ACTIONS                                                                                                                                             |
| 30 ESTABLISH LETDOWN FLOW<br>(Control Operator A):                                                        |                                                                                                                                                                 |
| a. VERIFY Przr Cold Cal Level,<br>greater than 20%                                                        | a. INCREASE charging flow to<br>MAXIMUM rate and <u>GO TO</u> Step 32.<br><u>WHEN</u> pressurizer level is<br>greater than 20%, <u>THEN GO TO</u><br>Step 30.b. |
| b. INITIATE Letdown:                                                                                      |                                                                                                                                                                 |
| 1) ADJUST CC-302/CV-31100,<br>Non-Rgn Hx Otlt Temp Cont,<br>to 50% OPEN                                   |                                                                                                                                                                 |
| 2) ADJUST LD-10/CV-31099, Low<br>Pressure Letdown Line PCV,<br>to 50% OPEN                                |                                                                                                                                                                 |
| 3) VERIFY LD-27/CV-31096, Ltd<br>Flow to H1dup/VC Tank 3-Way<br>CV, in DIVERT                             |                                                                                                                                                                 |
| 4) VERIFY LD-14/CV-31098, Ltd<br>Flow to Demin/VC Tank 3-Wa<br>CV, in V.C. TNK                            |                                                                                                                                                                 |
| 5) Locally INSERT fuses in<br>SD-101 FUG-7 and FUG-6<br>(for LD-3 and LD-6)                               |                                                                                                                                                                 |
| <u>NOTE</u> : Key to operate LD-6 is loca                                                                 | ted in Appendix R Fuse Box #1.                                                                                                                                  |
| 6) POSITION LD-6/CV-31234,<br>Letdown Flow to Ltdn Hx Is<br>CV, key switch to OPEN                        | 51                                                                                                                                                              |
| 7) OPEN LD-2/CV-31108, Ltdn<br>Line From LP-B Cold Leg RC<br>Isol Vlv                                     | 5                                                                                                                                                               |
| <u>NOTE</u> : Key to operate LD-3 is loca                                                                 | ted in Appendix R Fuse Box #1.                                                                                                                                  |
| 8) POSITION LD-3/CV-31104, Lt<br>Line From LP-B Cold Leg RC<br>Isol Vlv, key switch to OP<br><u>CONTI</u> | dn<br>5<br>EN<br>R <u>WED</u>                                                                                                                                   |



| WISCONS             | IN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                | NO.                               | E-0-06                                                 |                                        |              |   |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------------------------------|----------------------------------------|--------------|---|
| KEWA                | AUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                    | TITLE FIRE IN ALTERNATE FIRE ZONE |                                                        |                                        |              |   |
| EMER                | GENCY OPERATING PROCEDURES                                                                                                                                                                                                                   | DATE                              | SEP 15 2004                                            | <b>PAGE</b> 30                         | <b>of</b> 54 | 4 |
| STEP                | OPERATOR ACTIONS                                                                                                                                                                                                                             |                                   | CONTINGENO                                             | CY ACTIONS                             |              |   |
| 32 V<br>(<br>a<br>b | ERIFY NATURAL CIRCULATION<br>Control Operator A):<br>Reac Coolant LP A Hot Leg Temp<br>- STABLE OR DECREASING<br>RCS Subcooling based on Reac<br>Coolant LP A Hot Leg Temp and<br>Pzr Press - GREATER THAN 50°F<br>USING TABLE E-0-06-1      | I<br>G<br>S                       | ncrease dumping<br>enerator 1A, by<br>tm Gen 1A Pwr Op | steam from S<br>OPENING SD-3<br>o Rlf. | team<br>A,   |   |
| c<br>d<br>33 E      | <ul> <li>Stm Gen 1A Outlet Press -<br/>STABLE OR DECREASING</li> <li>Reac Coolant LP A Cold Leg Ten<br/>- AT SATURATION TEMPERATURE FO<br/>STM GEN 1A OUTLET PRESS USING<br/>TABLE E-0-06-1</li> <li>STABLISH COLD SHUTDOWN BORON</li> </ul> | np<br>)R                          |                                                        |                                        |              |   |
| C<br>a<br>b         | CONCENTRATION (Control Operator A<br>A. VERIFY letdown, IN SERVICE<br>A. ADJUST Chg Pump 1C Speed<br>Control to maintain Pzr Cold<br>Cal Level, 20-50%                                                                                       | <b>\):</b><br>a                   | . <u>GO TO</u> Step 30.                                |                                        |              |   |
| <u>NOTE</u> :<br>c  | <ul> <li>12,700 gal corresponds to 5% de at maximum speed (60 gpm) for 3</li> <li>WHEN 12,700 gallons has been added from RWST, <u>THEN</u> 1% Cold Shutdown boron concentration should be attained</li> </ul>                               | ecrease<br>3.5 hour               | in RWST level or<br>s.                                 | r charging fl                          | ow           |   |
|                     |                                                                                                                                                                                                                                              |                                   |                                                        |                                        |              | I |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                      | NO.                 | E-0-06                  |                    |             |   |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                              | TITLE               | FIRE IN ALTERN          | NATE FIRE ZON      | E           |   |
| EMERGENCY OPERATING PROCEDURES DATE SEP 15 2004 PAGE 31 of                                                                                                |                     |                         |                    | <b>of</b> 5 | 4 |
| STEP OPERATOR ACTIONS                                                                                                                                     |                     | CONTINGENO              | CY ACTIONS         |             |   |
| <u>NOTE</u> : Cables for Steam Generator 1B leve<br>protected. Indication may <u>NOT</u> be                                                               | el and p<br>availab | ressure indicati<br>le. | ion are <u>NOT</u> |             |   |
| 34 ESTABLISH 1B S/G PRESSURE CONTRO<br>(Control Operator A):                                                                                              | L                   |                         |                    |             |   |
| a. ESTABLISH communications with<br>Control Operator B                                                                                                    |                     |                         |                    |             |   |
| b. REQUEST Control Operator B<br>locally OPEN SD-3B to reduce<br>Stm Gen 1B Otlt Press to the<br>existing value for Stm Gen 1A<br><u>THEN</u> CLOSE SD-3B |                     |                         |                    | -           |   |
| c. <u>WHEN</u> Stm Gen 1B Otlt Press is<br>100 psig greater than Stm Gen<br>1A Otlt Press, <u>THEN</u> REPEAT<br>Steps 34.a and 34.b                      |                     |                         |                    |             |   |
|                                                                                                                                                           |                     |                         |                    |             |   |
|                                                                                                                                                           |                     |                         |                    |             |   |
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| WISCON           | SIN PUBLIC SERVICE CORPORATION                                                   | NO.                               | E-0-06                                     |              |              |
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| KEW              | AUNEE NUCLEAR POWER PLANT                                                        | TITLE FIRE IN ALTERNATE FIRE ZONE |                                            |              |              |
| EMER             | RGENCY OPERATING PROCEDURES                                                      | DATE                              | SEP 15 2004                                | PAGE 32      | <b>of</b> 54 |
|                  |                                                                                  | — , r                             |                                            |              |              |
| STEP             | OPERATOR ACTIONS                                                                 |                                   | CONTINGEN                                  | CY ACTIONS   |              |
|                  | <u>CAU</u>                                                                       | <u>TION</u>                       |                                            |              | *****        |
| <u>if</u> s/g    | B Wide Range Level is less than 3                                                | 102                               |                                            |              |              |
|                  | AND                                                                              |                                   |                                            |              |              |
| S/G B P<br>Press | ressure is greater than 1030 psig                                                | g, <u>OR</u> S/(                  | G B Pressure is                            | less than S  | /G A         |
|                  | THEN                                                                             |                                   |                                            |              |              |
| <u>DO NOT</u>    | initiate AFW flow to Steam Genera                                                | ator B                            |                                            |              |              |
|                  | ••••••                                                                           |                                   |                                            |              | • • • • • •  |
| 35               | ESTABLISH S/G 1B LEVEL CONTROL<br>(Control Operator A):                          | <u>11</u><br><u>G</u> (           | 5/G 1B is <u>NOT</u><br><u>10</u> Step 36. | available, ] | <u>rhen</u>  |
|                  | a. OPEN AFW-10B/MV-32028, Aux FW<br>1B Disch X-over local breaker                | р                                 |                                            |              |              |
|                  | b. Locally CLOSE AFW-10B                                                         |                                   |                                            |              |              |
|                  | c. At DSP, OPEN AFW-10A                                                          |                                   |                                            |              |              |
|                  | d. REQUEST Operator B monitor<br>FI-18202, AFW to 1B S/G (Aux<br>bldg bsmt)      |                                   |                                            |              |              |
| 1                | e. Locally THROTTLE AFW-10B to<br>establish 25 gpm on FI-18202,<br>AFW to 1B S/G |                                   |                                            |              |              |
|                  | f. ADJUST AFW-10B to maintain St<br>Gen 1B WR Level greater than (               | n<br>60%                          |                                            |              |              |
|                  |                                                                                  |                                   |                                            |              |              |
|                  |                                                                                  |                                   |                                            |              |              |
|                  |                                                                                  |                                   |                                            |              |              |
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| 1                |                                                                                  |                                   |                                            |              |              |

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| KEWAUNEE NUCLEAR POWER PLANT |                                                                                          | TITLE FIRE IN ALTERNATE FIRE ZONE |                         |              |    |
| EME                          | EMERGENCY OPERATING PROCEDURES                                                           |                                   | SEP 15 2004             | PAGE 33 of 5 | 54 |
| STEP                         | OPERATOR ACTIONS                                                                         |                                   | CONTINCEN               | CY ACTIONS   | ]  |
|                              |                                                                                          |                                   |                         |              |    |
| 36                           | MAINTAIN STABLE PLANT CONDITIONS<br>(Control Operator A):                                |                                   |                         |              | i  |
|                              | a. Reac Coolant LP A Cold Leg Ter<br>Ind - 550°F                                         | np                                |                         |              |    |
|                              | b. Reac Coolant LP A Cold Leg Ter<br>and Pzr Press - Within limits<br>of Figure E-0-06-1 | np b                              | . <u>GO TO</u> Step 23. |              |    |
|                              | c. Pzr Cold Cal Level - 20%-50%                                                          | с                                 | . <u>GO TO</u> Step 24. |              |    |
|                              | d. Stm Gen 1A WR Level - GREATER<br>THAN 60%                                             | d                                 | . <u>GO TO</u> Step 26. |              |    |
|                              | e. Stm Gen 1B WR Level<br>(if available) - GREATER THAN<br>60%                           | e                                 | . <u>GO TO</u> Step 34. |              |    |
| 37                           | VERIFY STATUS OF SUPPORT EQUIPMEN<br>(Control Operator A):                               | NT                                |                         |              |    |
|                              | a. Screenhouse Exhaust Fan 1A an<br>Diesel Generator Vent Supply<br>Fan 1A, ON           | da a                              | . Locally START         | fans.        |    |
|                              | b. Fire Pump 1A, RUNNING                                                                 |                                   |                         |              |    |
|                              | c. Aux Bldg Mezz Sfgrd Fan Coil<br>1A, ON                                                |                                   |                         |              |    |
|                              | d. Turbine Bldg Fan Coil Unit 1A<br>ON                                                   | •                                 |                         |              |    |
|                              | e. Battery Room Fan Coil Unit 1A<br>ON                                                   | •                                 |                         |              |    |
|                              |                                                                                          |                                   |                         |              |    |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                         | TITLE FIRE IN ALTERNATE FIRE ZONE                                                                                       |
| EMERGENCY OPERATING PROCEDURES                                                                                       | DATE SEP 15 2004 PAGE 34 of 54                                                                                          |
|                                                                                                                      |                                                                                                                         |
| STEP OPERATOR ACTIONS                                                                                                | CONTINGENCY ACTIONS                                                                                                     |
| 38 VERIFY COLD SHUTDOWN BORON<br>CONCENTRATION (Control Operator A                                                   | A):                                                                                                                     |
| <u>NOTE</u> : When 12,700 gallons has been at<br>1% Cold Shutdown boron concent                                      | dded from the RWST (5% level change),<br>ration should be attained.                                                     |
| a. RCS Boron Sample greater than<br>Cold Shutdown Boron<br>Concentration                                             | a. <u>GO TO</u> Step 33.                                                                                                |
| 39 REQUEST Plant Electricians<br>determine feasibility of returning<br>both CRDM Cooling Fans to service             | ng<br>e.                                                                                                                |
| <u>NOTE</u> : If the plant can be maintained in management should be consulted to off-site power prior to commencing | a stable Hot Shutdown condition, plant<br>determine the feasibility of restoring<br>g any further plant status changes. |
| 40 RCS COOLDOWN TO COLD SHUTDOWN<br>DESIRED                                                                          |                                                                                                                         |
| a. <u>GO</u> <u>TO</u> Step 41                                                                                       | a. <u>GO</u> <u>TO</u> to Step 36.                                                                                      |
|                                                                                                                      |                                                                                                                         |
|                                                                                                                      |                                                                                                                         |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                 | <b>NO.</b> E-0-06                                                                                                                                                                                                                                                         |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                         | NUCLEAR POWER PLANT TITLE FIRE IN ALTERNATE FIRE ZONE                                                                                                                                                                                                                     |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                                       | DATE SEP 15 2004 PAGE 35 of 54                                                                                                                                                                                                                                            |  |  |  |
|                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                           |  |  |  |
| STEP OPERATOR ACTIONS                                                                                                                                                                                                | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                       |  |  |  |
| CAU                                                                                                                                                                                                                  | TION                                                                                                                                                                                                                                                                      |  |  |  |
| When cooling down using Loop A, the RCS because S/G 1B may become a heat source                                                                                                                                      | should <u>NOT</u> be cooled down rapidly                                                                                                                                                                                                                                  |  |  |  |
| If S/G 1B pressure control and AFW flow stagnate and the only means of heat rem                                                                                                                                      | are <u>NOT</u> established, Loop B will<br>oval will be losses to ambient.                                                                                                                                                                                                |  |  |  |
|                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                           |  |  |  |
| 41 INITIATE RCS COOLDOWN:                                                                                                                                                                                            |                                                                                                                                                                                                                                                                           |  |  |  |
| a. MAINTAIN cooldown rate less<br>than 25°F/hr                                                                                                                                                                       |                                                                                                                                                                                                                                                                           |  |  |  |
| b. ADJUST SD-3A to achieve<br>required cooldown rate                                                                                                                                                                 |                                                                                                                                                                                                                                                                           |  |  |  |
| c. MAINTAIN Stm Gen 1A WR Level<br>GREATER THAN 60%                                                                                                                                                                  | -                                                                                                                                                                                                                                                                         |  |  |  |
| d. MAINTAIN Reac Coolant LP A Co<br>Leg Temp and Pzr Press - WITH<br>LIMITS OF FIGURE E-0-06-1                                                                                                                       | ld<br>IN                                                                                                                                                                                                                                                                  |  |  |  |
| e. <u>IF</u> Stm Gen 1B is available,<br><u>THEN</u> MAINTAIN temperature<br>difference between Loop A and<br>Loop B less than 20°F by<br>locally OPENING SD-3B to<br>equalize Stm Gen 1A and 1B<br>Outlet Pressures | e. MAINTAIN 50°F RCS Subcooling<br>based on Stm Gen 1B saturation<br>temperature using Table<br>E-O-O6-1. <u>IF</u> Stm Gen 1B Outlet<br>Press indication is <u>NOT</u><br>available, <u>THEN</u> REQUEST<br>maintenance assistance to<br>establish alternate indication. |  |  |  |
| 42 VERIFY REAC COOLANT LOOP A<br>TEMPERATURES - LESS THAN 550°F                                                                                                                                                      | <u>GO TO</u> Step 39.                                                                                                                                                                                                                                                     |  |  |  |
|                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                           |  |  |  |

| WISCO | ONSIN PUBLIC SERVICE CORPORATION                                                            | NO.                                              | E-0-06                                      |                                                           |              |
|-------|---------------------------------------------------------------------------------------------|--------------------------------------------------|---------------------------------------------|-----------------------------------------------------------|--------------|
| KE    | WAUNEE NUCLEAR POWER PLANT                                                                  | TITLE                                            | FIRE IN ALTER                               | NATE FIRE ZONE                                            |              |
| ЕМ    | ERGENCY OPERATING PROCEDURES                                                                | OPERATING PROCEDURES DATE SEP 15 2004 PAGE 36 of |                                             |                                                           | <b>of</b> 54 |
|       |                                                                                             | — , r                                            |                                             |                                                           |              |
| STEP  | OPERATOR ACTIONS                                                                            |                                                  | CONTINGEN                                   | CY ACTIONS                                                |              |
| 43    | DEPRESSURIZE RCS TO 1950 PSIG:                                                              |                                                  |                                             |                                                           |              |
|       | a. DE-ENERGIZE Pressurizer Heate<br>Backup Group 1A                                         | r                                                |                                             |                                                           |              |
|       | b. ESTABLISH Auxiliary Spray                                                                | b.                                               | <u>IF</u> Auxiliary S                       | Spray can <u>NOT</u>                                      | be<br>17F    |
|       | 1) VERIFY letdown in service                                                                |                                                  | using Przr Hea                              | ad Vent System                                            | :            |
|       | <ol> <li>VERIFY at least one Chargin<br/>Pump RUNNING.</li> </ol>                           | ng                                               | a) OPEN RC-46/<br>Head/Przr N               | /SV-33663, Rx<br>/ent to PRT                              | I            |
|       | 3) OPEN CVC-15/CV-31230, Chrg<br>Line to Przr Aux Spray                                     |                                                  | b) CYCLE OPEN<br>Przr Head N<br>control RCS | PR-33A/SV-3360<br>Vent Train A, <sup></sup><br>5 pressure | 60.<br>to    |
|       | c. <u>WHEN</u> Pzr Press is equal to<br>1950 psig, <u>THEN</u> STOP RCS<br>depressurization |                                                  |                                             |                                                           |              |
|       | d. ENERGIZE Pressurizer Heater<br>Backup Group 1A as necessary<br>maintain 1950 psig        | to                                               |                                             |                                                           |              |
| 44    | MAINTAIN THE FOLLOWING RCS<br>CONDITIONS:                                                   |                                                  |                                             |                                                           |              |
|       | a. Pzr Press - 1950 PSIG                                                                    |                                                  |                                             |                                                           | i            |
|       | b. Pzr Cold Cal Level - 20-50%                                                              |                                                  |                                             |                                                           |              |
|       | c. RCS cooldown rate - LESS THAN<br>25°F/hr                                                 |                                                  |                                             |                                                           |              |
|       | d. Reac Coolant LP A Cold Leg Te<br>and Pzr Press - WITHIN LIMITS<br>OF FIGURE E-0-06-1     | mp                                               |                                             |                                                           |              |
|       |                                                                                             |                                                  |                                             |                                                           |              |
|       |                                                                                             |                                                  |                                             |                                                           |              |
|       |                                                                                             |                                                  |                                             |                                                           | 1            |
| WISCONSIN PUBLIC SERVICE CORPORATION                    | NO.  | E-0-06                          |             |              |
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| KEWAUNEE NUCLEAR POWER PLANT                            |      | TLE FIRE IN ALTERNATE FIRE ZONE |             |              |
| EMERGENCY OPERATING PROCEDURES                          | DATE | SEP 15 2004                     | PAGE 37     | <b>of</b> 54 |
| STEP OPERATOR ACTIONS                                   | r    | CONTINCEN                       | TT ACTITONS | ]            |
|                                                         | L    |                                 |             |              |
| 45 MONITOR RCS COOLDOWN:                                |      |                                 |             |              |
| a. Reac Coolant LP A Hot Leg lemp<br>- DECREASING       | )    |                                 |             | :            |
| b. Stm Gen 1B Outlet Press -<br>STABLE or DECREASING    |      |                                 |             |              |
| c. RCS subcooling - GREATER THAN<br>50°F AND INCREASING |      |                                 |             |              |
| 1) Use Reac Coolant LP A Hot<br>Leg Temp Ind            |      |                                 |             |              |
| 2) REFER to Table E-0-06-1                              |      |                                 |             |              |
|                                                         |      |                                 |             |              |
|                                                         |      |                                 |             |              |
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| WISCO                        | NSIN PUBLIC SERVICE CORPORATION                                                                | NO.      |    | E-0-06                                                                      |                                                       |         |
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| KEWAUNEE NUCLEAR POWER PLANT |                                                                                                |          | LE | FIRE IN ALTERN                                                              | NATE FIRE ZONE                                        |         |
| EME                          | ERGENCY OPERATING PROCEDURES                                                                   | DAT      | E  | SEP 15 2004                                                                 | PAGE 38                                               | o£ 54   |
| []                           |                                                                                                |          | Г  |                                                                             |                                                       |         |
| STEP                         | OPERATOR ACTIONS                                                                               |          | L  | CONTINGEN                                                                   | CY ACTIONS                                            |         |
| 46                           | INITIATE RCS DEPRESSURIZATION:                                                                 |          |    |                                                                             |                                                       |         |
|                              | a. VERIFY CRDM Fans BOTH RUNNING                                                               |          | a. | Until 18 hours<br>completed, MAI<br>subcooling gre<br><u>AND GO TO</u> Step | s soak is<br>INTAIN RCS<br>eater than 200°<br>o 46.d. | F       |
|                              |                                                                                                |          |    | 1) Use Reac Co<br>Leg Temp Ir                                               | oolant LP A Hot<br>nd                                 |         |
|                              |                                                                                                |          |    | 2) REFER to Ta                                                              | able E-0-06-1                                         |         |
|                              | b. MAINTAIN RCS subcooling -<br>GREATER THAN 50°F                                              |          |    |                                                                             |                                                       |         |
|                              | 1) Use Reac Coolant LP A Hot<br>Leg Temp Ind                                                   |          |    |                                                                             |                                                       |         |
|                              | 2) REFER to Table E-0-06-1                                                                     |          |    |                                                                             |                                                       |         |
|                              | c. MAINTAIN Reac Coolant LP A Co<br>Leg Temp and Pzr Press - With<br>Limits of Figure E-0-06-2 | ld<br>in |    |                                                                             |                                                       |         |
|                              | d. DE-ENERGIZE Pressurizer Heater<br>Backup Group 1A                                           | r        |    |                                                                             |                                                       |         |
|                              | e. ESTABLISH Auxiliary Spray                                                                   |          | e. | <u>IF</u> Auxiliary S                                                       | Spray can <u>NOT</u> b<br>THEN DEPRESSURT             | e<br>7F |
|                              | 1) VERIFY letdown in service                                                                   |          |    | using Przr Hea                                                              | ad Vent System:                                       |         |
|                              | <ol> <li>VERIFY at least one Chargin<br/>Pump RUNNING.</li> </ol>                              | ng       |    | a) OPEN RC-46/<br>Head/Przr \                                               | /SV-33663, Rx<br>Vent to PRT                          |         |
|                              | 3) OPEN CVC-15/CV-31230, Chrg<br>Line to Przr Aux Spray                                        |          |    | b) CYCLE OPEN<br>Przr Head V<br>control RCS                                 | PR-33A/SV-3366<br>Vent Train A, t<br>S pressure       | 0.<br>o |
|                              |                                                                                                |          | ۰. |                                                                             |                                                       |         |
|                              |                                                                                                |          |    |                                                                             |                                                       |         |
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| wisco | ONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                | NO.            | E-0-06                                                                           |                                                      |              |
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| к     | EWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                     | TITL           | E FIRE IN ALTERN                                                                 | NATE FIRE ZONE                                       |              |
| EM    | IERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                                                                                                                                                                                   | DATE           | SEP 15 2004                                                                      | <b>PAGE</b> 39                                       | <b>of</b> 54 |
| STEP  | OPERATOR ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                |                | CONTINGENO                                                                       | CY ACTIONS                                           | — ]          |
| 47    | <ul> <li>CONTINUE RCS COOLDOWN AND<br/>DEPRESSURIZATION:</li> <li>a. MAINTAIN RCS cooldown rate let<br/>than 25°F/hr</li> <li>b. MAINTAIN subcooling<br/>requirements of Step 46</li> <li>c. MAINTAIN Reac Coolant LP A Co<br/>Leg Temp and Pzr Press - With<br/>limits of Figure E-0-06-1 or<br/>Figure E-0-06-2</li> <li>d. MAINTAIN Pzr Cold Cal Level -<br/>20-50%</li> <li>e. MAINTAIN Stm Gen 1A WR Level<br/>GREATER THAN 60%</li> </ul> | ss<br>Id<br>in | b. STOP depressur<br>RE-ESTABLISH s                                              | rization <u>AND</u><br>subcooling                    |              |
| 48    | VERIFY PZR COLD CAL LEVEL - NO<br>UNEXPECTED LARGE VARIATIONS                                                                                                                                                                                                                                                                                                                                                                                   |                | PRESSURIZE RCS wi<br>Figure E-0-06-1 1<br>potential voids i<br>CONTINUE cooldowr | ithin limits o<br>to collapse<br>in system and<br>1. | f            |



| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                      | NO.   | E-0-06                                      |                                                    |    |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                              | TITLE | FIRE IN ALTERN                              | NATE FIRE ZONE                                     |    |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                            | DATE  | SEP 15 2004                                 | PAGE 41 of                                         | 54 |  |  |
|                                                                                                                                                                                           |       |                                             |                                                    |    |  |  |
| STEP OPERATOR ACTIONS                                                                                                                                                                     |       | CONTINGEN                                   | CY ACTIONS                                         |    |  |  |
| <u>NOTE</u> : If Stm Gen 1B is <u>NOT</u> depressurized periodically, the Stm Gen 1B U-Tubes<br>will void during depressurization. This will result in a rapidly<br>increasing Pzr Level. |       |                                             |                                                    |    |  |  |
| 50 DEPRESSURIZE RCS TO 950 PSIG:                                                                                                                                                          |       |                                             |                                                    |    |  |  |
| a. DE-ENERGIZE Pressurizer Heater<br>Backup Group 1A                                                                                                                                      | r     |                                             |                                                    |    |  |  |
| b. ESTABLISH Auxiliary Spray                                                                                                                                                              | , p.  | <u>IF</u> Auxiliary S                       | Spray can <u>NOT</u> be<br>THEN DEPRESSURIZE       |    |  |  |
| 1) VERIFY letdown in service                                                                                                                                                              |       | using Przr Hea                              | ad Vent System:                                    |    |  |  |
| 2) VERIFY at least one Chargin<br>Pump RUNNING.                                                                                                                                           | ng    | a) OPEN RC-46/<br>Head/Przr V               | /SV-33663, Rx<br>/ent to PRT                       |    |  |  |
| 3) OPEN CVC-15/CV-31230, Chrg<br>Line to Przr Aux Spray                                                                                                                                   |       | b) CYCLE OPEN<br>Przr Head V<br>control RCS | PR-33A/SV-33660,<br>/ent Train A, to<br>5 pressure |    |  |  |
| c. <u>WHEN</u> Pzr Press is equal to<br>950 psig, <u>THEN</u> STOP RCS<br>depressurization                                                                                                |       |                                             |                                                    |    |  |  |
| d. ENERGIZE Pressurizer Heater<br>Backup Group 1A as necessary<br>maintain 950 psig                                                                                                       | to    |                                             |                                                    |    |  |  |
|                                                                                                                                                                                           |       |                                             |                                                    |    |  |  |
|                                                                                                                                                                                           |       |                                             |                                                    |    |  |  |
|                                                                                                                                                                                           |       |                                             |                                                    |    |  |  |
|                                                                                                                                                                                           |       |                                             |                                                    | ľ  |  |  |
|                                                                                                                                                                                           |       |                                             |                                                    |    |  |  |
|                                                                                                                                                                                           |       |                                             |                                                    |    |  |  |
| · ·                                                                                                                                                                                       |       |                                             |                                                    |    |  |  |
|                                                                                                                                                                                           |       |                                             |                                                    |    |  |  |
|                                                                                                                                                                                           |       |                                             |                                                    |    |  |  |

| wisco            | DNSIN PUBLIC SERVICE CORPORATION                                                                                                         | NO.                 | E-0-06                                                                |                                                            |
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| к                | EWAUNEE NUCLEAR POWER PLANT                                                                                                              | TITLE               | FIRE IN ALTER                                                         | NATE FIRE ZONE                                             |
| EM               | IERGENCY OPERATING PROCEDURES                                                                                                            | DATE                | SEP 15 2004                                                           | <b>PAGE</b> 42 of 54                                       |
| STEP             |                                                                                                                                          |                     | CONTINCEN                                                             | TY ACTIONS                                                 |
|                  |                                                                                                                                          |                     |                                                                       |                                                            |
| •••••            | <u>CAU</u>                                                                                                                               | <u></u><br>TION     | **************                                                        | ••••                                                       |
| Any va<br>with 1 | alve manipulation requiring Contain<br>Health Physics and approval per EP                                                                | nment en<br>-AD-11. | try will require                                                      | e coordination                                             |
| 51               | CHECK <u>IF</u> ACCUMULATORS SHOULD BE<br>ISOLATED:                                                                                      | *******             | ************                                                          |                                                            |
|                  | a. Pzr Press - LESS THAN 1000 PS                                                                                                         | IG a                | . <u>DO NOT</u> isolate<br><u>GO TO</u> Step 50.                      | e accumulators.                                            |
|                  | b. ISOLATE SI Accumulators A/B an<br>ALIGN SI for less than<br>1000 psig:                                                                | nd                  |                                                                       |                                                            |
|                  | <ol> <li>REQUEST plant electrician<br/>CLOSE the following valves<br/>from respective MCCs and<br/>LOCK OPEN supply breakers:</li> </ol> |                     | 1) <u>IF</u> power is<br><u>THEN</u> LOCK (<br>breakers an<br>valves. | s <u>NOT</u> available,<br>DPEN supply<br>nd locally CLOSE |
|                  | a) SI-20B/MV-32096, SI<br>Accumulator 1B Disch Is<br>(MCC-62B)                                                                           | 01                  |                                                                       |                                                            |
|                  | b) SI-20A/MV-32091, SI<br>Accumulator 1A Disch Ise<br>(MCC-52B)                                                                          | 0]                  |                                                                       |                                                            |
|                  | c) SI-302A/MV-32100, React<br>Vessel Safety Injection<br>(MCC-52B)                                                                       | or                  |                                                                       |                                                            |
|                  | d) SI-300A/MV-32111, RHR<br>Pump Suction Isol<br>(MCC-52E)                                                                               |                     |                                                                       |                                                            |
|                  | e) SI-351A/MV-32113, Cntmt<br>Sump B Isol (MCC-52E)                                                                                      |                     |                                                                       |                                                            |
|                  | f) SI-351B/MV-32114, Cntmt<br>Sump B Isol (MCC-62H)                                                                                      |                     |                                                                       |                                                            |
|                  |                                                                                                                                          |                     |                                                                       |                                                            |

| WISCONSIN PUBLIC SERVICE CORPORATION |                                                                                                                                          |          | E-0-06                                            |                               |          |     |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------|-------------------------------|----------|-----|
| KEWAUNEE NUCLEAR POWER PLANT         |                                                                                                                                          |          | FIRE IN ALTERN                                    | ATE FIRE ZON                  | E        |     |
| ЕМ                                   | ERGENCY OPERATING PROCEDURES                                                                                                             | DATE     | SEP 15 2004                                       | PAGE 43                       | of       | 54  |
| STEP                                 | OPERATOR ACTIONS                                                                                                                         | r        | CONTINCEN                                         | TY ACTIONS                    |          | ٦   |
| 52                                   | MAINTAIN LETDOWN FLOW:                                                                                                                   | L        |                                                   |                               | <u> </u> | J   |
|                                      | a. VERIFY adequate volume remain<br>in CVC Holdup Tank on fill                                                                           | sa.      | . REQUEST Contro<br>ALIGN letdown<br>Holdup Tank. | ol Operator B<br>to empty CVC |          |     |
|                                      | b. OPEN additional letdown orificity<br>isolation valves, as necessary<br>to maintain letdown flow                                       | ce<br>Y. |                                                   |                               |          |     |
|                                      | c. ADJUST LD-10 to maintain Ltdn<br>Ht Xgh Otlt Press at 250 psig                                                                        |          |                                                   |                               |          |     |
| 53                                   | MAINTAIN REQUIRED RXCP SEAL<br>INJECTION FLOW:                                                                                           |          |                                                   |                               |          |     |
|                                      | a. <u>IF</u> local flow indicators are<br>ENERGIZED, <u>THEN</u> THROTTLE CVC-<br>to establish 8 gpm seal<br>injection flow to each RXCP | 7        |                                                   |                               |          |     |
|                                      |                                                                                                                                          |          |                                                   |                               |          |     |
|                                      |                                                                                                                                          |          |                                                   |                               |          |     |
|                                      |                                                                                                                                          |          |                                                   |                               |          | . : |
|                                      |                                                                                                                                          |          |                                                   |                               |          |     |
|                                      |                                                                                                                                          |          |                                                   |                               |          |     |
|                                      |                                                                                                                                          |          |                                                   |                               |          |     |
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| WISCONS                      | SIN PUBLIC SERVICE CORPORATION                                                                    | NO.                   | E-0-06                                      |                                              |              |
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| KEW                          | AUNEE NUCLEAR POWER PLANT                                                                         | TITLE                 | FIRE IN ALTER                               | NATE FIRE ZONE                               |              |
| EMER                         | GENCY OPERATING PROCEDURES                                                                        | DATE                  | SEP 15 2004                                 | PAGE 44                                      | <b>of</b> 54 |
| STEP                         | OPERATOR ACTIONS                                                                                  |                       | CONTINGEN                                   | CY ACTIONS                                   |              |
| <u>NOTE</u> : If<br>wi<br>in | Stm Gen 1B is <u>NOT</u> depressurized<br>11 void during depressurization<br>acreasing Pzr Level. | d periodi<br>. This w | ically, the Stm<br>vill result in a         | Gen 1B U-Tube<br>a rapidly                   | S            |
| 54 D                         | EPRESSURIZE RCS TO 420 PSIG:                                                                      |                       |                                             |                                              | :            |
| a                            | . DE-ENERGIZE Pressurizer Heater<br>Backup Group 1A                                               | r                     |                                             |                                              |              |
| b                            | . ESTABLISH Auxiliary Spray                                                                       | b.                    | . <u>IF</u> Auxiliary S                     | Spray can <u>NOT</u>                         | be           |
|                              | 1) VERIFY letdown in service                                                                      |                       | using Przr Hea                              | id Vent System                               | :            |
|                              | <ol> <li>VERIFY at least one Chargin<br/>Pump RUNNING.</li> </ol>                                 | ng                    | a) OPEN RC-46/<br>Head/Przr N               | /SV-33663, Rx<br>/ent to PRT                 |              |
|                              | 3) OPEN CVC-15/CV-31230, Chrg<br>Line to Przr Aux Spray                                           |                       | b) CYCLE OPEN<br>Przr Head V<br>control RCS | PR-33A/SV-336<br>Vent Train A,<br>5 pressure | 60,<br>to    |
| c                            | : <u>WHEN</u> Pzr Press is equal to<br>420 psig, <u>THEN</u> STOP RCS<br>depressurization         |                       |                                             |                                              |              |
| d                            | I. ENERGIZE Pressurizer Heater<br>Backup Group 1A as necessary f<br>maintain 420 psig             | to                    |                                             |                                              |              |
| 55 C                         | HECK <u>IF</u> RHR SYSTEM CAN BE PLACE<br>N SERVICE:                                              | D                     |                                             |                                              |              |
| a                            | . Reac Coolant LP A Hot Leg Temp<br>less than 400°F                                               | p a.                  | . <u>GO TO</u> Step 47.                     |                                              |              |
| b                            | . Pzr Press less than 425 psig                                                                    | b                     | . <u>GO TO</u> Step 54.                     |                                              |              |
|                              |                                                                                                   |                       |                                             |                                              |              |
|                              |                                                                                                   |                       |                                             |                                              |              |
|                              |                                                                                                   |                       |                                             |                                              |              |

| WISCONSIN PUBLIC SERVICE CORPORATION |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | NO.                       | E-0-06        |                |              |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------|----------------|--------------|
| KEW                                  | AUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | TITLE                     | FIRE IN ALTER | NATE FIRE ZON  | E            |
| EMER                                 | GENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | DATE                      | SEP 15 2004   | <b>PAGE</b> 45 | <b>of</b> 54 |
| STEP                                 | OPERATOR ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                           | CONTINGEN     | CY ACTIONS     |              |
| 56 I                                 | <ul> <li>PLACE RHR TRAIN A IN SERVICE:</li> <li>a. CLOSE supply breakers for following valves:</li> <li>1) RHR-1A/MV-32116, Loop A Hot Leg to RHR Pump (MCC-52B Ext)</li> <li>2) RHR-2A/MV-32117, Loop A Hot Leg to RHR Pump (MCC-52B Ext)</li> <li>3) RHR-11/MV-32118, RHR to Loo B Cold Leg Isol (MCC-52B)</li> <li>b. Locally VERIFY following valve CLOSED, THEN OPEN supply breakers:</li> <li>1) RHR-299A/MV-32134, RHR Hx Outlet to SI Pmp 1A (MCC-52)</li> <li>c. Locally POSITION RHR-8A/CV-31114, RHR Hx 1A Outlet CV, as follows:</li> <li>1) CLOSE IA-31114-1</li> <li>3) BLEED OFF air pressure at pressure regulators</li> </ul> | t<br>t<br>op<br>es<br>2E) |               |                |              |
|                                      | <ul> <li>4) LOOSEN jam nut on varve sto</li> <li>5) Manually POSITION RHR-8A to</li> <li>10% OPEN</li> <li>4 ODEN CO 4000 (NN 20110 CO 4000)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | D                         |               |                |              |
| C                                    | to Rsdl Hx 1A MV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | er                        |               |                |              |
| CONTINUED                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                           |               |                |              |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                   | NO. E-0-06                                                                                                                                        |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                           | TITLE FIRE IN ALTERNATE FIRE ZONE                                                                                                                 |
| EMERGENCY OPERATING PROCEDURES                                                                                                                         | DATE SEP 15 2004 PAGE 46 of 54                                                                                                                    |
| STEP OPERATOR ACTIONS                                                                                                                                  | CONTINGENCY ACTIONS                                                                                                                               |
| <u>CONTINUED</u>                                                                                                                                       |                                                                                                                                                   |
| e. (CAS) MAINTAIN CC Hx CCW Retur<br>Flow between 2650 gpm and<br>3650 gpm                                                                             | rn e. Perform the following:<br>1) Locally VERIFY CC-400B<br>CLOSED.                                                                              |
|                                                                                                                                                        | 2) Locally THROTTLE OPEN<br>CC-402A, RHR Heat Exchanger<br>1A Outlet, as necessary to<br>maintain CC Hx CCW Return<br>Flow greater than 2650 gpm. |
| f. ADJUST LD-10 to increase Ltdn<br>Ht Xgh Otlt Press to 420 psig<br>(equal to Pzr Press)                                                              |                                                                                                                                                   |
| g. OPEN RHR-1A/MV-32116 and<br>RHR-2A/MV-32117, Loop A Hot Le<br>RHR Inlt Isol MVs                                                                     | g. REPLACE fuses at MCC-52B Ext.<br>eg                                                                                                            |
| h. CLOSE LD-4A, LD-4B, and LD-4C<br>Regen Hx Ltdn Otlt Orif Isol (                                                                                     | CVs                                                                                                                                               |
| i. POSITION LD-10 Controller to<br>MANUAL and OPEN LD-10                                                                                               |                                                                                                                                                   |
| j. START RHR Pump 1A                                                                                                                                   |                                                                                                                                                   |
| k. VERIFY RHR Pump Pit Fan<br>Coil 1A, ON                                                                                                              | k. Locally START RHR Pump Pit Fan<br>Coil 1A.                                                                                                     |
| <ol> <li>Locally VERIFY 1A RHR Ht Exch<br/>Outlet Temperature (TI-12075)<br/>increases to within 50°F of<br/>Reac Coolant LP A Hot Leg Temp</li> </ol> | 0                                                                                                                                                 |
| m. VERIFY RHR System Boron<br>Concentration within 100 ppm<br>of RCS                                                                                   |                                                                                                                                                   |
| n. OPEN RHR-11/MV-32118, RHR<br>Return to LP-B Cold Leg Isol M                                                                                         | n. REPLACE fuses at MCC-52B.<br>1V                                                                                                                |
| CONTI                                                                                                                                                  | NUED                                                                                                                                              |

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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                       | TITLI  | S FIRE IN ALTERNATE FIRE ZONE |            |    |    |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                                                                     | DATE   | SEP 15 2004                   | PAGE 47    | of | 54 |
| STEP OPERATOR ACTIONS                                                                                                                                                                                                                                                                                                              | -      | CONTINGENO                    | CY ACTIONS |    | ר  |
| 56                                                                                                                                                                                                                                                                                                                                 |        |                               |            |    |    |
| 56<br>CONTINUED<br>O. Locally LOCK OPEN supply<br>breaker to SW-1300A/MV-32009<br>(MCC-52B), <u>THEN</u> OPEN SW-1300A,<br>CC Hx 1A Outlet<br>P. ADJUST LD-10 to maintain Pzr<br>Cold Cal Level 20-50%<br>Q. VERIFY integrity of RHR System<br>by MONITORING Pzr Cold Cal<br>Level and Chg Pump 1C Speed<br>versus LD-10 position. | ,<br>n |                               |            |    |    |
|                                                                                                                                                                                                                                                                                                                                    |        |                               |            |    |    |
|                                                                                                                                                                                                                                                                                                                                    |        |                               |            |    |    |



| WISCONSIN PUBLIC SERVICE CORPORATION                                                           | NO.      | E-0-06                              |                      |              |
|------------------------------------------------------------------------------------------------|----------|-------------------------------------|----------------------|--------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                   | TITL     | E FIRE IN ALTERN                    | NATE FIRE ZONI       | E            |
| EMERGENCY OPERATING PROCEDURES                                                                 | DATE     | SEP 15 2004                         | PAGE 49              | <b>of</b> 54 |
|                                                                                                |          |                                     |                      |              |
| STEP OPERATOR ACTIONS                                                                          |          | CONTINGEN                           | CY ACTIONS           |              |
| 57                                                                                             |          |                                     |                      |              |
| CONTINUED                                                                                      |          |                                     |                      | 9            |
| d. Locally ADJUST<br>RHR-101/CV-31116, RHR Hx Bypa<br>CV, as follows:                          | 55       |                                     |                      |              |
| 1) Fail RHR-101 closed:                                                                        |          |                                     |                      |              |
| a) CLOSE IA-31116-2                                                                            |          |                                     |                      |              |
| b) CLOSE IA-31116-1                                                                            |          |                                     |                      |              |
| c) BLEED OFF air pressure a pressure regulator                                                 | at       |                                     |                      |              |
| 2) VERIFY RHR-110, RHR Return<br>to RWST, CLOSED                                               |          |                                     |                      |              |
| 3) OPEN RHR-10A, Cross Connect<br>Valve                                                        | t        |                                     |                      |              |
| 4) OPEN RHR-100A, Heat<br>Exchanger Bypass Line                                                |          |                                     |                      |              |
| 5) LOOSEN jam nut on RHR-101<br>valve stem                                                     |          |                                     |                      |              |
| 6) OPEN RHR-101 to establish<br>1000-2000 gpm RHR flow                                         |          |                                     |                      |              |
| e. MAINTAIN Reac Coolant LP A Co<br>Leg Temp and Pzr Press - With<br>limits of Figure E-0-06-1 | ld<br>in |                                     |                      |              |
| f. MAINTAIN Pzr Cold Cal Level -<br>20-50%                                                     | -        | f. ADJUST Chg Pum<br>LD-10 positior | np 1C Speed an<br>1. | nd           |
|                                                                                                |          |                                     |                      |              |
| CONTI                                                                                          | NUED     | ·                                   |                      |              |
|                                                                                                |          |                                     |                      |              |
|                                                                                                |          |                                     |                      |              |

| wisco            | NSIN PUBLIC SERVICE CORPORATION                                                                                                   | NO.                     | E-0-06                                                               |                                                      |    |    |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------------------------------------------------------|------------------------------------------------------|----|----|
| KE               | WAUNEE NUCLEAR POWER PLANT                                                                                                        | TITLE                   | FIRE IN ALTER                                                        | NATE FIRE ZONE                                       | Ē  |    |
| EMI              | ERGENCY OPERATING PROCEDURES                                                                                                      | DATE                    | SEP 15 2004                                                          | <b>PAGE</b> 50                                       | of | 54 |
| STEP             | OPERATOR ACTIONS                                                                                                                  |                         | CONTINGEN                                                            | CY ACTIONS                                           |    | ٦  |
| 57               | · · · · · · · · · · · · · · · · · · ·                                                                                             |                         | ·                                                                    |                                                      |    |    |
| <u>CONTI</u>     | NUED                                                                                                                              |                         |                                                                      |                                                      |    |    |
|                  | g. <u>WHEN</u> Reac Coolant LP A Hot Leg<br>Temp is less than 200°F, <u>THEN</u><br>ALIGN Containment Spray System<br>as follows: | )<br>N                  |                                                                      |                                                      |    |    |
|                  | <ol> <li>Locally LOCK CLOSED ICS-7A<br/>and ICS-7B, Cntmt Spray Pun<br/>1A/1B to Cntmt Vessel (N ar<br/>E Pen room)</li> </ol>    | np<br>1d                |                                                                      |                                                      |    |    |
|                  | 2) REQUEST plant electrician<br>RACK OUT 1B ICS Pump breake                                                                       | er                      |                                                                      |                                                      |    |    |
| Depres<br>additi | <u>CAU</u><br>surizing the RCS before entire RCS<br>onal void formation in RCS.                                                   | <u>[ION</u><br>5 is les | s than 200°F may                                                     | / result in                                          |    |    |
|                  | • • • • • • • • • • • • • • • • • • • •                                                                                           | *******                 | • • • • • • • • • • • • • • • • • • •                                |                                                      |    |    |
| 58               | CONTINUE COOLDOWN OF INACTIVE<br>Portion of RCS:                                                                                  |                         |                                                                      |                                                      |    |    |
|                  | a. Steam Generator U-Tubes -<br>CONTINUE dumping steam from<br>both Steam Generators                                              |                         |                                                                      |                                                      |    |    |
|                  | b. Upper head region - Both CRDM<br>cooling fans, RUNNING                                                                         | Ь                       | . WAIT 30 hours<br>temperature re<br>before depress<br>less than 350 | after RCS<br>eaches 200°F<br>surizing RCS 1<br>psig. | to |    |
| 59               | DETERMINE <u>IF</u> RCS DEPRESSURIZATION<br>IS PERMITTED:                                                                         | ł                       |                                                                      |                                                      |    |    |
|                  | a. Entire RCS - LESS THAN 200°F                                                                                                   | a                       | . DO <u>NOT</u> depress<br><u>GO TO</u> Step 57.                     | surize RCS.                                          |    |    |



## WISCONSIN PUBLIC SERVICE CORPORATION

NO. E-0-06

## KEWAUNEE NUCLEAR POWER PLANT

TITLE FIRE IN ALTERNATE FIRE ZONE

- EMERGENCY OPERATING PROCEDURES
- DATE SEP 15 2004

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| TABLE E-0-06-1<br>REACTOR COOLANT SYSTEM SUBCOOLING                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                              |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| PRESSURIZER<br>PRESSURE<br>PSIG                                                                                                                                                                                                                          | T-SAT<br>DEG F                                                                                                                                                                                                                                                                                                                                        | 50 DEG<br>SUBCOOLING<br>DEG F                                                                                                                                                                                                                                                                    | 200 DEG<br>SUBCOOLING<br>DEG F                                                                                                                                                                                               |  |
| 2300<br>2250<br>2200<br>2150<br>2100<br>2050<br>2000<br>1950<br>1900<br>1850<br>1800<br>1750<br>1700<br>1650<br>1600<br>1550<br>1500<br>1450<br>1450<br>1400<br>1350<br>1300<br>1250<br>1200<br>1150<br>1100<br>1050<br>1000<br>950<br>900<br>850<br>800 | bEG F         657         654         650         647         644         640         637         633         630         622         618         614         610         606         598         593         588         584         579         569         563         558         552         546         540         534         527         520 | $\begin{array}{c} 607\\ 604\\ 600\\ 597\\ 594\\ 590\\ 587\\ 583\\ 580\\ 576\\ 572\\ 568\\ 564\\ 560\\ 556\\ 552\\ 548\\ 564\\ 560\\ 556\\ 552\\ 548\\ 543\\ 538\\ 534\\ 529\\ 524\\ 519\\ 513\\ 508\\ 534\\ 529\\ 524\\ 519\\ 513\\ 508\\ 502\\ 496\\ 490\\ 484\\ 477\\ 470\\ 462\\ \end{array}$ | 457<br>454<br>450<br>447<br>444<br>440<br>437<br>433<br>430<br>426<br>422<br>418<br>414<br>410<br>406<br>402<br>398<br>393<br>388<br>384<br>379<br>374<br>369<br>363<br>358<br>352<br>346<br>340<br>334<br>327<br>320<br>313 |  |
| 700<br>650<br>600<br>550<br>500                                                                                                                                                                                                                          | 505<br>497<br>489<br>480<br>470                                                                                                                                                                                                                                                                                                                       | 455<br>447<br>439<br>430<br>420                                                                                                                                                                                                                                                                  | 305<br>297<br>289<br>280<br>270                                                                                                                                                                                              |  |
| LOOP TEMPERATURE                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                              |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                    | NO. E-O QRF                                                                                                                                                                                                                                                                                                                                                      | REV H                             |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                            | TITLE QUICK REFERENC                                                                                                                                                                                                                                                                                                                                             | E FOLDOUT SECTION E-0             |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>DATE</b> MAR 21 2004                                                                                                                                                                                                                                                                                                                                          | PAGE 1 of 1                       |  |  |  |
| REVIEWED BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | APPROVED BY                                                                                                                                                                                                                                                                                                                                                      |                                   |  |  |  |
| <u>NOTE</u> : Use ADVERSE CONTAINMENT values when >4                                                                                                                                                                                                                                                                                                                                                                                                                                    | psig <u>OR</u> >10+05 R/HR                                                                                                                                                                                                                                                                                                                                       |                                   |  |  |  |
| 1 <u>RXCP TRIP CRITERIA</u><br><u>IF BOTH</u> conditions listed below occur, <u>TI</u><br>a. RCS injection flow verified:<br>1) SI Pump flow indication, F925 - INI<br><u>OR</u>                                                                                                                                                                                                                                                                                                        | <u>HEN</u> trip RXCPs:<br>DICATES FLOW                                                                                                                                                                                                                                                                                                                           |                                   |  |  |  |
| <ol> <li>2) RHR Pump flow indication. F626 or 1</li> <li>b. RCS subcooling based on Core Exit TCs<br/>CONTAINMENT]</li> </ol>                                                                                                                                                                                                                                                                                                                                                           | <sup>5</sup> 928 - INDICATES FLOW GR<br>- LESS THAN 15°F [45°F                                                                                                                                                                                                                                                                                                   | EATER THAN 375 GPM<br>FOR ADVERSE |  |  |  |
| 2 <u>SI ACTUATION CRITERIA</u><br><u>IF EITHER</u> condition listed below occurs,<br>OR SAFETY INJECTION, Step 1:<br>a. RCS subcooling based on Core Exit TCs<br>CONTAINMENT]<br>b. PRZR level - CANNOT BE MAINTAINED GREAT                                                                                                                                                                                                                                                             | 2 <u>SI ACTUATION CRITERIA</u><br><u>IF EITHER</u> condition listed below occurs, <u>THEN</u> actuate SI <u>AND GO TO</u> E-O, REACTOR TRIP<br>OR SAFETY INJECTION, Step 1:<br>a. RCS subcooling based on Core Exit TCs - LESS THAN 30°F [65°F FOR ADVERSE<br>CONTAINMENT]<br>b. PRZR level - CANNOT BE MAINTAINED GREATER THAN 5% [30% FOR ADVERSE CONTAINMENT] |                                   |  |  |  |
| <ul> <li><u>FAULTED SG ISOLATION CRITERIA</u></li> <li><u>IF</u> any SG pressure decreasing in an uncontrolled manner <u>OR</u> any SG completely depressurized, <u>AND</u> the remaining SG is intact, <u>THEN</u> the following may be performed:         <ul> <li>a. Isolate feed flow to faulted SG.</li> <li>b. Maintain total feed flow greater than 200 gpm until narrow range level in at least one SG is greater than 4% [15% FOR ADVERSE CONTAINMENT].</li> </ul> </li> </ul> |                                                                                                                                                                                                                                                                                                                                                                  |                                   |  |  |  |
| 4 <u>RUPTURED SG ISOLATION CRITERIA</u><br><u>IF</u> any SG level rises in an uncontrolled manner <u>OR</u> any SG has abnormal radiation,                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                  |                                   |  |  |  |
| narrow range level in affected SG(s) is CONTAINMENT], <u>THEN</u> feed flow may be isol                                                                                                                                                                                                                                                                                                                                                                                                 | greater than 4% [15% FOR<br>ated to affected SG(s).                                                                                                                                                                                                                                                                                                              | ADVERSE                           |  |  |  |
| 5 <u>AFW SUPPLY SWITCHOVER CRITERION</u><br><u>IF</u> CST level decreases to less than 8%, <u>THEN</u> switch to alternate AFW pump water<br>source per A-FW-05B.                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                  |                                   |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                  |                                   |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                  |                                   |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                  |                                   |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DRATION            | <b>NO.</b> E  | -0                                  | REV              | ٧             |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------|-------------------------------------|------------------|---------------|----|
| KEWAUNEE NUCLEAR POWER P                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>TITLE</b> R     | EACTOR TRIP   | OR SAFETY                           | INJECTIC         | N             |    |
| EMERGENCY OPERATING PROCED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | URES               | DATE N        | IOV 18 2003                         | PAGE             | 1 <b>of</b>   | 18 |
| REVIEWED BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    | APPRO         | VED BY                              |                  |               | _  |
| NUCLEAR XES POR<br>SAFETY RELATED NO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | C REVIEW<br>NUIRED | ⊠ YES<br>□ NO | SRO APPROV<br>TEMPORARY<br>REQUIRED | AL OF<br>Changes | ⊠ YES<br>□ NO |    |
| 1.0 <u>INTRODUCTION</u> 1.1 This procedure should be implemented after any unexpected Reactor Trip or Safety Injection actuation. The purpose of this procedure is to verify proper response of the automatic protection systems following actuation of REACTOR TRIP or SAFETY INJECTION, to assess Plant conditions, and identify the appropriate recevery procedure.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    |               |                                     |                  |               | 5. |
| <ul> <li>verify proper response of the automatic protection systems following actuation of REACTOR TRIP or SAFETY INJECTION, to assess Plant conditions, and identify the appropriate recovery procedure.</li> <li>2.0 SYMPTOMS <ul> <li>2.1 Following are symptoms of a Reactor Trip:</li> <li>a. Any Reactor Trip Annunciator LIT.</li> <li>b. Rapid decrease in neutron level indicated by nuclear instrumentation.</li> <li>c. All shutdown and control rods are fully inserted. Rod Bottom Lights are LIT.</li> <li>d. Rapid decrease in unit load to zero power.</li> <li>e. Turbine Trip followed by tripping of G1.</li> </ul> </li> <li>2.2 Following are symptoms of Reactor Trip and Safety Injection: <ul> <li>a. Any SI Annunciator LIT.</li> <li>b. SI Pumps in service.</li> <li>c. Containment Isolation Annunciator LIT.</li> </ul> </li> <li>3.1 Reactor and Primary System: <ul> <li>a. Reactor Trip Breakers open.</li> </ul> </li> </ul> |                    |               |                                     |                  |               |    |

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| V   | VISC                                                                | ONSIN PUBLIC SERVICE CORPORATION                                                                       | NO.              | E-0                    |          |              |
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|     | KEWAUNEE NUCLEAR POWER PLANT TITLE REACTOR TRIP OR SAFETY INJECTION |                                                                                                        |                  |                        |          | ECTION       |
|     | EN                                                                  | MERGENCY OPERATING PROCEDURES                                                                          | DATE             | NOV 18 2003            | PAGE 2   | <b>of</b> 18 |
|     |                                                                     |                                                                                                        |                  |                        |          |              |
| 3.2 | Tur                                                                 | bine and Associated Systems:                                                                           |                  |                        |          |              |
|     | a.                                                                  | Turbine trips.                                                                                         |                  |                        |          |              |
|     | b.                                                                  | Turbine stop, control, interceptor steam supply valves close.                                          | r, reheat        | er stop, and re        | eheater  |              |
|     | c.                                                                  | Extraction steam check valves clos                                                                     | e for:           |                        |          |              |
|     |                                                                     | 1) Feedwater Heaters 14A and 14B.                                                                      |                  |                        |          |              |
|     |                                                                     | 2) Feedwater Heaters 15A and 15B.                                                                      |                  |                        |          |              |
|     | d.                                                                  | Initiation of Steam Dump.                                                                              |                  |                        |          |              |
|     | e.                                                                  | Turbine Generator Breaker (G-1) and the Field Breaker (41 Bkr)<br>trip after 30 seconds.               |                  |                        |          |              |
|     | f.                                                                  | 4160V auxiliary power shifts from the Main Auxiliary Transformer to the Reserve Auxiliary Transformer. |                  |                        |          |              |
| 3.3 | 3.3 Safeguards Systems:                                             |                                                                                                        |                  |                        |          |              |
|     | a.                                                                  | Diesel Generators start.                                                                               |                  |                        |          |              |
|     | b.                                                                  | b. Safety Injection sequence initiates.                                                                |                  |                        |          |              |
|     | c.                                                                  | Containment Isolation occurs.                                                                          |                  |                        |          |              |
|     | d.                                                                  | Feedwater Isolation occurs and the Motor Driven Auxiliary Feedwater Pumps start.                       |                  |                        |          |              |
|     | e.                                                                  | Service Water headers A and B are isolated.                                                            |                  |                        |          |              |
|     | f.                                                                  | Main Steam Line Isolation occurs on:                                                                   |                  |                        |          |              |
|     |                                                                     | 1) Hi-Hi Containment pressure at                                                                       | 17 psig.         |                        |          | ·            |
|     |                                                                     | 2) Hi-Hi steam flow <u>AND</u> Safety Ir                                                               | jection.         |                        |          |              |
|     |                                                                     | 3) Hi steam flow <u>AND</u> Lo-Lo Tave (                                                               | (540°F) <u>A</u> | <u>ND</u> Safety Injec | ction.   |              |
|     | g.                                                                  | In the event of hi-hi Containment Spray will be actuated.                                              | pressure         | (23 psig) Cont         | cainment |              |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                   | NO. E-0                                                                                                                                                                                                 |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                           | TITLE REACTOR TRIP OR SAFETY INJECTION                                                                                                                                                                  |
| EMERGENCY OPERATING PROCEDURES                                                                         | DATE NOV 18 2003 PAGE 3 of 18                                                                                                                                                                           |
| STEP OPERATOR ACTIONS                                                                                  | CONTINGENCY ACTIONS                                                                                                                                                                                     |
| 4.0 DETAILED PROCEDURE                                                                                 |                                                                                                                                                                                                         |
| <u>NOTE</u> : E-O Quick Reference Foldout page                                                         | should be open.                                                                                                                                                                                         |
| <u>NOTE</u> : The Emergency Plan Implementing P<br>periodically to evaluate if the en<br>be activated. | rocedures should be reviewed<br>mergency response organization should                                                                                                                                   |
| 1 Verify Reactor Trip:                                                                                 | Perform the following:                                                                                                                                                                                  |
| <ul> <li>Reactor Trip and Bypass Breaker</li> <li>OPEN</li> </ul>                                      | rs a. Manually trip reactor.                                                                                                                                                                            |
| AND                                                                                                    | b. <u>IF</u> any Reactor Trip <u>OR</u> Bypass<br>Breaker is <u>NOT</u> open, <u>THEN</u><br>perform the following:                                                                                     |
| <ul> <li>All Rod Position Indicators - A<br/>ZERO</li> </ul>                                           | 1) Manually insert control rods.                                                                                                                                                                        |
| AND                                                                                                    | 2) Open Bus 33 and Bus 43<br>supply breakers to                                                                                                                                                         |
| <ul> <li>All Rod Bottom Lights - LIT</li> </ul>                                                        | de-energize Rod Drive MG<br>Sets.                                                                                                                                                                       |
| <ul> <li>Neutron flux - DECREASING</li> </ul>                                                          | c. <u>IF</u> reactor power is greater<br>than or equal to 5% <u>OR</u><br>intermediate range power is<br>increasing, <u>THEN GO TO</u> FR-S.1,<br>RESPONSE TO NUCLEAR POWER<br>GENERATION/ATWS, Step 1. |
|                                                                                                        | d. <u>IF</u> any Reactor Trip <u>OR</u> Bypass<br>Breaker is <u>NOT</u> open, <u>THEN</u><br>perform the following:                                                                                     |
|                                                                                                        | 1) Dispatch operator to locally<br>open Reactor Trip <u>AND</u> Bypass<br>Breakers.                                                                                                                     |
|                                                                                                        | 2) Continue with Step 2. <u>WHEN</u><br>the Reactor Trip <u>AND</u> Bypass<br>Breakers have been opened.<br><u>THEN</u> re-energize Bus 33 and<br>Bus 43.                                               |
|                                                                                                        |                                                                                                                                                                                                         |

| WISCONSIN PUBLIC SERVICE CORPORAT                                                                                                         | TION NO.        | E-0                                                                                                                                                                                                                                                                                                                             |
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| KEWAUNEE NUCLEAR POWER PLAN                                                                                                               | T TIT           | LE REACTOR TRIP OR SAFETY INJECTION                                                                                                                                                                                                                                                                                             |
| EMERGENCY OPERATING PROCEDURE                                                                                                             | S DATI          | E NOV 18 2003 PAGE 4 of 18                                                                                                                                                                                                                                                                                                      |
| STEP OPERATOR ACTION                                                                                                                      | S               | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                             |
| <ul> <li>2 Verify Turbine Trip:</li> <li>• HP Turbine impulse pressu<br/>TRENDING TO ZERO</li> <li>• All Turbine Stop Valves -</li> </ul> | ire -<br>CLOSED | <ul> <li>Manually trip Turbine. <u>IF</u> Turbine will <u>NOT</u> trip, <u>THEN</u> perform the following:</li> <li>a. Manually run back Turbine.</li> <li>b. Stop both EH Oil Pumps.</li> <li>c. <u>IF</u> Turbine Control Valves can <u>NOT</u> be closed, <u>THEN</u> manually initiate Main Steamline Isolation.</li> </ul> |
| <ul> <li>3 Verify Power To Emergency A<br/>Buses:</li> <li>a. Bus 5 <u>OR</u> 6 - AT LEAST ON<br/>ENERGIZED</li> </ul>                    | ιE              | a. <u>GO TO ECA-O.O. LOSS OF ALL AC</u><br>POWER, Step 1.                                                                                                                                                                                                                                                                       |



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| WISCO          | DNSIN PUBLIC SERVICE CORPORATION                                                                                                                 | NO.               | E-0                                   |                      |              |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------|----------------------|--------------|
| к              | KEWAUNEE NUCLEAR POWER PLANT                                                                                                                     |                   | TITLE REACTOR TRIP OR SAFETY INJECTIO |                      |              |
| EM             | ERGENCY OPERATING PROCEDURES                                                                                                                     | DATE              | NOV 18 2003                           | PAGE 9               | <b>of</b> 18 |
|                |                                                                                                                                                  |                   |                                       |                      |              |
| STEP           | OPERATOR ACTIONS                                                                                                                                 |                   | CONTINGEN                             | CY ACTIONS           |              |
| 13             | 13 Verify Containment And Containment<br>Ventilation Isolation:                                                                                  |                   |                                       |                      |              |
|                | a. CI Active Status Panel lights<br>LIT                                                                                                          | - a               | . Manually close<br>dampers.          | e valves or          |              |
| 14             | Verify ESF Equipment Running:                                                                                                                    |                   |                                       |                      |              |
|                | a. SI pumps – BOTH RUNNING                                                                                                                       | a                 | . Manually star                       | t SI pumps.          |              |
|                | <b>b.</b> RHR pumps - BOTH RUNNING                                                                                                               | þ                 | . Manually star                       | t RHR pumps.         |              |
|                | c. CC pumps - BOTH RUNNING                                                                                                                       | c                 | . Manually star                       | t CC pumps.          | [            |
|                | d. SI Active Status Panel lights<br>LIT                                                                                                          | - d               | . Manually alig<br>necessary.         | n equipment a        | S            |
| •••••          | <u></u>                                                                                                                                          | <u></u>           | •••••                                 |                      | • • • • •    |
| SI in<br>Prote | SI initiation inhibits automatic Fire Pump operation; monitor the Fire Protection Status Panel and manually operate the Fire Pumps as necessary. |                   |                                       |                      |              |
| *****          | ••••••                                                                                                                                           | • • • • • • • • • | • • • • • • • • • • • • • • • • • •   |                      | ****         |
| 15             | Verify SI Flow:                                                                                                                                  |                   |                                       |                      |              |
|                | a. RCS pressure - LESS THAN<br>2200 PSIG [2000 PSIG FOR<br>ADVERSE CONTAINMENT]                                                                  | а                 | . <u>GO TO</u> Step 16                |                      |              |
|                | b. SI cold leg injection flow<br>indication, F925 - INDICATES<br>FLOW                                                                            | b                 | . Manually star valves.               | t pumps <u>AND</u> a | lign         |
|                | c. RCS pressure – LESS<br>THAN 150 PSIG                                                                                                          | С                 | . <u>GO TO</u> Step 16                |                      |              |
|                | d. RHR Pump flow indication, F62<br>and F928 - INDICATE FLOW                                                                                     | 6 d               | . Manually star valves.               | t pumps <u>AND</u> a | lign         |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                               | <b>NO.</b> E-0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                       | TITLE REACTOR TRIP OR SAFETY INJECTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                                                     | DATE NOV 18 2003 PAGE 10 of 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| STEP OPERATOR ACTIONS                                                                                                                                                                                                                                                                                              | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 16 Verify Total AFW Flow - GREATER<br>THAN 200 GPM                                                                                                                                                                                                                                                                 | <ul> <li>Perform the following:</li> <li>a. <u>IF</u> SG narrow range level<br/>greater than 4% [15% FOR<br/>ADVERSE CONTAINMENT] in any SG.<br/><u>THEN</u> control feed flow to<br/>maintain narrow range level.</li> <li>b. <u>IF</u> narrow range level less than<br/>4% [15% FOR ADVERSE<br/>CONTAINMENT] in both SGs, <u>THEN</u><br/>perform the following:</li> <li>1) Manually start pumps and<br/>align valves as necessary to<br/>establish greater than<br/>200 gpm AFW flow.</li> <li>2) <u>IF</u> AFW flow greater than<br/>200 gpm can <u>NOT</u> be<br/>established, <u>THEN GO TO</u><br/>FR-H.1, RESPONSE TO LOSS OF<br/>SECONDARY HEAT SINK, Step 1.</li> </ul> |
| <ul> <li>17 Check RXCP Seal Cooling:</li> <li>a. CC supply to RXCP Thermal Barriers - NORMAL</li> <li>1) Valves CC-600, CC-601A(B), CC-610A(B), and CC-612A(B) OPEN</li> <li>2) RXCP Thermal Barrier temperatures, T614 and T610 - NORMAL</li> <li>3) RXCP Bearing temperatures, T132 and T125 - NORMAL</li> </ul> | <ul> <li>a. <u>IF</u> CC to an RXCP is lost, <u>THEN</u>:</li> <li>a) Trip the RXCP.</li> <li>b) Start one Charging Pump at minimum speed for seal injection.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

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| wisco | WISCONSIN PUBLIC SERVICE CORPORATION               |        | E-0                                                                                                                                                                                                                                                                                                                  |
|-------|----------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| к     | KEWAUNEE NUCLEAR POWER PLANT                       |        | REACTOR TRIP OR SAFETY INJECTION                                                                                                                                                                                                                                                                                     |
| EM    | IERGENCY OPERATING PROCEDURES                      | DATE   | NOV 18 2003 PAGE 12 of 18                                                                                                                                                                                                                                                                                            |
| STEP  | OPERATOR ACTIONS                                   | ור     | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                  |
| 19    | Check Pressurizer PORVs And Spra<br>Valves Closed: | I<br>y |                                                                                                                                                                                                                                                                                                                      |
|       | a. PORVs - CLOSED                                  | a      | . <u>IF</u> PRZR pressure less than<br>2315 psig, <u>THEN</u> manually close<br>PORVs. <u>IF</u> any valve can <u>NOT</u> be<br>closed, <u>THEN</u> manually close its<br>block valve. <u>IF</u> block valve<br>can <u>NOT</u> be closed, <u>THEN GO TO</u><br>E-1, LOSS OF REACTOR OR<br>SECONDARY COOLANT, Step 1. |
|       | b. Normal PRZR Spray Valves -<br>CLOSED            | b      | IF PRZR pressure less than<br>2260 psig, <u>THEN</u> manually close<br>valves. <u>IF</u> valves can <u>NOT</u> be<br>closed, <u>THEN</u> stop RXCP(s)<br>supplying failed spray valve(s).                                                                                                                            |
|       | c. CVC-15, Auxiliary Spray Valve<br>CLOSED         | - с    | Manually close Auxiliary Spray<br>Valve. <u>IF</u> valve can <u>NOT</u> be<br>closed, <u>THEN</u> perform the<br>following:                                                                                                                                                                                          |
|       |                                                    |        | 1) Isolate Letdown.                                                                                                                                                                                                                                                                                                  |
|       |                                                    |        | <ol> <li>Isolate auxiliary spray line<br/>by closing CVC-7, Charging<br/>Line Flow Control Valve.</li> </ol>                                                                                                                                                                                                         |
|       |                                                    |        | 3) Establish Excess Letdown per<br>N-CVC-35B, CHARGING AND<br>VOLUME CONTROL, after<br>Containment Isolation is<br>reset.                                                                                                                                                                                            |
|       |                                                    |        |                                                                                                                                                                                                                                                                                                                      |
|       |                                                    |        |                                                                                                                                                                                                                                                                                                                      |
|       |                                                    |        |                                                                                                                                                                                                                                                                                                                      |





| WISCO    | WISCONSIN PUBLIC SERVICE CORPORATION                                                             |      | NO. E-0                                                                                   |                                                                                         |  |
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| кі       | KEWAUNEE NUCLEAR POWER PLANT                                                                     |      | TITLE REACTOR TRIP OR SAFETY INJEC                                                        |                                                                                         |  |
| EM       | ERGENCY OPERATING PROCEDURES                                                                     | DATE | NOV 18 2003                                                                               | <b>PAGE</b> 15 of 18                                                                    |  |
| C TTED   | OPERATOR ACTIONS                                                                                 |      | CONTINCEN                                                                                 | CY ACTIONS                                                                              |  |
| <b>J</b> |                                                                                                  |      |                                                                                           |                                                                                         |  |
| 24       | Check If SI Should Be Terminated                                                                 | :    |                                                                                           |                                                                                         |  |
|          | a. RCS subcooling based on Core<br>Exit TCs - GREATER THAN 30°F                                  | а    | . <u>GO TO</u> Step 25                                                                    |                                                                                         |  |
|          | b. RCS pressure - GREATER THAN<br>2200 PSIG <u>AND</u> STABLE OR<br>INCREASING                   | b    | o. <u>GO TO</u> Step 25                                                                   |                                                                                         |  |
|          | c. Pressurizer level - GREATER<br>THAN 5%.                                                       | C    | . Stabilize RCS<br>normal spray.                                                          | pressure with<br><u>GO</u> <u>TO</u> Step 25.                                           |  |
|          | d. Secondary heat sink:                                                                          | d    | I. <u>IF</u> neither co                                                                   | ndition is<br>EN GO TO Step 25                                                          |  |
|          | <ul> <li>Total feed flow to Steam<br/>Generators - GREATER THAN<br/>200 GPM</li> </ul>           |      | 300131160, <u>111</u>                                                                     | <u>In do 10</u> 500p 25.                                                                |  |
|          | <u>OR</u>                                                                                        |      |                                                                                           |                                                                                         |  |
|          | <ul> <li>Narrow range level in at<br/>least one Steam Generator -<br/>GREATER THAN 4%</li> </ul> |      |                                                                                           |                                                                                         |  |
|          | e. <u>GO</u> <u>TO</u> ES-1.1, SI TERMINATION,<br>Step 1                                         |      |                                                                                           |                                                                                         |  |
| 25       | Initiate Monitoring Of Critical<br>Safety Function Status Trees                                  |      |                                                                                           |                                                                                         |  |
| 26       | Check Steam Generator Levels:                                                                    |      |                                                                                           |                                                                                         |  |
|          | a. Narrow range level – GREATER<br>THAN 4%                                                       | a    | a. Maintain tota<br>greater than<br>narrow range<br>4% in at leas                         | l feed flow<br>200 gpm until<br>level greater than<br>t one SG.                         |  |
|          | b. Control feed flow to maintain<br>narrow range level between 4%<br>and 50%                     | ł    | D. <u>IF</u> narrow ran<br>continues to<br>uncontrolled<br>E-3, STEAM GE<br>RUPTURE, Step | ge level in any SG<br>increase in an<br>manner, <u>THEN GO TO</u><br>NERATOR TUBE<br>1. |  |

| WISCO            | ONSIN PUBLIC SERVICE CORPORATION                                                                        | <b>NO.</b> E-0                                                                                                                                                                         |  |  |  |  |
|------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| KE               | WAUNEE NUCLEAR POWER PLANT                                                                              | TITLE REACTOR TRIP OR SAFETY INJECTION                                                                                                                                                 |  |  |  |  |
| EM               | ERGENCY OPERATING PROCEDURES                                                                            | DATE NOV 18 2003 PAGE 16 of 18                                                                                                                                                         |  |  |  |  |
|                  |                                                                                                         |                                                                                                                                                                                        |  |  |  |  |
|                  | OPERATOR ACTIONS                                                                                        | CONTINGENCI ACTIONS                                                                                                                                                                    |  |  |  |  |
| 27               | Check Main Steamline Radiation<br>Channels R-31 And R-33 On SPDS -<br>NORMAL                            | <u>GO</u> <u>TO</u> E-3, STEAM GENERATOR TUBE<br>RUPTURE, Step 1.                                                                                                                      |  |  |  |  |
| 28               | Check Auxiliary Building Radiation - NORMAL                                                             | on Evaluate cause of abnormal<br>conditions. <u>IF</u> the cause is a<br>loss of RCS inventory outside<br>Containment, <u>THEN GO TO</u> ECA-1.2,<br>LOCA OUTSIDE CONTAINMENT, Step 1. |  |  |  |  |
| 29               | Check PRT Conditions - NORMAL                                                                           | Evaluate cause of abnormal conditions.                                                                                                                                                 |  |  |  |  |
| 30               | Isolate Letdown:                                                                                        |                                                                                                                                                                                        |  |  |  |  |
|                  | a. Place control switches for<br>LD-4A, B, and C, Letdown<br>Orifice Isolation Valves, to<br>CLOSE      |                                                                                                                                                                                        |  |  |  |  |
|                  | CAUTION                                                                                                 |                                                                                                                                                                                        |  |  |  |  |
| If off<br>restar | If offsite power is lost after SI reset, manual action may be required to restart safeguards equipment. |                                                                                                                                                                                        |  |  |  |  |
| *****            | ***************************************                                                                 |                                                                                                                                                                                        |  |  |  |  |
| 31               | Reset SI                                                                                                | x                                                                                                                                                                                      |  |  |  |  |
| 32               | Reset Containment Isolation:                                                                            |                                                                                                                                                                                        |  |  |  |  |
|                  | a. Depress both Containment<br>Isolation Reset pushbuttons                                              |                                                                                                                                                                                        |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                          | NO. E-0                                                                            |
|---------------------------------------------------------------|------------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                  | TITLE REACTOR TRIP OR SAFETY INJECTION                                             |
| EMERGENCY OPERATING PROCEDURES                                | DATE NOV 18 2003 PAGE 17 of 18                                                     |
|                                                               | []                                                                                 |
| STEP OPERATOR ACTIONS                                         | CONTINGENCY ACTIONS                                                                |
| 33 Verify Instrument Air To<br>Containment - ESTABLISHED      | Start one Air Compressor <u>AND</u><br>establish Instrument Air to<br>Containment. |
|                                                               |                                                                                    |
| <u>CAU</u><br>If PCS pressure decreases in an uncontr         | olled manner below 150 psig the RHR                                                |
| Pumps must be manually restarted to sup                       | ply water to RCS.                                                                  |
|                                                               | •••••                                                                              |
| 34 Check If RHR Pumps Should Be<br>Stopped:                   |                                                                                    |
| a. Check RCS pressure – GREATER<br>THAN 150 PSIG              | a. <u>GO TO</u> E-1, LOSS OF REACTOR OR<br>SECONDARY COOLANT, Step 1.              |
| b. Check RCS pressure - STABLE O<br>INCREASING                | R b. <u>GO TO</u> Step 35.                                                         |
| c. Check RHR injection flow, F62<br>and F928 - EQUAL TO O GPM | 6 c. <u>GO</u> <u>TO</u> Step 35.                                                  |
| d. Stop RHR Pumps <u>AND</u> place in A                       | υтο                                                                                |
|                                                               |                                                                                    |
|                                                               |                                                                                    |
|                                                               |                                                                                    |
|                                                               |                                                                                    |
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| WISCO | INSIN PUBLIC SERVICE CORPORATION                                                                                                                                                 | NO.  | E-0                                                                                                                                                                     |                                                                                                                               |              |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------|
| KE    | KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                     |      | REACTOR TRIP O                                                                                                                                                          | DR SAFETY INJE                                                                                                                | CTION        |
| EM    | EMERGENCY OPERATING PROCEDURES                                                                                                                                                   |      | NOV 18 2003                                                                                                                                                             | <b>PAGE</b> 18                                                                                                                | <b>of</b> 18 |
| STEP  | OPERATOR ACTIONS                                                                                                                                                                 |      | CONTINGENO                                                                                                                                                              | CY ACTIONS                                                                                                                    |              |
| 35    | Check If Charging Flow Has Been<br>Established:                                                                                                                                  |      |                                                                                                                                                                         |                                                                                                                               |              |
|       | a. Charging Pumps – AT LEAST ONE<br>RUNNING                                                                                                                                      | a.   | Perform the fo<br>1) <u>IF</u> CC flow<br>Thermal Bar<br><u>THEN</u> locall<br>CVC-204A(B)<br>injection t<br>RXCP(s) bef<br>Charging Pu<br>2) Start Charg<br>necessary. | ollowing:<br>to RXCP(s)<br>rier is lost,<br>y close<br>to isolate s<br>to affected<br>fore starting<br>imps.<br>ging Pumps as | eal          |
|       | b. Establish flow to maintain PR<br>level - GREATER THAN 5%                                                                                                                      | ZR   |                                                                                                                                                                         |                                                                                                                               |              |
| 36    | Check If Diesel Generators Should<br>Be Stopped:                                                                                                                                 | d    |                                                                                                                                                                         |                                                                                                                               |              |
|       | <ul> <li>a. Verify Bus 5 and Bus 6 -<br/>ENERGIZED BY OFFSITE POWER</li> <li>b. Stop any unloaded Diesel<br/>Generator <u>AND</u> place in AUTO,<br/>30 seconds apart</li> </ul> | a.   | Perform the fo<br>1) Restore off<br>2) Verify Dies<br>- LESS THAN                                                                                                       | ollowing:<br>Site power.<br>Sel Generator<br>& 2950 KW.                                                                       | load         |
| 37    | <u>60 TO</u> Step 18<br>-                                                                                                                                                        | END- |                                                                                                                                                                         |                                                                                                                               |              |
|       |                                                                                                                                                                                  |      | ·····                                                                                                                                                                   |                                                                                                                               |              |

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| WISCONSIN PUBLIC SERVICE CORPORATION |                                                                                                                                                                                                    | NO. ECA-0.0                   |                                                                                                       | REV         | AB            |           |             |    |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------|-------------|---------------|-----------|-------------|----|
|                                      | KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                       |                               |                                                                                                       | TITLE L     | .OSS OF ALL A | C POWER   |             |    |
|                                      | EMERGENCY OPERATING PROCEDURES                                                                                                                                                                     |                               |                                                                                                       | DATE A      | APR 13 2004   | PAGE      | 1 <b>of</b> | 24 |
| REVIEWED BY                          |                                                                                                                                                                                                    |                               | APPRO                                                                                                 | VED BY      |               |           |             |    |
| NUCLEAR SAFETY RELATED NO REQUIRED   |                                                                                                                                                                                                    |                               | YES SRO APPROVAL OF     SRO APPROVAL OF     TEMPORARY CHANGES     REQUIRED     NO     REQUIRED     NO |             |               |           |             |    |
| 1.0                                  | INTRO                                                                                                                                                                                              | DUCTION                       |                                                                                                       |             |               |           |             |    |
|                                      | 1.1 The purpose of this procedure is to verify proper response of<br>available automatic protection systems following the loss of all<br>AC power, and to specify appropriate operator actions to: |                               |                                                                                                       |             |               |           |             |    |
|                                      |                                                                                                                                                                                                    | a. Minimize RO                | CS inventory lo                                                                                       | \$\$.       |               |           |             |    |
|                                      |                                                                                                                                                                                                    | b. Maintain ar                | ı ultimate heat                                                                                       | sink.       |               |           |             |    |
|                                      |                                                                                                                                                                                                    | c. Restore AC                 | power.                                                                                                |             |               |           |             |    |
|                                      |                                                                                                                                                                                                    | d. Recover the                | e plant followi                                                                                       | ng restorat | ion of AC po  | wer.      |             |    |
| 2.0                                  | <u>SYMP</u>                                                                                                                                                                                        | TOMS_OR_ENTRY_CONT            | DITIONS                                                                                               |             |               |           |             |    |
|                                      | 2.1                                                                                                                                                                                                | The following ar              | e symptoms of                                                                                         | a loss of a | 111 AC power: |           |             |    |
|                                      |                                                                                                                                                                                                    | a. Control roo                | om standard lig                                                                                       | hting off a | and emergency | lighting  | on.         |    |
|                                      |                                                                                                                                                                                                    | b. Plant safeg                | juards equipmen                                                                                       | t not energ | jized.        |           |             |    |
|                                      |                                                                                                                                                                                                    | c. Zero voltag                | ge indication f                                                                                       | rom the pla | int auxiliary | transfor  | mers.       |    |
|                                      |                                                                                                                                                                                                    | d. Zero voltag                | ge indication f                                                                                       | rom the mai | in and emerge | ncy AC bu | ses.        |    |
|                                      | 2.2                                                                                                                                                                                                | This procedure i              | s entered from                                                                                        | :           |               |           |             |    |
|                                      |                                                                                                                                                                                                    | a. Directly, w<br>observing t | without implementing E-O, as a result of an operator the symptoms of a loss of all AC power.          |             |               |           |             |    |
|                                      | b. E-O, REACTOR TRIP OR SAFETY INJECTION, Step 3, on the indication<br>that all emergency AC busses are deenergized.                                                                               |                               |                                                                                                       |             |               |           |             |    |
| 3.0                                  | 3.0 AUTOMATIC ACTIONS                                                                                                                                                                              |                               |                                                                                                       |             |               |           |             |    |
|                                      | 3.1                                                                                                                                                                                                | Reactor Trip.                 |                                                                                                       |             |               | •         |             |    |
|                                      | 3.2 Turbine Trip.                                                                                                                                                                                  |                               |                                                                                                       |             |               |           |             |    |

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| WISCONSIN PUBLIC SERVICE CO                                                                                              | RPORATION                                 | NO.  |     | ECA-0.0                                                                                      |                                                                        | -                                |                |    |
|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------|-----|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------|----------------|----|
| KEWAUNEE NUCLEAR POWE                                                                                                    | KEWAUNEE NUCLEAR POWER PLANT              |      | E   | LOSS OF ALL AC                                                                               | POWER                                                                  |                                  |                |    |
| EMERGENCY OPERATING PROC                                                                                                 | EDURES                                    | DATE |     | APR 13 2004                                                                                  | PAGE                                                                   | 3                                | of             | 24 |
| STEP OPERATOR A                                                                                                          | CTIONS                                    |      | [   | CONTINGENO                                                                                   | CY ACTIO                                                               | NS                               |                | ]  |
| 3 Check That RCS Is Iso                                                                                                  | lated:                                    |      | а   | IF PR7R pressu                                                                               | re less t                                                              | than                             |                |    |
|                                                                                                                          | .0                                        |      | u . | 2315 psig, <u>THE</u><br>PORVs.                                                              | <u>N</u> manuall                                                       | ly clo                           | se             |    |
| b. Letdown Isolation<br>CLOSED                                                                                           | Valves -                                  |      | b.  | Manually close                                                                               | e valves.                                                              |                                  |                |    |
| c. Excess Letdown Isc<br>- CLOSED                                                                                        | olation Valve                             | 25   | c.  | Manually close                                                                               | e valves.                                                              |                                  |                |    |
| d. Other RCS vent pat                                                                                                    | hs - CLOSED:                              | :    | d.  | Close any open                                                                               | RCS vent                                                               | t path                           | •              |    |
| <ul> <li>PR-33A, PRZR Hea</li> <li>RC-45A, Reactor<br/>Train A</li> <li>RC-46, RX/PRZR H<br/>PRZR Relief Tank</li> </ul> | d Vent Trair<br>Head Vent<br>lead Vent to | n A  |     |                                                                                              |                                                                        |                                  |                |    |
| <ul> <li>PR-33B, PRZR Hea</li> <li>RC-45B, Reactor<br/>Train B</li> <li>RC-49, RX/PRZR H<br/>Containment</li> </ul>      | d Vent Trair<br>Head Vent<br>lead Vent to | n B  |     |                                                                                              |                                                                        |                                  |                |    |
| 4 Verify AFW Flow - GRE<br>200 GPM                                                                                       | ATER THAN                                 |      | Pe  | rform the follo                                                                              | owing:                                                                 |                                  |                |    |
|                                                                                                                          |                                           |      | a.  | Verify Turbine<br>running. <u>IF M</u><br>open steam sup<br>MS-100A, MS-10<br>MS-102, as nec | e-Driven A<br><u>AOT, THEN</u><br>Oply valve<br>OOB, MS-10<br>cessary. | AFW Pu<br>manua<br>es,<br>D3, an | mp<br>11y<br>d |    |
|                                                                                                                          |                                           |      | b.  | Verify proper<br>alignment of A<br><u>NOT, THEN</u> manu<br>as necessary.                    | emergency<br>NFW valves<br>Wally alig                                  | y<br>s. <u>IF</u><br>gn val      | ves            |    |
|                                                                                                                          |                                           |      |     |                                                                                              |                                                                        |                                  |                |    |

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| WISCONSI | N PUBLIC SERVICE CORPORATION                         | NO.   | ECA-0.0                                                                             |                                                                                             |
|----------|------------------------------------------------------|-------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| KEWA     | UNEE NUCLEAR POWER PLANT                             | TITLE | LOSS OF ALL A                                                                       | C POWER                                                                                     |
| EMERG    | ENCY OPERATING PROCEDURES                            | DATE  | APR 13 2004                                                                         | PAGE 4 of 24                                                                                |
|          |                                                      |       |                                                                                     |                                                                                             |
| STEP     | OPERATOR ACTIONS                                     |       | CONTINGEN                                                                           | CY ACTIONS                                                                                  |
| 5 Re     | estore Power To Bus 5 Or Bus 6:                      |       |                                                                                     |                                                                                             |
| a.       | Energize Bus 5 or Bus 6 with a Diesel Generator:     | 8     |                                                                                     |                                                                                             |
|          | 1) Start either Diesel Genera                        | tor   | 1) Start and<br>Generator p<br>ABNORMAL D<br>A(B) OPERA<br>Control Roo              | load either Diesel<br>Der A-DGM-10A(B),<br>IESEL GENERATOR<br>TION, from the<br>Dm.         |
|          |                                                      |       | <u>IF</u> neither<br>starts, <u>THI</u><br>Step 5.b wi<br>attempting<br>either Dies | Diesel Generator<br>EN continue with<br>Dile locally<br>to start and load<br>sel Generator. |
|          | 2) Verify Bus 5(6) -<br>AUTOMATICALLY ENERGIZED      |       | 2) Manually er<br>per A-DGM-1<br>DIESEL GENI<br>OPERATION p                         | nergize Bus 5(6)<br>LOA(B), ABNORMAL<br>ERATOR A(B)<br>Der Step 4.5.                        |
|          |                                                      |       | <u>IF</u> bus can<br><u>THEN</u> manual<br>Diesel Gene<br>Step 5.a fo<br>AC bus.    | NOT be energized,<br>Ily trip the<br>erator <u>AND</u> repeat<br>or other emergency         |
|          |                                                      |       | <u>IF</u> neither<br>energized,<br>with Step {                                      | bus can be<br><u>THEN</u> continue<br>5.b.                                                  |
|          | 3) Verify Diesel Generator lo<br>- LESS THAN 2950 KW | ad    | 3) <u>IF</u> Diesel (<br>greater tha<br>remove unne<br>required:                    | Generator load<br>an 2950 KW, <u>THEN</u><br>ecessary loads as                              |
| ,<br>,   |                                                      |       | • Fire Pump<br>• Spent Fuc<br>• Other loa                                           | p<br>el Pool Pump<br>ads                                                                    |
| b.       | Check emergency AC buses -                           | b.    | . Perform the fo                                                                    | ollowing:                                                                                   |
|          | DUS 5 UN DUS O ENERGIZED                             |       | <ol> <li>Inform Syst<br/>the urgency<br/>power.</li> </ol>                          | tem Operating of<br>y of restoring                                                          |
|          |                                                      |       | 2) Start actic<br>portable po<br>sources.                                           | on to obtain<br>ower and water                                                              |
|          |                                                      |       | 3) <u>GO TO</u> Step<br>CAUTION PR                                                  | 6. OBSERVE<br>IOR TO STEP 6.                                                                |
| c.       | Return to procedure and step effect                  | in    |                                                                                     |                                                                                             |

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|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                      | TITLE LOSS OF ALL AC POWER                                                                                        |  |  |  |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                                    | DATE APR 13 2004 PAGE 5 of 24                                                                                     |  |  |  |  |  |  |
| STEP OPERATOR ACTIONS                                                                                             | CONTENCENCE ACTEONS                                                                                               |  |  |  |  |  |  |
|                                                                                                                   |                                                                                                                   |  |  |  |  |  |  |
| CAUTION                                                                                                           |                                                                                                                   |  |  |  |  |  |  |
| When power is restored to any 4160 volt should continue starting with Step 32.                                    | When power is restored to any 4160 volt emergency AC bus, recovery actions should continue starting with Step 32. |  |  |  |  |  |  |
| If an SI signal exists or if an SI sign<br>should be reset to permit manual loading                               | al is actuated during this procedure, it<br>g of equipment on an emergency AC bus.                                |  |  |  |  |  |  |
| A service water pump should be kept ava<br>emergency AC bus to provide Diesel Gener                               | ilable to automatically load on its rator cooling.                                                                |  |  |  |  |  |  |
| When off-site power is available, A-SUB to the plant.                                                             | -59 shall be followed for restoring power                                                                         |  |  |  |  |  |  |
| •••••••••••••••••••••••••••••••••••••••                                                                           |                                                                                                                   |  |  |  |  |  |  |
| 6 Place The Following Equipment - PULLOUT:                                                                        | [N                                                                                                                |  |  |  |  |  |  |
| <ul> <li>SI Pumps</li> <li>Containment Spray Pumps</li> <li>RHR Pumps</li> <li>Component Cooling Pumps</li> </ul> |                                                                                                                   |  |  |  |  |  |  |
| <ul> <li>Charging Pumps</li> <li>MD AFW Pumps</li> <li>Containment Fan Coil Units</li> </ul>                      |                                                                                                                   |  |  |  |  |  |  |
| 7 Isolate Service Water To Turbine<br>Building:                                                                   | 7 Isolate Service Water To Turbine<br>Building:                                                                   |  |  |  |  |  |  |
| a. Position Turbine Bldg SW<br>Selector switch to ISOL                                                            |                                                                                                                   |  |  |  |  |  |  |
| <u>NOTE</u> : Pre-planning of power restoration available sources is required.                                    | efforts based on the event and                                                                                    |  |  |  |  |  |  |
| 8 Dispatch Personnel To Locally<br>Restore Emergency AC Power                                                     |                                                                                                                   |  |  |  |  |  |  |



| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | NO.      | ECA-0.0     |            |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|------------|--------------|
| KEWAUNEE NUCLEAR POWER PLANT TITLE LOSS OF ALL AC POWE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |          |             |            |              |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DATE     | APR 13 2004 | PAGE 7     | <b>of</b> 24 |
| STEP OPERATOR ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          | CONTINGEN   | CY ACTIONS |              |
| NOTE:       Steps 13 and 14 should be perform         13       Perform The Following With The Control Operator:         a. Place the following control switches to OFF:       • Spent Fuel Pool Pump A         • Containment Dome Fan A       • Pressurizer Heater Group A         • Place the following control switches to PULLOUT:       • Boric Acid Transfer Pump A         • Service Water Pump A2       C. Maintain Core Exit Thermocoup Temperature at 547°F by Controlling setpoint of SD-3A and SD-3B, S/G A and B PORV         d. Open the following Relay Room panel doors:       • RR-101         • RR-102       • RR-104         • RR-103       • RR-104         • RR-104       • RR-112         • RR-117       • RR-118         • RR-118       • RR-116         • RR-116       • RR-116         • RR-116       • RR-116 | ed concu | rrently.    |            |              |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                          | NO. ECA-0.0                                              |  |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                  | TITLE LOSS OF ALL AC POWER                               |  |  |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                                                | DATE APR 13 2004 PAGE 8 of 24                            |  |  |  |  |  |
| STEP OPERATOR ACTIONS                                                                                                                                                                                                         | CONTINGENCY ACTIONS                                      |  |  |  |  |  |
| 14 Dispatch Auxiliary Operator Wi<br>Emergency Keyring And Two Way<br>Radio To Locally Perform The<br>Following:                                                                                                              | -h                                                       |  |  |  |  |  |
| a. Close MU-2A and MU-2B,Conde<br>Normal and Emergency Make-u<br>Valves                                                                                                                                                       | iser<br>D                                                |  |  |  |  |  |
| b. Perform at Bus 46:                                                                                                                                                                                                         |                                                          |  |  |  |  |  |
| 1) Open Bkr 14606, MCC-46C                                                                                                                                                                                                    | · · ·                                                    |  |  |  |  |  |
| 2) Close Bkr 14607, Bus 46<br>Tie                                                                                                                                                                                             | k 52                                                     |  |  |  |  |  |
| c. Perform in Battery Room A:                                                                                                                                                                                                 |                                                          |  |  |  |  |  |
| <ol> <li>Open the following break<br/>on MCC-52C:</li> </ol>                                                                                                                                                                  | ers                                                      |  |  |  |  |  |
| <ul> <li>A1, Auxiliary Feedwate<br/>Pump A Aux Lube Oi<br/>Pump</li> <li>A2. Battery Charger<br/>BRA-108</li> <li>B3. Inverter BRA-111<br/>(Instrument Bus 1)</li> <li>B5. Inverter BRA-112<br/>(Instrument Bus 4)</li> </ul> |                                                          |  |  |  |  |  |
| <ul> <li>B7, Battery Room A Fan<br/>Coil Unit</li> </ul>                                                                                                                                                                      | <ul> <li>B7, Battery Room A Fan<br/>Coil Unit</li> </ul> |  |  |  |  |  |
| 2) On BRA-127, Open Supply<br>Breaker From BRA-126.                                                                                                                                                                           |                                                          |  |  |  |  |  |
| 3) Block Open the following doors:                                                                                                                                                                                            |                                                          |  |  |  |  |  |
| <ul> <li>Door #45, between the<br/>Battery Rooms</li> <li>Door #48, Turb Bldg to<br/>Battery Room B</li> </ul>                                                                                                                |                                                          |  |  |  |  |  |
| <u>Con</u>                                                                                                                                                                                                                    | TINUED                                                   |  |  |  |  |  |



| WISCONSIN PUBLIC SERVICE CORPORATION | NO.       | ECA-0.0           |         |              |
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| KEWAUNEE NUCLEAR POWER PLANT         | TITLE     | LOSS OF ALL AC    | POWER   |              |
| EMERGENCY OPERATING PROCEDURES       | DATE      | APR 13 2004       | PAGE 10 | <b>of</b> 24 |
|                                      |           |                   |         |              |
| STEP OPERATOR ACTIONS                |           | CONTINGENC        |         | ]            |
| 15 Verify Bus 52 - ENERGIZED         | <u>G0</u> | <u>TO</u> Step 19 |         |              |
|                                      |           |                   |         |              |
|                                      |           |                   |         |              |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                          | NO. ECA-0.0                                                                                                 |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                  | TITLE LOSS OF ALL AC POWER                                                                                  |  |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                | DATE APR 13 2004 PAGE 11 of 24                                                                              |  |  |  |  |
| ·                                                                                             | ·                                                                                                           |  |  |  |  |
| STEP OPERATOR ACTIONS                                                                         | CONTINGENCY ACTIONS                                                                                         |  |  |  |  |
| <u>CAUTION</u>                                                                                |                                                                                                             |  |  |  |  |
| If an SI signal exists or if an SI sign<br>should be reset to permit manual loading           | al is actuated during this procedure, it<br>g of equipment on an emergency AC bus.                          |  |  |  |  |
| • • • • • • • • • • • • • • • • • • • •                                                       |                                                                                                             |  |  |  |  |
| 16 Establish Charging Flow:                                                                   | ·                                                                                                           |  |  |  |  |
| a. Close CVC-212, RXCP Seal Water<br>Return Isolation                                         | r                                                                                                           |  |  |  |  |
| b. Close CVC-7, Charging Control<br>Chg Line                                                  |                                                                                                             |  |  |  |  |
| c. Align Charging Pump suction to<br>the RWST                                                 | D                                                                                                           |  |  |  |  |
| d. Place Charging Pump A<br>controller to MINIMUM SPEED                                       |                                                                                                             |  |  |  |  |
| e. Start Charging Pump A to                                                                   | e. Start Charging Pump C:                                                                                   |  |  |  |  |
| flow                                                                                          | 1) Place Charging Pump C<br>controller to MINIMUM SPEED                                                     |  |  |  |  |
|                                                                                               | 2) Close supply breaker by<br>placing Charging Pump 1C<br>control switch to START                           |  |  |  |  |
|                                                                                               | 3) Locally, at the DSP, depress<br>Charging Pump 1C Reset PB                                                |  |  |  |  |
|                                                                                               | Locally, at the Charging<br>Pump 1C Controller cabinet,<br>depress System Fault Reset<br>(black) pushbutton |  |  |  |  |
|                                                                                               | 4) Start Charging Pump 1C by<br>placing control switch to<br>START                                          |  |  |  |  |
|                                                                                               | 5) Establish RXCP seal injection flow                                                                       |  |  |  |  |
| f. Slowly open CVC-7 <u>AND</u> Control<br>charging flow, as necessary,<br>restore Przr Level | to                                                                                                          |  |  |  |  |
|                                                                                               |                                                                                                             |  |  |  |  |

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| KE    | WAUNEE NUCLEAR POWER PLANT                                                                                                    | TITLE | LOSS OF ALL AC | POWER      |    |    |
| EM    | ERGENCY OPERATING PROCEDURES                                                                                                  | DATE  | APR 13 2004    | PAGE 12    | of | 24 |
|       |                                                                                                                               |       |                |            |    |    |
| STEP  | OPERATOR ACTIONS                                                                                                              |       | CONTINGENO     | CY ACTIONS |    |    |
| 17    | Maintain The Following Plant<br>Conditions:                                                                                   |       |                |            |    |    |
|       | a. S/G Narrow Range Level -<br>BETWEEN 4% [15% FOR ADVERSE<br>CONTAINMENT] AND 50%                                            |       |                |            |    |    |
|       | <ol> <li>Cycle AFW-10A and AFW-10B,<br/>AFW Train A/B Crossover<br/>Valve, as necessary, to<br/>maintain S/G level</li> </ol> |       |                |            |    |    |
|       | b. Core Exit Thermocouple<br>Temperature - 547°F                                                                              |       |                |            |    |    |
|       | c. Przr Level - GREATER THAN 19%<br>[42% FOR ADVERSE CONTAINMENT]                                                             |       |                |            |    |    |
| 18    | <u>GO TO</u> Step 20. OBSERVE CAUTION<br>PRIOR TO STEP 20.                                                                    |       |                |            |    |    |
| 19    | Dispatch Auxiliary Operator To<br>Locally Close The Following Valv                                                            | es:   |                |            |    |    |
|       | <ul> <li>CVC-201A and B, Seal Supply Lip<br/>Filter A(B) Inlets</li> </ul>                                                    | ne    |                |            |    |    |
|       | <ul> <li>CVC-212, RXCP Seal Water Return<br/>Isolation Valve</li> </ul>                                                       | n .   |                |            |    |    |
|       | <ul> <li>CC-613A and B, RXCP CC Return<br/>Manual Isolation Valves</li> </ul>                                                 |       |                |            |    |    |
|       | <ul> <li>MU-2A and B, Condensate Normal<br/>and Emergency Make-up Control<br/>Station Inlets</li> </ul>                       |       |                |            |    |    |
|       |                                                                                                                               |       |                |            |    |    |
|       |                                                                                                                               |       |                |            |    |    |
|       |                                                                                                                               |       |                |            |    |    |

| WISCONSIN PUBLIC SERVICE CORPORATION                                           | NO.                                                     | ECA-0.0                                                                            |  |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                   | TITLE                                                   | LOSS OF ALL AC POWER                                                               |  |  |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                 | DATE                                                    | APR 13 2004 PAGE 13 of 24                                                          |  |  |  |  |  |
| STEP OPERATOR ACTIONS                                                          |                                                         |                                                                                    |  |  |  |  |  |
|                                                                                |                                                         |                                                                                    |  |  |  |  |  |
| <u>CAU</u>                                                                     | <u>CAUTION</u>                                          |                                                                                    |  |  |  |  |  |
| A hydrogen fire/explosion hazard may ex seal oil system.                       | ist at t                                                | he Generator due to loss of the                                                    |  |  |  |  |  |
| A faulted or ruptured SG that is isolat to the Turbine-Driven AFW Pump must be | ed shoul<br>maintain                                    | d remain isolated. Steam supply<br>ed from at least one SG.                        |  |  |  |  |  |
| •••••••                                                                        | * * * * * * * *                                         |                                                                                    |  |  |  |  |  |
| 20 Check If Steam Generators Are<br>Faulted:                                   |                                                         |                                                                                    |  |  |  |  |  |
| a. ANY SG PRESSURE DECREASING IN<br>AN UNCONTROLLED MANNER                     | а                                                       | 1. <u>GO</u> <u>TO</u> Step 21.                                                    |  |  |  |  |  |
| <u>OR</u>                                                                      |                                                         |                                                                                    |  |  |  |  |  |
| ANY SG COMPLETELY DEPRESSURIZ                                                  | ED                                                      |                                                                                    |  |  |  |  |  |
| b. Verify Steamlines and Feedlin<br>to faulted SG - ISOLATED.                  | es b                                                    | . Isolate faulted SG(s):                                                           |  |  |  |  |  |
|                                                                                |                                                         | 1) Verify BT-2A(B) and<br>BT-3A(B), SG A(B) Blowdown<br>Isolation Valves - CLOSED. |  |  |  |  |  |
|                                                                                |                                                         | 2) Verify SG PORV - CLOSED. <u>IF</u><br><u>NOT, THEN</u> manually close.          |  |  |  |  |  |
|                                                                                |                                                         | 3) Close AFW-2A(B), AFWP A(B)<br>Flow Control Valve.                               |  |  |  |  |  |
|                                                                                |                                                         | 4) Close MS-100A(B), SG A(B)<br>Steam Supply To T/D AFW Pump.                      |  |  |  |  |  |
|                                                                                |                                                         | 5) Verify BT-31A(B) and<br>BT-32A(B), SG Sample<br>Isolation Valves, - CLOSED.     |  |  |  |  |  |
|                                                                                | 6) Close AFW-10A(B), AFW Train<br>A(B) Crossover Valve. |                                                                                    |  |  |  |  |  |
|                                                                                |                                                         |                                                                                    |  |  |  |  |  |

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                       | TITLE LOSS OF ALL AC POWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                                                                                                                                     | DATE APR 13 2004 PAGE 14 of 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |
| STEP OPERATOR ACTIONS                                                                                                                                                                                                                                                                                                                                                                              | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| <ul> <li>21 Check That Steam Generator Tubes<br/>Are Not Ruptured:</li> <li>R-15 indication - NORMAL</li> <li>R-19 indication - NORMAL</li> <li>Main Steamline radiation<br/>channels R-31 and R-33 on SPDS<br/>- NORMAL</li> <li>Main Steamline N-16 monitors<br/>R-42 and R-43 - NORMAL</li> <li>Steam flow/feed flow and narrow<br/>range SG level response before<br/>trip - NORMAL</li> </ul> | <ul> <li>Identify ruptured SG(s). Continue<br/>with Step 22. OBSERVE CAUTION<br/>PRIOR TO STEP 22. WHEN ruptured<br/>SG(s) identified. THEN isolate<br/>ruptured SG(s):</li> <li>a. Verify BT-2A(B) and BT-3A(B).<br/>SG A(B) Blowdown Isolation<br/>Valves - CLOSED.</li> <li>b. WHEN SG pressure less than<br/>1050 psig. THEN verify SG PORV<br/>- CLOSED. IF NOT, THEN<br/>manually close.</li> <li>c. Close AFW-2A(B). AFWP A(B) Flow<br/>Control Valve.</li> <li>d. Close MS-100A(B). SG A(B) Steam<br/>Supply To T/D AFW Pump.</li> <li>e. Close AFW-10A(B). AFW Train<br/>A(B) Crossover Valve.</li> <li>f. Locally close Main Steam Header<br/>A(B). Trap 20(9) inlet and<br/>bypass valves:</li> <li>TD-1-20(TD-1-9)</li> <li>TD-3-20(TD-3-9)</li> </ul> |  |  |  |

| WISC           | ONSIN PUBLIC SERVICE CORPORATION                                                                             | NO.                        | ECA-0.0                                                                              |                                                                                |  |  |
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| к              | EWAUNEE NUCLEAR POWER PLANT                                                                                  | TITLE LOSS OF ALL AC POWER |                                                                                      |                                                                                |  |  |
| EN             | MERGENCY OPERATING PROCEDURES                                                                                | DATE                       | APR 13 2004                                                                          | <b>PAGE</b> 15 of 24                                                           |  |  |
| STEP           | OPERATOR ACTIONS                                                                                             |                            | CONTINCEN                                                                            | TY ACTIONS                                                                     |  |  |
|                |                                                                                                              |                            |                                                                                      |                                                                                |  |  |
|                | <u>CAU</u>                                                                                                   | <u>FION</u>                | ************                                                                         | *****                                                                          |  |  |
| If CS<br>pumps | T level decreases to less than 8%,<br>will be necessary per A-FW-05B.                                        | use of                     | alternate water                                                                      | sources for AFW                                                                |  |  |
| *****          | Check Intact Steam Concertan                                                                                 |                            | ******                                                                               | • • • • • • • • • • • • • • • • • • • •                                        |  |  |
| ٤٢             | Levels:                                                                                                      |                            |                                                                                      |                                                                                |  |  |
|                | a. Narrow range level - GREATER<br>THAN 4% [15% FOR ADVERSE<br>CONTAINMENT]                                  | а                          | . Maintain maxim<br>narrow range 1<br>than 4% [15% F<br>CONTAINMENT] i<br>intact SG. | num AFW flow until<br>level is greater<br>FOR ADVERSE<br>in at least one       |  |  |
|                | b. Control AFW flow to maintain<br>narrow range level between 4%<br>[15% FOR ADVERSE CONTAINMENT]<br>and 50% | b                          | IF narrow range<br>SG(s) continue<br>an uncontrolle<br>isolate ruptur                | ge level in any<br>es to increase in<br>ed manner, <u>THEN</u><br>red SG:      |  |  |
|                |                                                                                                              |                            | 1) Verify BT-2<br>BT-3A(B),<br>Isolation V                                           | 2A(B) and<br>SG A(B) Blowdown<br>Valves - CLOSED.                              |  |  |
|                |                                                                                                              |                            | 2) <u>WHEN</u> SG pro<br>1050 psig,<br>PORV - CLOS<br>manually c                     | essure less than<br><u>THEN</u> verify SG<br>SED. <u>IF NOT, THEN</u><br>lose. |  |  |
|                |                                                                                                              |                            | 3) Close AFW-2<br>Flow Contro                                                        | 2A(B), AFWP A(B)<br>ol Valve.                                                  |  |  |
|                |                                                                                                              |                            | 4) Close MS-10<br>Steam Supp                                                         | DOA(B), SG A(B)<br>ly To T/D AFW Pump.                                         |  |  |
|                |                                                                                                              |                            | 5) Close AFW-3<br>A(B) Cross                                                         | 10A(B), AFW Train<br>over Valve.                                               |  |  |
|                |                                                                                                              |                            | 6) Locally clo<br>Header A(B<br>inlet and l                                          | ose Main Steam<br>), Trap 20(9)<br>bypass valves:                              |  |  |
|                |                                                                                                              |                            | • TD-1-20(<br>• TD-3-20(                                                             | TD-1-9)<br>TD-3-9)                                                             |  |  |

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| к     | EWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                               | TITLE      | LOSS OF ALL A                                                                                                                | C POWER                                                            |                                         |                        |    |
| EM    | IERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                                                             | DATE       | APR 13 2004                                                                                                                  | PAGE                                                               | 16                                      | of                     | 24 |
| STEP  | OPERATOR ACTIONS                                                                                                                                                                                                                                                                                                          |            | CONTINGEN                                                                                                                    | CY ACTI                                                            | ONS                                     |                        |    |
| 23    | <ul> <li>Periodically Monitor The Status (Each DC Bus Voltage:</li> <li>BRA-102 - VOLTAGE GREATER THAN 105 VDC</li> <li>BRB-102 - VOLTAGE GREATER THAN 105 VDC</li> <li>BRC-102 - VOLTAGE GREATER THAN 105 VDC</li> <li>BRD-102 - VOLTAGE GREATER THAN 105 VDC</li> <li>BRE-102 - VOLTAGE GREATER THAN 205 VDC</li> </ul> | Df Pe      | erform the follo<br>. Shed non-esser<br>affected DC bu<br>. <u>IF</u> generator s<br>can <u>NOT</u> be mai<br>purge generato | owing:<br>ntial loa<br>uses.<br>seal oil<br>intained,<br>or per A- | nds fr<br>press<br><u>THEN</u><br>GE-84 | rom<br>sure<br>1<br>A. |    |
| 24    | Check CST Level - GREATER THAN 8                                                                                                                                                                                                                                                                                          | X Sv<br>sc | vitch to alterna<br>burce per A-FW-(                                                                                         | ate AFW p<br>)5B.                                                  | oump ¥                                  | water                  |    |
| 25    | Verify Power To Bus 52:                                                                                                                                                                                                                                                                                                   |            |                                                                                                                              |                                                                    |                                         |                        |    |
|       | a. Bus 52 - ENERGIZED                                                                                                                                                                                                                                                                                                     | а.         | . <u>GO TO</u> Step 26.<br>CAUTIONS PRIO                                                                                     | . OBSERV<br>R TO STEP                                              | /E<br>26.                               |                        |    |
|       | b. <u>GO TO</u> Step 30.                                                                                                                                                                                                                                                                                                  |            |                                                                                                                              |                                                                    |                                         |                        |    |
|       |                                                                                                                                                                                                                                                                                                                           |            |                                                                                                                              |                                                                    |                                         |                        |    |

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| KE                                | WAUNEE NUCLEAR POWER PLANT                                                                                                                      | TITLE                             | LOSS OF ALL A                                                                                  | C POWER                                                                                                   |  |
| EM                                | ERGENCY OPERATING PROCEDURES                                                                                                                    | DATE                              | APR 13 2004                                                                                    | <b>PAGE</b> 17 of 24                                                                                      |  |
|                                   |                                                                                                                                                 |                                   |                                                                                                | <b>_</b>                                                                                                  |  |
| STEP                              | OPERATOR ACTIONS                                                                                                                                |                                   | CONTINGEN                                                                                      | CY ACTIONS                                                                                                |  |
|                                   | <u>CAU</u>                                                                                                                                      | <u>ΓΙΟΝ</u>                       |                                                                                                | •••••                                                                                                     |  |
| Steam<br>preven                   | Generator pressure should not be on the second s                                 | decreased<br>en into t            | l to less than a<br>the RCS.                                                                   | 200 psig to                                                                                               |  |
| AFW fl<br>range<br>SG. I<br>level | ow and SG depressurization should<br>level greater than 4% [15% FOR ADV<br>f level can not be maintained. SG<br>is restored in at least one SG. | be contr<br>VERSE CON<br>depressu | colled to mainta<br>TAINMENT] in a<br>Irization should                                         | ain SG narrow<br>t least one intact<br>1 be stopped until                                                 |  |
|                                   | ****                                                                                                                                            |                                   | ************                                                                                   | • • • • • • • • • • • • • • • • • • • •                                                                   |  |
| <u>NOTE</u> :                     | The Steam Generators should be deprate to minimize RCS inventory los                                                                            | pressuriz<br>ss from R            | ed at the maxim<br>XCP Seals.                                                                  | num controllable                                                                                          |  |
| <u>NOTE</u> :                     | RCS cooldown rate may exceed 100°1<br>Reactor Vessel upper head voiding<br>SGs. Depressurization should <u>NOT</u><br>occurrences.              | F/hr, PRZ<br>may occu<br>be stopp | R level may be<br>in due to depres<br>bed to prevent 1                                         | lost, and<br>ssurization of<br>these                                                                      |  |
| 26                                | Depressurize Intact Steam<br>Generators To 300 PSIG:                                                                                            |                                   |                                                                                                |                                                                                                           |  |
|                                   | a. Check SG narrow range levels -<br>GREATER THAN 4% [15% FOR                                                                                   | - a.                              | Perform the fo                                                                                 | ollowing:                                                                                                 |  |
|                                   | ADVERSE CONTAINMENT] in at<br>least one SG                                                                                                      |                                   | 1) Maintain ma<br>until narro<br>greater tha<br>ADVERSE CO<br>least one S                      | aximum AFW flow<br>ow range level<br>an 4% [15% FOR<br>NTAINMENT] in at<br>SG.                            |  |
|                                   |                                                                                                                                                 |                                   | 2) Continue wi<br>narrow rang<br>than 4% [19<br>CONTAINMEN<br>SG, <u>THEN</u> do<br>.d and .e. | ith Step 27. <u>WHEN</u><br>ge level greater<br>5% FOR ADVERSE<br>[] in at least one<br>5 Steps 26.b, .c, |  |
|                                   | b. Manually dump steam at maximum controllable rate using SG PO                                                                                 | n<br>RVs                          |                                                                                                |                                                                                                           |  |
|                                   | c. Check RCS cold leg temperature                                                                                                               | es c.                             | Perform the fo                                                                                 | ollowing:                                                                                                 |  |
|                                   | GREATEN THAN JUT I                                                                                                                              |                                   | 1) Control SG<br>depressuriz                                                                   | PORVs to stop SG<br>zation.                                                                               |  |
|                                   |                                                                                                                                                 |                                   | 2) <u>GO</u> <u>TO</u> Step                                                                    | 27.                                                                                                       |  |
|                                   | d. Check SG pressure - LESS THAN<br>300 PSIG                                                                                                    | d.                                | Continue with<br>pressure decre<br>300 psig, <u>THE</u>                                        | Step 27. <u>WHEN</u> SG<br>eased to less than<br>d do Step 26.e.                                          |  |
|                                   | e. Manually control SG PORVs to<br>maintain SG pressure at 300 ps                                                                               | e.<br>sig                         | Locally contro<br>maintain SG p<br>300 psig.                                                   | ol SG PORVs to<br>ressure at                                                                              |  |

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| к             | EWAUNEE NUCLEAR POWER PLANT                                                                             | TITLE LOSS OF ALL AC POWER                                                                                                                                                                                                              |  |  |  |  |
| EN            | IERGENCY OPERATING PROCEDURES                                                                           | DATE APR 13 2004 PAGE 18 of 24                                                                                                                                                                                                          |  |  |  |  |
|               |                                                                                                         |                                                                                                                                                                                                                                         |  |  |  |  |
| STEP          | OPERATOR ACTIONS                                                                                        | CONTINGENCY ACTIONS                                                                                                                                                                                                                     |  |  |  |  |
| 27            | Check Reactor Subcritical:<br>a. Intermediate Range channels -<br>STARTUP RATE ZERO OR NEGATIVE         | Control SG PORVs to stop SG<br>depressurization and allow RCS to<br>heat up.                                                                                                                                                            |  |  |  |  |
| ,             | RATE ZERO OR NEGATIVE                                                                                   | Ur .                                                                                                                                                                                                                                    |  |  |  |  |
| <u>NOTE</u> : | Depressurization of SGs will resu<br>to permit manual loading of equip                                  | lt in SI actuation. SI should be reset<br>ment on emergency AC bus.                                                                                                                                                                     |  |  |  |  |
| 28            | Check SI Signal Status:                                                                                 |                                                                                                                                                                                                                                         |  |  |  |  |
|               | a. SI - HAS BEEN ACTUATED                                                                               | a. <u>GO TO</u> Step 30. <u>WHEN</u> SI<br>actuated. <u>THEN</u> do Steps 28.b<br>and 29.                                                                                                                                               |  |  |  |  |
|               | b. Reset SI                                                                                             |                                                                                                                                                                                                                                         |  |  |  |  |
| 29            | Verify Containment And Containme<br>Ventilation Isolation:                                              | nt Manually actuate Isolation.                                                                                                                                                                                                          |  |  |  |  |
|               | a. Refer to Attachment A <u>AND</u><br>verify all Containment<br>Isolation valves and dampers<br>CLOSED | <ul> <li>a. Manually close valves or<br/>dampers. <u>IF</u> valves or dampers</li> <li>- can <u>NOT</u> be manually closed.<br/><u>THEN</u> verify one Containment<br/>Isolation valve or damper in<br/>each line is closed.</li> </ul> |  |  |  |  |
|               |                                                                                                         | <u>IF</u> one valve or damper in each<br>line is <u>NOT</u> closed, <u>THEN</u><br>locally close one inline valve<br>or damper in each line outside<br>Containment.                                                                     |  |  |  |  |
| 30            | Check Core Exit TCs - LESS THAN<br>1200°F                                                               | <u>IF</u> core exit temperatures greater<br>than or equal to 1200°F and<br>increasing, <u>THEN GO TO</u> SACRG-1,<br>SEVERE ACCIDENT CONTROL ROOM<br>GUIDELINE INITIAL RESPONSE, Step 1.                                                |  |  |  |  |

| wisco | ONSIN PUBLIC SERVICE CORPORATION                          | NO. ECA-0.0                                              |                                                       |                                                                                 |                                                   |                     | -  |
|-------|-----------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------|---------------------|----|
| кі    | WAUNEE NUCLEAR POWER PLANT                                | TITLE LOSS OF ALL AC POWER                               |                                                       |                                                                                 |                                                   |                     |    |
| EM    | ERGENCY OPERATING PROCEDURES                              | DATE                                                     | APR 13 2004                                           | PAGE                                                                            | 19                                                | of                  | 24 |
| ·     | ·····                                                     | _ ,                                                      |                                                       |                                                                                 |                                                   |                     |    |
| STEP  | OPERATOR ACTIONS                                          | [                                                        | CONTING                                               | ENCY ACTI                                                                       | ONS                                               |                     |    |
| 31    | Check If Emergency AC Power Is<br>Restored:               |                                                          |                                                       |                                                                                 |                                                   |                     |    |
|       | a. Check emergency AC buses –<br>BUS 5 OR BUS 6 ENERGIZED | a                                                        | . Continue to<br>conditions<br>status:                | control R<br>and monito                                                         | CS<br>r Plan                                      | it                  |    |
|       |                                                           |                                                          | 1) Check st<br>actions:                               | atus of lo                                                                      | cal                                               |                     |    |
|       |                                                           |                                                          | • AC pow<br>• RXCP S<br>• DC pow                      | ver restora<br>Geal isolat<br>Ver supply.                                       | tion.<br>ion.                                     |                     |    |
|       |                                                           | 2) Check status of BAT and<br>Safeguards boration system |                                                       |                                                                                 |                                                   | ems:                |    |
|       |                                                           |                                                          | a) Tempe<br>125°F<br>dispa<br>reduc<br>conce<br>as ne | rature gre<br><u>IF NOT</u> ,<br>tch person<br>e boron<br>ntration,<br>cessary. | ater t<br><u>_THEN</u><br>nel to<br><u>OR</u> dra | han<br>)<br>)<br>)  |    |
|       |                                                           |                                                          | 3) Check Sp<br>(cooling                               | ent Fuel P<br>) - ADEQUA                                                        | ool le<br>TE:                                     | evel                |    |
|       |                                                           |                                                          | a) Annun<br>SPENT<br>And<br>And                       | ciator 470<br>FUEL POOL<br>SER points<br>160 - NOT                              | 55-N,<br>ABNOR<br>49001<br>ALARME                 | MAL,<br>-159<br>ED. |    |
|       |                                                           |                                                          | b) Spent<br>LESS<br>below                             | Fuel Pool<br>THAN 3 fee<br>the SFP f                                            | level<br>t 4 in<br>loor.                          | -<br>iches          |    |
|       |                                                           |                                                          | <u>IF NO</u><br>dispa<br>initi<br>Spent               | ) <u>T</u> adequate<br>Itch person<br>ate makeup<br>Fuel Pool                   | , <u>THEN</u><br>nel to<br>to th                  | <u>l</u><br>)<br>1e |    |
|       |                                                           |                                                          | 4) Check st<br>obtain p<br>water so                   | atus of ac<br>ortable po<br>ources.                                             | tions<br>wer an                                   | to<br>Id            |    |
|       |                                                           |                                                          | 5) <u>GO TO</u> St                                    | ep 15.                                                                          |                                                   |                     |    |

| wisco           | DNSIN PUBLIC SERVICE CORPORATION                                          | NO.            | ECA-0.0                                            |                                                          |
|-----------------|---------------------------------------------------------------------------|----------------|----------------------------------------------------|----------------------------------------------------------|
| КІ              | EWAUNEE NUCLEAR POWER PLANT                                               | TITI           | LOSS OF ALL A                                      | C POWER                                                  |
| EM              | IERGENCY OPERATING PROCEDURES                                             | DATE           | APR 13 2004                                        | <b>PAGE</b> 20 of 24                                     |
|                 | (                                                                         |                | [                                                  |                                                          |
| STEP            | OPERATOR ACTIONS                                                          |                | CONTINGEN                                          | CY ACTIONS                                               |
| 32              | Stabilize Steam Generator<br>Pressures:                                   |                |                                                    |                                                          |
|                 | a. Manually control SG PORVs                                              |                | a. Locally contr                                   | ol SG PORVs.                                             |
|                 |                                                                           |                |                                                    |                                                          |
| ******          | <u>CAU</u>                                                                | <u>FION</u>    |                                                    | •••••                                                    |
| If Bus<br>at th | s 52 is being supplied by the TSC I<br>is time.                           | Diesel,        | , DO <u>NOT</u> change B                           | us 52 power supply                                       |
| The lo<br>capac | oads placed on the energized emerge<br>ity of the power source.           | ency AC        | C bus should not                                   | exceed the                                               |
| If an<br>should | SI signal exists or if an SI sign<br>d be reset to permit manual loading  | alisa<br>gofed | actuated during t<br>quipment on an em             | his procedure, it<br>ergency AC bus.                     |
| •••••           | • • • • • • • • • • • • • • • • • • • •                                   |                |                                                    | • • • • • • • • • • • • • • • • • • • •                  |
| 33              | Verify Following Equipment Loade<br>On Emergency AC Bus:                  | đ              |                                                    |                                                          |
|                 | a. 480V Buses                                                             |                |                                                    |                                                          |
|                 | b. Battery Chargers                                                       |                |                                                    |                                                          |
|                 | c. Instrument Buses                                                       |                |                                                    |                                                          |
|                 | d. Gaitronics                                                             |                | d. Position BRA-<br>Gaitronics Ma<br>Alternate fee | 115, Emerg Ltg &<br>n Xfer Switch, to<br>d from MCC-46A. |
| 34              | Verify Service Water System<br>Operation:                                 |                |                                                    |                                                          |
|                 | a. Locally verify SW-301A(B),<br>SW From DG 1A(B) Heat Exchange<br>- OPEN | er             | a. Manually open                                   | valve.                                                   |
|                 | b. Verify pumps – RUNNING                                                 |                | b. Manually star                                   | t pump.                                                  |

| wisco | NSIN PUBLIC SERVICE CORPORATION                                                                            | NO.          | ECA-0.0                                                  |                                   |      |    |
|-------|------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------------------|-----------------------------------|------|----|
| KE    | WAUNEE NUCLEAR POWER PLANT                                                                                 | TITLE        | LOSS OF ALL AG                                           | C POWER                           |      |    |
| EMI   | ERGENCY OPERATING PROCEDURES                                                                               | DATE         | APR 13 2004                                              | PAGE 21                           | of   | 24 |
| STEP  | OPERATOR ACTIONS                                                                                           |              | CONTINGEN                                                | CY ACTIONS                        |      |    |
| 35    | Select Recovery Procedure:                                                                                 |              |                                                          |                                   |      | _  |
|       | a. Check RCS subcooling based on<br>Core Exit TCs - GREATER THAN<br>30°F [65°F FOR ADVERSE<br>CONTAINMENT] | a.           | <u>GO TO</u> ECA-0.2<br>POWER RECOVER<br>REQUIRED, Step  | , LOSS OF AL<br>WITH SI<br>0 1.   | L AC |    |
|       | b. Check PRZR level - GREATER TH<br>5% [30% FOR ADVERSE CONTAINME                                          | AN b.<br>NT] | <u>GO TO</u> ECA-0.2,<br>POWER RECOVER<br>REQUIRED, Step | LOSS OF AL                        | LAC  |    |
|       | c. Check SI equipment - HAS <u>NOT</u><br>AUTOMATICALLY STARTED UPON AC<br>POWER RESTORATION               | C.           | <u>GO TO</u> ECA-0.2<br>POWER RECOVER<br>REQUIRED, Step  | , LOSS OF AL<br>( WITH SI<br>) 1. | L AC |    |
|       | d. <u>GO TO</u> ECA-0.1, LOSS OF ALL AC<br>POWER RECOVERY WITHOUT SI<br>REQUIRED, Step 1                   |              |                                                          |                                   |      |    |
|       | -                                                                                                          | END-         |                                                          |                                   |      |    |
|       |                                                                                                            |              |                                                          |                                   |      |    |
|       |                                                                                                            |              |                                                          |                                   |      |    |
|       |                                                                                                            |              |                                                          |                                   |      |    |
|       |                                                                                                            |              |                                                          |                                   |      |    |
|       |                                                                                                            |              |                                                          |                                   |      |    |
|       |                                                                                                            |              |                                                          |                                   |      |    |
|       |                                                                                                            |              |                                                          |                                   |      |    |
|       |                                                                                                            |              |                                                          |                                   |      |    |

| WIS           | SCONSIN PUBLIC                                                                                                                                                    | C SERVICE CORPORATION                                         | NO.                    | ECA-0.0          |            |  |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------------|------------------|------------|--|
|               | KEWAUNEE NUCLEAR POWER PLANT TITLE LOSS OF ALL AC POWER                                                                                                           |                                                               |                        |                  |            |  |
|               | EMERGENCY OPERATING PROCEDURES DATE APR 13 2004 PAGE 22 of 24                                                                                                     |                                                               |                        |                  |            |  |
|               |                                                                                                                                                                   | - <b></b>                                                     |                        |                  |            |  |
|               |                                                                                                                                                                   |                                                               | ACHMENT A              | <u>\</u>         |            |  |
| Contai        | nment Isolati                                                                                                                                                     | on isolates the following                                     | ng penetr              | ations:          |            |  |
| <u>NOTE</u> : | Items indica<br>and may not                                                                                                                                       | ted with a pound sign (;<br>be accessible.                    | #) are lo              | ocated inside co | ontainment |  |
| <u>NOTE</u> : | Valves indic<br>fail in the                                                                                                                                       | ated with an asterisk (<br>as-is position on loss (           | *) are mo<br>of power. | otor operated ar | nd will    |  |
| A.1           | Pressurizer                                                                                                                                                       | Relief Tank                                                   |                        |                  |            |  |
|               | MG(R)-512<br>MG(R)-513                                                                                                                                            | PRT Gas Sampling Isol<br>PRT Gas Sampling Isol                |                        |                  |            |  |
|               | MU-1010-1<br>NG-302                                                                                                                                               | PRT Make Up Water Isol<br>PRT Nitrogen Supply Is              | 01                     |                  |            |  |
| A.2           | Excess Letdo                                                                                                                                                      | wn Heat Exchanger                                             |                        |                  |            |  |
|               | *CC-653                                                                                                                                                           | Component Cooling Retu                                        | rn Isol                |                  |            |  |
| A.3           | SI Accumulat                                                                                                                                                      | ors                                                           |                        |                  |            |  |
|               | NG-107                                                                                                                                                            | N2 Supply To Accumulat                                        | ors                    |                  |            |  |
| A.4           | Reactor Cool<br>*#CVC-211<br>*CVC-212                                                                                                                             | ant Pumps<br>Seal Water Return To V<br>Seal Water Return To V | СТ<br>СТ               |                  |            |  |
| A.5           | CVCs Letdown                                                                                                                                                      | Line                                                          |                        |                  |            |  |
|               | #LD-4A Letdown Orifice Isolation<br>#LD-4B Letdown Orifice Isolation<br>#LD-4C Letdown Orifice Isolation<br>LD-6 Letdown Flow To Letdown Heat Exchanger Isolation |                                                               |                        |                  |            |  |
|               |                                                                                                                                                                   |                                                               |                        |                  |            |  |
|               |                                                                                                                                                                   |                                                               |                        |                  |            |  |
|               |                                                                                                                                                                   |                                                               |                        |                  |            |  |
|               |                                                                                                                                                                   |                                                               |                        |                  |            |  |

| w                            | ISCONSIN PUBL          | IC SERVICE CORPORATION                             | NO. ECA-0.0                          |                      |
|------------------------------|------------------------|----------------------------------------------------|--------------------------------------|----------------------|
| KEWAUNEE NUCLEAR POWER PLANT |                        |                                                    | TITLE LOSS OF ALL AC                 | : POWER              |
|                              | EMERGENCY C            | PERATING PROCEDURES                                | DATE APR 13 2004                     | <b>PAGE</b> 23 of 24 |
| A.6                          | Primary Sam            | pling System                                       |                                      |                      |
|                              | #RC-402<br>RC-403      | Pressurizer Steam Samp<br>Pressurizer Steam Samp   | ling Isol<br>ling Isol               |                      |
|                              | #RC-412<br>RC-413      | Pressurizer Liquid Samµ<br>Pressurizer Liquid Samµ | pling Isol<br>pling Isol             |                      |
|                              | #RC-422<br>#RC-423     | RCS Hot Leg Sampling Is<br>RCS Hot Leg Sampling Is | sol<br>sol                           |                      |
| A.7                          | Reactor Coo            | lant Drain Tank                                    |                                      |                      |
|                              | MG(R)-503<br>MG(R)-504 | RCDT To Gas Analyzer Is<br>RCDT To Gas Analyzer Is | solation<br>solation                 |                      |
|                              | MG(R)-509<br>MG(R)-510 | RCDT Vent To Waste Gas<br>RCDT Vent To Waste Gas   | Header<br>Header                     |                      |
|                              | RC-507<br>RC-508       | RX CLNT Drain Pump Dis<br>RX CLNT Drain Pump Dis   | ch Header Isol<br>ch Header Isol     |                      |
| A.8                          | Containment            | Sump A                                             |                                      |                      |
|                              | MD(R)-134<br>MD(R)-135 | CNTMT Sump Pumps Discha<br>CNTMT Sump Pumps Discha | arge Header Isol<br>arge Header Isol |                      |
| A.9                          | Internal Co            | ntainment Spray System                             |                                      |                      |
|                              | ICS-201<br>ICS-202     | ICS Pump Test Line To I<br>ICT Pump Test Line To I | RWST<br>RWST                         |                      |
| A.10                         | Steam Gener            | ators                                              |                                      |                      |
|                              | #BT-31A<br>BT-32A      | S/G A Sample Line Isola<br>S/G A Sample Line Isola | ation<br>ation                       |                      |
|                              | #BT-31B<br>BT-32B      | S/G B Sample Line Isola<br>S/G B Sample Line Isola | ation<br>ation                       |                      |
|                              | *#BT-2A<br>*BT-3A      | S/G A Blowdown Line Iso<br>S/G A Blowdown Line Iso | olation<br>olation                   |                      |
|                              | *#BT-2B<br>*BT-3B      | S/G B Blowdown Line Iso<br>S/G B Blowdown Line Iso | olation<br>olation                   |                      |

| w                            | ISCONSIN PUBLI                                            | C SERVICE CORPORATION                                                                                                          | NO.                                                        | ECA-0.0                                         |       |    |              |
|------------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-------------------------------------------------|-------|----|--------------|
| KEWAUNEE NUCLEAR POWER PLANT |                                                           |                                                                                                                                |                                                            | LOSS OF ALL AC                                  | POWER |    |              |
|                              | EMERGENCY OP                                              | ERATING PROCEDURES                                                                                                             | DATE                                                       | APR 13 2004                                     | PAGE  | 24 | <b>of</b> 24 |
| A.11                         | Containment                                               |                                                                                                                                |                                                            |                                                 |       |    |              |
|                              | VB-10A<br>VB-10B<br>AS-1<br>AS-2<br>AS-32                 | Power Operated CNTMT V<br>Power Operated CNTMT V<br>Containment Air Sample<br>Containment Air Sample<br>Containment Air Sample | acuum Bre<br>acuum Bre<br>Isolatio<br>Isolatio<br>Isolatio | aker A<br>aker B<br>n A<br>n B<br>n C           |       |    |              |
| A.12                         | Containment                                               | Group 2                                                                                                                        |                                                            |                                                 |       |    |              |
|                              | *MD(R)-323A<br>*MD(R)-323B<br>WG-310<br>#WG-311<br>CVC-54 | Deaerated Drains Tank<br>Deaerated Drains Tank<br>Deaerated Drains Tank<br>Deaerated Drains Tank<br>VCT Vent To CNTMT          | CNTMT Dis<br>CNTMT Dis<br>Vent Outs<br>Vent Insi           | ch Isol A<br>ch Isol B<br>ide CNTMT<br>de CNTMT |       |    |              |
| A.13                         | Purge and Ve                                              | ntilation                                                                                                                      |                                                            |                                                 |       |    |              |
|                              | RBV-1<br>#RBV-2<br>TAV-12                                 | CNTMT Purge/Vent Suppl<br>CNTMT Purge/Vent Suppl<br>CNTMT Purge/Vent Suppl                                                     | y Valve A<br>y Valve B<br>y Damper                         |                                                 |       |    |              |
|                              | #RBV-3<br>RBV-4<br>RBV-5                                  | CNTMT Purge/Vent Exhau<br>CNTMT Purge/Vent Exhau<br>CNTMT Purge/Vent Exhau                                                     | st Valve<br>st Valve<br>st Damper                          | B<br>A                                          |       |    |              |
|                              | *#LOCA-2B<br>LOCA-100B                                    | Post LOCA Hydrogen CNT<br>Post LOCA Hydrogen CNT                                                                               | MT Vent I<br>MT Recomb                                     | sol B<br>niner B                                |       |    |              |
|                              | #LOCA-201B<br>*SA-7003B                                   | Post LOCA Hydrogen Rec<br>Hydrogen Dilution To C                                                                               | ombiner B<br>ontainmen                                     | To CNTMT<br>It                                  |       |    |              |
|                              |                                                           |                                                                                                                                |                                                            |                                                 |       |    |              |
|                              |                                                           |                                                                                                                                | ì                                                          |                                                 |       |    |              |
|                              |                                                           |                                                                                                                                |                                                            |                                                 |       |    |              |
|                              |                                                           |                                                                                                                                |                                                            |                                                 |       |    |              |

| WISCONSIN PUBLIC SERVICE (                                                                                                | <b>NO.</b> E-0                                                                                                                                                                                                                                                                                                                                        | W-04                                | REV V                                          |                     |  |
|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------|---------------------|--|
| KEWAUNEE NUCLEAR POV                                                                                                      | VER PLANT                                                                                                                                                                                                                                                                                                                                             | TITLE Loss of Circulating Water     |                                                |                     |  |
| OPERATING PROCE                                                                                                           | DURE                                                                                                                                                                                                                                                                                                                                                  | <b>date</b> D                       | EC 04 2003                                     | <b>PAGE 1 of 12</b> |  |
| REVIEWED BY                                                                                                               |                                                                                                                                                                                                                                                                                                                                                       | APPRO                               | VED BY                                         |                     |  |
| NUCLEAR XES<br>SAFETY RELATED NO                                                                                          | PORC REVIEW<br>REQUIRED                                                                                                                                                                                                                                                                                                                               | ⊠ YES<br>□ NO                       | SRO APPROVAL OF STEMPORARY CHANGES REQUIRED NO |                     |  |
| 1.0 <u>INTRODUCTION</u><br>1.1 Procedure describes                                                                        | automatic and a                                                                                                                                                                                                                                                                                                                                       | operator ac                         | tion for dec                                   | reasing             |  |
| 1.2 (CAS) indicates a "Construction of long duration and <u>OR</u> the step requires performed.                           | <ul> <li>Forebay level, blockage of traveling water screens, or a loss of circulating water.</li> <li>1.2 (CAS) indicates a "Continuous Action Statement." It signifies a step of long duration and does <u>NOT</u> have to be completed before continuing, <u>OR</u> the step requires a certain plant condition prior to being performed</li> </ul> |                                     |                                                |                     |  |
| 2.0 <u>SYMPTOMS</u>                                                                                                       |                                                                                                                                                                                                                                                                                                                                                       |                                     |                                                |                     |  |
| 2.1 Annunciators:                                                                                                         |                                                                                                                                                                                                                                                                                                                                                       |                                     |                                                |                     |  |
| <ul> <li>CW PUMPS LOW LOW I</li> <li>FOREBAY LEVEL LOW</li> <li>CONDENSER VACUUM I</li> <li>TRAVELING WTR SCRE</li> </ul> | EVEL TRIP (470<br>(47051-N)<br>OW (47051-W)<br>EN DP HIGH (47                                                                                                                                                                                                                                                                                         | 51-M)<br>054-Q)                     |                                                |                     |  |
| 2.2 Control Room Indicat                                                                                                  | cions:                                                                                                                                                                                                                                                                                                                                                |                                     |                                                |                     |  |
| <ul> <li>Circulating Water</li> <li>Circulating Water</li> <li>Condenser Water Boo</li> <li>Condenser Pressure</li> </ul> | Pump White Ove<br>Pump Discharge<br>ox Inlet Valves<br>e INCREASING                                                                                                                                                                                                                                                                                   | rcurrent Li<br>Check Valv<br>CLOSED | ght<br>es CLOSED                               |                     |  |
| <ul> <li>Circ Wtr Forebay I</li> <li>CW Intake Forebay</li> <li>Cdsr 1A Circ Wtr 1</li> </ul>                             | <ul> <li>Circ Wtr Forebay Level Meter</li> <li>CW Intake Forebay Level Computer Pt. L9075A</li> <li>Cdsr 1A Circ Wtr Inlet Temp Computer Pt. T2513A</li> </ul>                                                                                                                                                                                        |                                     |                                                |                     |  |
| 2.3 Screenhouse Indicati                                                                                                  | on:                                                                                                                                                                                                                                                                                                                                                   |                                     |                                                |                     |  |
| <ul> <li>Slush ice or other</li> <li>Low Forebay level<br/>LI-26832)</li> </ul>                                           | debris on the<br>indication (LI                                                                                                                                                                                                                                                                                                                       | traveling<br>-26829, LI-            | screen or in<br>26830, LI-26                   | fish basket<br>831, |  |
|                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                       |                                     |                                                |                     |  |

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## WISCONSIN PUBLIC SERVICE CORPORATION

**NO.** E-CW-04

**KEWAUNEE NUCLEAR POWER PLANT** 

TITLE Loss of Circulating Water

- **OPERATING PROCEDURE**
- DATE DEC 04 2003 PAGE 2 of 12

## 3.0 AUTOMATIC ACTIONS

1

- 3.1 Turbine trip on low condenser vacuum of 10" Hg Abs
- 3.2 On high traveling screen differential pressure, screens shift to fast speed, screen spray starts and runs continuously
- 3.3 Circulating water pumps trip on 2/4 signal from Forebay Lo-Lo Level of  $\leq$  42%

| WISCONSIN PUBLIC SERVICE CORPORATION |                                                                             | NO. E-CW-04                     |                                                                                                                            |  |  |  |  |  |
|--------------------------------------|-----------------------------------------------------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT         |                                                                             | TITLE LOSS OF CIRCULATING WATER |                                                                                                                            |  |  |  |  |  |
| EM                                   | ERGENCY OPERATING PROCEDURES                                                | DAT                             | E DEC 04 2003 PAGE 3 of 12                                                                                                 |  |  |  |  |  |
|                                      |                                                                             |                                 |                                                                                                                            |  |  |  |  |  |
| STEP                                 | OPERATOR ACTIONS                                                            |                                 | CONTINGENCY ACTIONS                                                                                                        |  |  |  |  |  |
| 4.0 <u>DE</u>                        | 4.0 <u>DETAILED PROCEDURE</u>                                               |                                 |                                                                                                                            |  |  |  |  |  |
| 1                                    | (CAS) Check Annunciator CW PUMPS<br>LOW LOW LEVEL TRIP (47051-M) - N        | Perform the following:          |                                                                                                                            |  |  |  |  |  |
|                                      | LIT                                                                         |                                 | a. Verify Circulating Water Pumps<br>- BOTH STOPPED                                                                        |  |  |  |  |  |
|                                      |                                                                             |                                 | b. <u>IF</u> reactor is critical, <u>THEN</u><br>trip the reactor <u>AND</u> <u>GO</u> <u>TO</u> E-O.                      |  |  |  |  |  |
| 2                                    | (CAS) Verify Circulating Water<br>Pumps - AT LEAST ONE RUNNING              |                                 | <u>WHEN</u> forebay level is >64%, <u>THEN</u><br>start one Circulating Water Pump.                                        |  |  |  |  |  |
| 3                                    | (CAS) Check Number Of Circulatin<br>Water Pumps Running - <u>NOT</u> CHANGE | g<br>D                          | Stop any liquid waste discharge in<br>progress.                                                                            |  |  |  |  |  |
| 4                                    | (CAS) Check Condenser Vacuum -<br>NORMAL<br>a. PPCS - NO CONDENSER VACUUM   |                                 | Reduce turbine load as necessary<br>to maintain condenser vacuum per<br>FIGURE 1 using any of the<br>following procedures: |  |  |  |  |  |
|                                      | ALARMS<br>b. Condenser back pressure -<br>WITHIN THE LIMITS OF FIGURE 1     |                                 | • A-0-03<br>• N-TB-54<br>• N-0-03                                                                                          |  |  |  |  |  |
| 5                                    | Verify Circulating Water Pump<br>Discharge Valve Position:                  |                                 | Shift CW pumps <u>OR</u> stop and restart<br>any operating pump to reposition<br>valves as necessary.                      |  |  |  |  |  |
|                                      | a. CW pump discharge check valve<br>for any running CW pump – OPEN          |                                 | taites as inclusions.                                                                                                      |  |  |  |  |  |
|                                      | b. CW pump discharge check valve<br>for any idle CW pump – SHUT             |                                 |                                                                                                                            |  |  |  |  |  |
|                                      |                                                                             |                                 |                                                                                                                            |  |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION |                                                                                                                                                                                                                                                                                 | NO.                             |                                | E-CW-04                                                                            | •                                          |                                     |             |    |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------------------------|------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------|-------------|----|
| KEWAUNEE NUCLEAR POWER PLANT         |                                                                                                                                                                                                                                                                                 | TITLE LOSS OF CIRCULATING WATER |                                |                                                                                    |                                            |                                     |             |    |
| EM                                   | IERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                   | DATE                            | E I                            | DEC 04 2003                                                                        | PAGE                                       | 4                                   | of          | 12 |
|                                      |                                                                                                                                                                                                                                                                                 |                                 | <b>_</b>                       | -                                                                                  |                                            |                                     |             |    |
| STEP                                 | OPERATOR ACTIONS                                                                                                                                                                                                                                                                |                                 | L                              | CONTINGEN                                                                          |                                            | ONS                                 |             |    |
| 6                                    | Verify Condenser Water Box Inlet<br>Valves - OPEN<br>• CW-2A1<br>• CW-2A2<br>• CW-2B1<br>• CW-2B2                                                                                                                                                                               |                                 | IF<br>For<br>inc<br>Box<br>inc | Forebay level<br>ebay level is<br>reasing, <u>THEN</u><br>inlet valves<br>rements. | is >64%<br>stable o<br>slowly o<br>in 5-10 | <u>AND</u><br>or<br>open l<br>degre | Water<br>ee |    |
| 7                                    | <ul> <li>Check Traveling Screens - CLEAR</li> <li>Check annunciator TRAVELING<br/>WATER SCREEN DP HIGH (47054-Q)<br/><u>NOT</u> LIT</li> <li>Locally check traveling screene<br/>Diff Press - &lt;6 INCHES H<sub>2</sub>O</li> <li>Locally monitor traveling screene</li> </ul> | -<br>s<br>ens                   | <u>IF</u><br>The               | traveling scre<br><u>N GO TO</u> Step 1                                            | eens are<br>lO.                            | foul                                | ed,         |    |
| 8                                    | Locally Verify Forebay Level -<br>STABLE <u>OR</u> INCREASING<br>• LI-26829<br>• LI-26830<br>• LI-26831<br>• LI-26832                                                                                                                                                           |                                 | Per<br>a.<br>b.                | form the follo<br>Place travelin<br>in HAND.<br><u>GO TO</u> Step 10.              | owing:<br>ng water                         | scre                                | ens         |    |
| 9                                    | <u>60 TO</u> Step 12                                                                                                                                                                                                                                                            |                                 |                                |                                                                                    |                                            |                                     |             |    |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                | NO. E-CW-04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                        | TITLE LOSS OF CIRCULATING WATER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                                                      | DATE DEC 04 2003 PAGE 5 of 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |  |
| STEP OPERATOR ACTIONS                                                                                                               | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |
| <u>NOTE</u> : Traveling Screen Motors will <u>NOT</u> s<br>pressure greater than 60 psig is s<br>pressure switches (PS-16065 thru 1 | start in "HAND" or "AUTO" unless SW<br>sensed by the traveling screen water<br>16068).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |
| 10 Check Traveling Screens - RUNNING                                                                                                | G Locally perform the following:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |
|                                                                                                                                     | <ul> <li>a. Verify spray flow valves - OPEN:</li> <li>SW-200A, Isolation Header A<br/>Screen Wash</li> <li>SW-200B, Isolation Header B<br/>Screen Wash</li> <li>SW-201A1, Screen Wash<br/>Isolation</li> <li>SW-201A2, Screen Wash<br/>Isolation</li> <li>SW-201B1, Screen Wash<br/>Isolation</li> <li>SW-201B2, Screen Wash<br/>Isolation</li> <li>SW-201B2, Screen Wash<br/>Isolation</li> <li>b. Verify power available to<br/>traveling screens.</li> <li>1A1, MCC-52D, A6</li> <li>1A2, MCC-35C, B8</li> <li>1B1, MCC-45C, A7</li> <li>1B2, MCC-62D, A6</li> </ul> |  |  |  |  |
|                                                                                                                                     | <ul> <li>c. At traveling screen panel,<br/>verify control power switches -<br/>ON</li> <li>1A1 and 1A2 screens</li> <li>1B1 and 1B2 screens</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |
|                                                                                                                                     | d. Push local jog pushbutton to<br>test operability of screen wash<br>motor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |
|                                                                                                                                     | e. Position traveling screens<br>selector switches to HAND or<br>AUTO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                         | NO. E-CW-04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |  |  |
|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                 | TITLE LOSS OF CIRCULATING WATER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                               | DATE DEC 04 2003 PAGE 6 of 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  |  |
| STEP OPERATOR ACTIONS                                                        | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |  |
| <u>NOTE</u> : During severe weather, ensure trav<br>closed.                  | veling screen covers can be promptly                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |
| <u>NOTE</u> : Traveling Screen motors running way for shear pin replacement. | ith <u>NO</u> screen motion indicates the need                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |
| 11 Check Traveling Screens -<br>OPERATING PROPERLY                           | <ul> <li>Perform the following:</li> <li>a. <u>IF</u> weather conditions <u>OR</u> visual inspection indicate possible icing, <u>THEN</u> verify proper operation of CW Recirculation Pump per N-CW-04.</li> <li>b. <u>IF</u> Service Water to traveling screens <u>NOT</u> restored. <u>OR</u> normal screen wash <u>NOT</u> keeping up with fouling, <u>THEN</u> locally perform the following:</li> <li>1) Open traveling screen service water cover(s).</li> <li>2) Flush screen with fire hose.</li> <li>3) Rotate screen using local jog pushbutton.</li> <li>4) <u>WHEN</u> screen DP is ≤6 inches H<sub>2</sub>O, <u>THEN</u> close service water cover(s).</li> <li>5) Repeat items 1 through 4 above as necessary to clear other screens.</li> <li>6) <u>WHEN</u> fouling conditions clear, <u>THEN</u> operate traveling screens per N-CW-04.</li> </ul> |  |  |  |  |

| WISCONSIN PUBLIC SERVICE                                        | CORPORATION                                                                                                  | NO.       | E-CW-04                         |         |       |    |    |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-----------|---------------------------------|---------|-------|----|----|
| KEWAUNEE NUCLEAR POWER PLANT                                    |                                                                                                              |           | TITLE LOSS OF CIRCULATING WATER |         |       |    |    |
| EMERGENCY OPERATING F                                           | PROCEDURES                                                                                                   | DATE      | DEC 04 2003                     | PAG     | æ 7   | of | 12 |
|                                                                 |                                                                                                              |           | ·                               |         |       |    |    |
| STEP OPERATO                                                    | R ACTIONS                                                                                                    |           | CONTING                         | NCY AC  | TIONS |    | ]  |
| <u>NOTE</u> : Loss of air to fore<br>Forebay level indi         | ebay level conti<br>cation.                                                                                  | rol sys   | tem results in                  | a false | low   |    |    |
| 12 Verify Normal For                                            | ebay Level:                                                                                                  | 1         |                                 |         |       |    |    |
| a. Verify Compute<br>CW Intake Fore<br>alarm limit – S<br>TABLE | a. Verify Computer Point L9075A,<br>CW Intake Forebay Level, low<br>alarm limit – SET TO VALUE FROM<br>TABLE |           |                                 |         |       |    |    |
|                                                                 | CW PUMPS RUNN                                                                                                | ENG A     | LARM SETPOINT                   |         |       |    |    |
|                                                                 | TWO                                                                                                          |           | 55%                             |         |       |    |    |
|                                                                 | ONE                                                                                                          |           | 64%                             |         |       |    |    |
|                                                                 | NONE                                                                                                         |           | 64%                             |         |       |    |    |
| b. Check forebay<br>THAN LOW LEVEL                              | level - GREATER<br>ALARM SETPOINT                                                                            |           | b. <u>GO TO</u> Step 1          | 14.     |       |    |    |
| c. Check forebay<br>INCREASING                                  | level - STABLE <u>(</u>                                                                                      | <u>DR</u> | c. <u>GO TO</u> Step 1          | 14.     |       |    | ]  |
| 13 Return To Procedu<br>Effect                                  | re And Step In                                                                                               |           |                                 |         |       |    |    |
|                                                                 |                                                                                                              |           |                                 |         |       |    |    |
|                                                                 |                                                                                                              |           |                                 |         |       |    |    |

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| WISCONSIN PUBLIC SERVICE CORPORATION |                                                                                                                                                       | NO.                      | E-CW-04                         |               |         |             |    |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------|---------------|---------|-------------|----|
| KEWAUNEE NUCLEAR POWER PLANT         |                                                                                                                                                       |                          | TITLE LOSS OF CIRCULATING WATER |               |         |             |    |
| ЕМ                                   | EMERGENCY OPERATING PROCEDURES                                                                                                                        |                          |                                 | DEC 04 2003   | PAGE    | 8 <b>of</b> | 12 |
|                                      | · · · · · · · · · · · · · · · · · · ·                                                                                                                 |                          | r                               |               |         |             |    |
| STEP                                 | OPER                                                                                                                                                  | ATOR ACTIONS             |                                 | CONTINGEN     | Y ACTIC | DNS         |    |
| 14                                   | Place Forebay<br>Computer Trend                                                                                                                       | Level Indication On<br>1 | n                               |               |         |             |    |
|                                      | • L9075A                                                                                                                                              |                          |                                 |               |         |             |    |
| 15                                   | Determine Actu                                                                                                                                        | ual Lake Level:          |                                 |               |         |             |    |
|                                      | <ul> <li>Contact National Ocean Service<br/>(NOAA) for current lake level<br/>and trend (select Water Level<br/>Observations from</li> </ul>          |                          |                                 |               |         |             |    |
|                                      | <ul> <li>WWW.CO-OpS.nos.noaa.gov)</li> <li>Contact National Weather Service<br/>for current and approaching<br/>weather (www.nws.noaa.gov)</li> </ul> |                          |                                 |               |         |             |    |
| 16                                   | Verify Minimum                                                                                                                                        | n Forebay Level:         |                                 |               |         |             |    |
|                                      | a. Determine minimum forebay level from table:                                                                                                        |                          |                                 |               |         |             |    |
|                                      |                                                                                                                                                       | CW PUMPS RUNNING         | MINIMUM                         | FOREBAY LEVEL | ]       |             |    |
|                                      |                                                                                                                                                       | TWO                      |                                 | 42.0%         |         |             |    |
|                                      | ONE 46.9%                                                                                                                                             |                          |                                 |               |         |             |    |
|                                      | NONE 53.1%                                                                                                                                            |                          |                                 |               |         |             |    |
|                                      | b. Check forebay level (Computer b. Refer to EPIPs to classify<br>Point L9075A) - GREATER THAN <u>OR</u> event.<br>EQUAL TO MINIMUM LEVEL             |                          |                                 |               |         |             |    |
|                                      |                                                                                                                                                       |                          |                                 |               |         |             |    |
|                                      |                                                                                                                                                       |                          |                                 |               |         |             |    |
|                                      |                                                                                                                                                       |                          |                                 |               |         |             |    |
|                                      |                                                                                                                                                       |                          |                                 |               |         |             |    |

| KEWAUNEE NUCLEAR POWER PLANT TITLE LUSS OF CIRCULATING WATER                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| EMERGENCY OPERATING PROCEDURES DATE DEC 04 2003 PAGE 9 o                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>f</b> 12     |
| STEP OPERATOR ACTIONS CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |
| <ul> <li>17 Check If One Circulating Water<br/>Pump Should Be Stopped:</li> <li>a. Check Circulating Water Pumps - a. <u>GO TO</u> Step 18.<br/>BOTH RUNNING</li> <li>b. Reduce turbine load as<br/>necessary to stop one<br/>circulating water pump using<br/>any of the following procedures:</li> <li>A-0-03</li> </ul>                                                                                                                                                        |                 |
| <ul> <li>N-1B-54</li> <li>N-0-03</li> <li>c. Stop one circulating water pump</li> <li>18 Check Forebay Level - RESTORED Perform the following:</li> </ul>                                                                                                                                                                                                                                                                                                                         |                 |
| <ul> <li>a. Forebay level - GREATER THAN 64%</li> <li>b. Forebay level - STABLE OR<br/>INCREASING</li> <li>2. IF low forebay level is due t<br/>frazil ice formation, <u>THEN</u><br/>contact WWC/Maintenance Singl<br/>Point Of Contact:</li> <li>a) Verify mechanics are onsit<br/>and briefed on how to rake<br/>30-inch SW auxiliary intak</li> <li>b) (CAS) IF reactor trip<br/>occurs, <u>THEN</u> dispatch<br/>mechanic to rake 30-inch S<br/>auxiliary intake.</li> </ul> | .0<br>.e<br>.e. |
| 19 Return To Procedure And Step In<br>Effect<br>-END-                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                     | NO. E-CW-04                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT TITLE Loss of Circulating Water                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                      | DATE DEC 04 2003 PAGE 10 of 12                                                                                                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |
| <u>ATTACHMENT A - WAT</u><br>(Page 1                                                                                                                                                                     | <u>ATTACHMENT A - WATER BOX THROTTLING</u><br>(Page 1 of 2)                                                                                                                                                                                                                                                                                                                      |  |  |  |  |  |  |  |
| CAUTI                                                                                                                                                                                                    | ON                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |  |  |
| • <u>WHEN</u> water box throttling is initia<br>can NO longer be used in determining<br>lake level anomalies. Subsequently<br>such as the National Ocean Service<br>Service shall be used to make EAL de | <ul> <li><u>WHEN</u> water box throttling is initiated, the forebay level indication<br/>can NO longer be used in determining Emergency Action Levels (EAL) for<br/>lake level anomalies. Subsequently, alternate sources of information<br/>such as the National Ocean Service (NOAA) and the National Weather<br/>Service shall be used to make EAL determinations.</li> </ul> |  |  |  |  |  |  |  |
| <ul> <li>Circulating Water Box inlet valves following limits is reached:</li> <li>Water Box inlet valves are 27.5</li> <li>Condenser back pressure approach of FIGURE 1.</li> </ul>                      | <ul> <li>Circulating Water Box inlet valves may be throttled until one of the following limits is reached:</li> <li>Water Box inlet valves are 27.5 degrees OPEN.</li> <li>Condenser back pressure approaching operating limit of FIGURE 1.</li> </ul>                                                                                                                           |  |  |  |  |  |  |  |
| • To avoid uneven Turbine blading hears shall be throttled equally in 5-10                                                                                                                               | ting, all Condenser inlet valves<br>degree increments.                                                                                                                                                                                                                                                                                                                           |  |  |  |  |  |  |  |
| A.1 Stop any liquid waste discharge in                                                                                                                                                                   | progress.                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |  |  |  |
| A.2 <u>WHEN</u> Condenser Water Box inlet val<br>monitor CW Recirculation Pump for                                                                                                                       | ves are being throttled, <u>THEN</u><br>potential overheating or cavitation.                                                                                                                                                                                                                                                                                                     |  |  |  |  |  |  |  |
| A.3 Reduce Circulating Water flow to R                                                                                                                                                                   | ESTORE Forebay level:                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |
| 1. THROTTLE closed the following                                                                                                                                                                         | equally in 5-10 degree increments:                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |  |  |
| a. CW-2A1/MV-32003, Condenser<br>valve                                                                                                                                                                   | A Inlet Water Box Al Isolation                                                                                                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |
| b. CW-2A2/MV-32004, Condenser<br>valve                                                                                                                                                                   | A Inlet Water Box A2 Isolation                                                                                                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |
| c. CW-2B1/MV-32005, Condenser<br>valve                                                                                                                                                                   | B Inlet Water Box B1 Isolation                                                                                                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |
| d. CW-2B2/MV-32006, Condenser<br>valve                                                                                                                                                                   | B Inlet Water Box B2 Isolation                                                                                                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |
| A.4 <u>IF</u> CW Recirculation Pump is in ser<br>Water To Intake Crib, to maintain<br>per N-CW-04.                                                                                                       | vice, <u>THEN</u> throttle CW-404, Recirc<br>approximately 35 psig on PI-11092                                                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |
|                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |  |  |  |

| TITLE Loss of Circulating Water                                               |  |  |  |  |  |
|-------------------------------------------------------------------------------|--|--|--|--|--|
| <b>of</b> 12                                                                  |  |  |  |  |  |
|                                                                               |  |  |  |  |  |
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|                                                                               |  |  |  |  |  |
| Restore Turbine load to required value using any of the following procedures: |  |  |  |  |  |
|                                                                               |  |  |  |  |  |
|                                                                               |  |  |  |  |  |
|                                                                               |  |  |  |  |  |
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| WISCONSIN PUBLIC SERVICE                                                                                             | CORPORATION                                                                                                                                                                                                                            | NO. E-FH-53B REV D                                                                       |                                             |                                     |  |  |
|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|--|--|
| KEWAUNEE NUCLEAR PO                                                                                                  | WER PLANT                                                                                                                                                                                                                              | TITLE Loss of Reactor Cavity Inventory<br>During Fuel Movement                           |                                             |                                     |  |  |
| OPERATING PROCE                                                                                                      | DURE                                                                                                                                                                                                                                   | <b>DATE</b>                                                                              | EB 19 2004                                  | PAGE 1 of 7                         |  |  |
| REVIEWED BY                                                                                                          |                                                                                                                                                                                                                                        | APPRO                                                                                    | VED BY                                      |                                     |  |  |
| NUCLEAR X YES<br>SAFETY RELATED NO                                                                                   | PORC REVIEW<br>REQUIRED                                                                                                                                                                                                                | YES SRO APPROVAL OF     SRO APPROVAL OF     TEMPORARY CHANGES     NO     REQUIRED     NO |                                             |                                     |  |  |
| 1.0 INTRODUCTION                                                                                                     | 1.0 <u>INTRODUCTION</u>                                                                                                                                                                                                                |                                                                                          |                                             |                                     |  |  |
| 1.1 Procedure describes<br>inventory during Re                                                                       | actions to be<br>fueling operati                                                                                                                                                                                                       | taken on lo<br>ons.                                                                      | ss of Reacto                                | r Cavity                            |  |  |
| 1.2 (CAS) indicates a of long duration ar<br><u>OR</u> the step require<br>performed.                                | Continuous Acti<br>d does <u>NOT</u> have<br>s a certain pla                                                                                                                                                                           | on Statemen<br>to be comp<br>nt conditio                                                 | t." It sign<br>leted before<br>n prior to b | ifies a step<br>continuing,<br>eing |  |  |
| 2.0 <u>SYMPTOMS</u>                                                                                                  |                                                                                                                                                                                                                                        |                                                                                          |                                             |                                     |  |  |
| 2.1 Computer alarm L905                                                                                              | 3A, Refueling W                                                                                                                                                                                                                        | ater Level                                                                               | A WR low.                                   |                                     |  |  |
| 2.2 Decreasing water le                                                                                              | vel in Reactor                                                                                                                                                                                                                         | Cavity and/                                                                              | or Spent Fue                                | 1 Pool.                             |  |  |
| 2.3 Control Room Annunc                                                                                              | iators:                                                                                                                                                                                                                                |                                                                                          |                                             |                                     |  |  |
| <ul> <li>CONTAINMENT SUMP</li> <li>CONTAINMENT SUMP</li> <li>REACTOR CAVITY SU</li> <li>SPENT FUEL POOL A</li> </ul> | A LEVEL HI-HI (<br>A LEVEL HIGH (4<br>MP LEVEL HIGH/L<br>BNORMAL (47055-                                                                                                                                                               | 47031-P)<br>7031-Q)<br>OW (47031-R<br>N)                                                 | )                                           |                                     |  |  |
| • S/G NOZZLE DAM TF                                                                                                  | OUBLE (47065-A)                                                                                                                                                                                                                        |                                                                                          |                                             |                                     |  |  |
| 2.4 Control Board Indic                                                                                              | ations:                                                                                                                                                                                                                                |                                                                                          |                                             |                                     |  |  |
| <ul> <li>Reactor Cavity Le</li> <li>CNTMT Level Sump</li> <li>CNTMT Level Wide</li> <li>R-2 or R-5 indica</li> </ul> | <ul> <li>Reactor Cavity Level indication decreasing.</li> <li>CNTMT Level Sump B lights indicating sump level increasing.</li> <li>CNTMT Level Wide Range indication increasing.</li> <li>R-2 or R-5 indication increasing.</li> </ul> |                                                                                          |                                             |                                     |  |  |
| 3.0 <u>AUTOMATIC ACTIONS</u>                                                                                         |                                                                                                                                                                                                                                        |                                                                                          |                                             |                                     |  |  |
| 3.1 None                                                                                                             |                                                                                                                                                                                                                                        |                                                                                          |                                             |                                     |  |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                   | NO.                        | E-FH-53B                                                                                                                |                                                                                                    |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                           | TITLE                      | LOSS OF REACTO<br>DURING FUEL MO                                                                                        | OR CAVITY INVENTORY<br>DVEMENT                                                                     |  |  |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                                                         | DATE FEB 19 2004 PAGE 2 of |                                                                                                                         |                                                                                                    |  |  |  |  |  |
|                                                                                                                                                                                                                                        |                            |                                                                                                                         |                                                                                                    |  |  |  |  |  |
| STEP OPERATOR ACTIONS                                                                                                                                                                                                                  |                            | CONTINGENO                                                                                                              | CY ACTIONS                                                                                         |  |  |  |  |  |
| 4.0 <u>DETAILED PROCEDURE</u>                                                                                                                                                                                                          |                            |                                                                                                                         |                                                                                                    |  |  |  |  |  |
| <u>NOTE</u> : Throughout subsequent actions, Emergency Plan Implementing Procedures<br>shall be reviewed to evaluate if Emergency Response Organization should<br>be activated.                                                        |                            |                                                                                                                         |                                                                                                    |  |  |  |  |  |
| 1 Evacuate Non-Essential Personnel<br>From Containment And SFP Area:                                                                                                                                                                   |                            |                                                                                                                         |                                                                                                    |  |  |  |  |  |
| a. On MCC A, Actuate Containment<br>Evacuation Alarm                                                                                                                                                                                   |                            |                                                                                                                         |                                                                                                    |  |  |  |  |  |
| b. Notify plant personnel using<br>Gai-tronics:                                                                                                                                                                                        |                            |                                                                                                                         |                                                                                                    |  |  |  |  |  |
| "Attention in the plant.<br>Attention in the plant.<br>Reactor Cavity level is<br>dropping. Evacuate Containmen<br>and Spent Fuel Pool Area.<br>Reactor Cavity level is<br>dropping. Evacuate Containmen<br>and Spent Fuel Pool Area." | it<br>it                   |                                                                                                                         |                                                                                                    |  |  |  |  |  |
| 2 Notify Health Physics                                                                                                                                                                                                                |                            |                                                                                                                         |                                                                                                    |  |  |  |  |  |
| 3 Stop Spent Fuel Pool Pumps                                                                                                                                                                                                           |                            |                                                                                                                         |                                                                                                    |  |  |  |  |  |
| 4 Direct Containment Refueling<br>Operator To Perform ATTACHMENT A                                                                                                                                                                     | Pe<br>a.<br>b.             | erform the follo<br><u>IF</u> time permit<br><u>THEN</u> locally o<br>Transfer Syste<br>Locally close<br>in each persor | owing:<br>ts valve closure,<br>tlose Fuel<br>em Gate Valve.<br>at least one door<br>anel air lock. |  |  |  |  |  |
|                                                                                                                                                                                                                                        |                            |                                                                                                                         |                                                                                                    |  |  |  |  |  |

| WISCO | NSIN PUBLIC SERVICE CORPORATION                          | NO.                | E-FH-53B                                                           |                                           |                      |             |   |
|-------|----------------------------------------------------------|--------------------|--------------------------------------------------------------------|-------------------------------------------|----------------------|-------------|---|
| KE    | WAUNEE NUCLEAR POWER PLANT                               | TITLE              | LOSS OF REACT<br>DURING FUEL M                                     | DR CAVITY<br>DVEMENT                      | INVEN                | ITORY       |   |
| EMI   | ERGENCY OPERATING PROCEDURES                             | DATE               | FEB 19 2004                                                        | PAGE                                      | 3                    | of          | 7 |
| STEP  | OPERATOR ACTIONS                                         |                    | CONTINGEN                                                          | CY ACTIO                                  | )<br>NS              |             | 7 |
| 5     | Direct SFP Refueling Operator To<br>Perform ATTACHMENT B | I<br>              | <u>F</u> local SFP leve<br>'4" below floor<br>evel per A-SFP-2     | el is gre<br>. <u>THEN</u> re<br>21.      | ater t<br>store      | chan<br>SFP |   |
| 6     | Evaluate Requirement To Set<br>Containment Integrity     |                    |                                                                    |                                           |                      |             |   |
| 7     | Check RCS Below Vessel Flange -<br>INTACT                | <u>I</u><br>1<br>F | <u>F</u> loss of inven<br>eakage from RCS<br>lange, <u>THEN GO</u> | tory is d<br>below Ve<br><u>TO</u> A-RHR- | ue to<br>ssel<br>34. |             |   |
| 8     | Return To Procedure And Step In<br>Effect                |                    |                                                                    |                                           |                      |             |   |
|       | -                                                        | END-               |                                                                    |                                           |                      |             |   |
|       | · · · · · · · · · · · · · · · · · · ·                    |                    |                                                                    |                                           |                      |             |   |
|       |                                                          |                    |                                                                    |                                           |                      |             |   |
|       |                                                          |                    |                                                                    |                                           |                      |             |   |
|       |                                                          |                    |                                                                    |                                           |                      |             |   |
|       |                                                          |                    |                                                                    |                                           |                      | ,           |   |
|       |                                                          |                    |                                                                    |                                           |                      |             |   |
|       |                                                          |                    |                                                                    |                                           |                      |             |   |
|       |                                                          |                    |                                                                    |                                           |                      |             |   |

| ĺ | WISCONS | IN PUBLIC SERVICE CORPORATION                                 | NO.                             | E-FH-53B                                               |                                                                           |
|---|---------|---------------------------------------------------------------|---------------------------------|--------------------------------------------------------|---------------------------------------------------------------------------|
|   | KEW     | AUNEE NUCLEAR POWER PLANT                                     | TITLE                           | LOSS OF REACTO<br>DURING FUEL MO                       | DR CAVITY INVENTORY<br>DVEMENT                                            |
|   | EMER    | GENCY OPERATING PROCEDURES                                    | DATE                            | FEB 19 2004                                            | PAGE 4 of 7                                                               |
|   |         |                                                               | r                               |                                                        |                                                                           |
|   | STEP    |                                                               |                                 |                                                        |                                                                           |
|   | A.1     | (CAS) Check Manipulator Cran<br>Radiation Monitor Alarm - CLI | e<br>B<br>B<br>B<br>B<br>A<br>R | Evacuate all<br>manipulator c<br>area.                 | <u>personnel from</u><br>crane and surrounding                            |
|   | A.2     | Check Manipulator Crane Mast<br>EMPTY                         | -                               | <u>IF</u> Manipulato<br>an irradiateo<br>perform one o | or Crane Mast contains<br>1 assembly, <u>THEN</u><br>of the following:    |
|   |         | <i>.</i>                                                      |                                 | a. Lower asse<br>location c<br>plate <u>AND</u>        | embly to any available<br>on lower core support<br>do <u>NOT</u> unlatch. |
|   |         |                                                               |                                 | <u>(</u>                                               | <u>)R</u>                                                                 |
|   |         |                                                               |                                 | b. Lower asse<br>transfer c                            | embly into upender <u>AND</u><br>conveyor to SFP Canal.                   |
|   |         |                                                               |                                 | <u>(</u>                                               | <u>)R</u>                                                                 |
|   |         |                                                               |                                 | c. Lower asse<br>system sum                            | embly into transfer<br>np <u>AND</u> do <u>NOT</u> unlatch.               |
|   |         |                                                               |                                 |                                                        |                                                                           |
|   |         |                                                               |                                 |                                                        |                                                                           |
|   |         |                                                               |                                 |                                                        |                                                                           |
|   |         |                                                               |                                 |                                                        |                                                                           |
|   |         |                                                               |                                 |                                                        |                                                                           |
|   |         |                                                               |                                 |                                                        |                                                                           |
|   |         |                                                               |                                 |                                                        |                                                                           |
|   |         |                                                               |                                 |                                                        |                                                                           |
|   |         |                                                               |                                 |                                                        |                                                                           |
|   |         |                                                               |                                 |                                                        |                                                                           |

| WISCONS       | IN PUBLIC SERVICE CORPORATION                                    | NO.                    | E-FH-53B                                                                     | · · · · · · · · · · · · · · · · · · ·                                              |
|---------------|------------------------------------------------------------------|------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| KEWA          | AUNEE NUCLEAR POWER PLANT                                        | TITLE                  | LOSS OF REACTO<br>DURING FUEL MO                                             | DR CAVITY INVENTORY<br>DVEMENT                                                     |
| EMERO         | GENCY OPERATING PROCEDURES                                       | DATE                   | FEB 19 2004                                                                  | PAGE 5 of 7                                                                        |
|               |                                                                  | — , r                  |                                                                              |                                                                                    |
| STEP          | OPERATOR ACTIONS                                                 |                        | CONTINGEN                                                                    | CY ACTIONS                                                                         |
|               | <u>ATTACHMENT A - CONTAI</u>                                     | <u>NMENT RE</u>        | FUELING OPERATO                                                              | <u>)R</u>                                                                          |
| <u>NOTE</u> : | An assembly left in RCC Change<br>assembly which is abandoned in | e Fixture<br>n the Man | e is less hazaro<br>ipulator Crane                                           | lous than an<br>mast.                                                              |
| A.3           | Check RCC Change Fixture - E                                     | МРТҮ                   | <u>IF</u> RCC Change<br>irradiated as<br>the following                       | e Fixture contains an<br>sembly, <u>THEN</u> perform<br>1:                         |
|               |                                                                  |                        | a. <u>IF</u> water 1<br>rapidly, <u>1</u><br>following:                      | evel is decreasing<br><u>HEN</u> perform the                                       |
|               |                                                                  |                        | 1) Do <u>NOT</u>                                                             | relocate assembly.                                                                 |
|               |                                                                  |                        | 2) If time<br>movemer<br>into as                                             | e permits RCC<br>ht, <u>THEN</u> insert RCC<br>sembly.                             |
|               |                                                                  |                        | b. <u>IF</u> water 1<br>slowly, <u>TH</u><br>assembly <u>A</u><br>following: | evel is decreasing<br>I <u>EN</u> insert RCC into<br>IND perform one of the        |
|               |                                                                  |                        | 1) Transfe<br>availal<br>core su<br><u>NOT</u> unl                           | er assembly to any<br>Die location on lower<br>upport plate <u>AND</u> do<br>atch. |
|               |                                                                  |                        |                                                                              | <u>OR</u>                                                                          |
|               |                                                                  |                        | 2) Lower a<br><u>AND</u> tra<br>Canal.                                       | assembly into upender<br>ansfer conveyor to SFP                                    |
|               |                                                                  |                        |                                                                              | <u>OR</u>                                                                          |
|               |                                                                  |                        | 3) Lower a<br>system<br>unlatch                                              | assembly into transfer<br>sump area <u>AND</u> do <u>NOT</u><br>1.                 |
| A.4           | Check Upender - EMPTY                                            |                        | Transfer conv                                                                | veyor to SFP Canal.                                                                |

| WISCON | WISCONSIN PUBLIC SERVICE CORPORATION                |                 | E-FH-53B                                                    |                                             |
|--------|-----------------------------------------------------|-----------------|-------------------------------------------------------------|---------------------------------------------|
| KEW    | AUNEE NUCLEAR POWER PLANT                           | TITLE           | LOSS OF REACTO<br>DURING FUEL MO                            | DR CAVITY INVENTORY<br>DVEMENT              |
| EMER   | RGENCY OPERATING PROCEDURES                         | DATE            | FEB 19 2004                                                 | <b>PAGE</b> 6 of 7                          |
|        |                                                     |                 |                                                             |                                             |
| STEP   |                                                     |                 |                                                             | CY ACTIONS                                  |
|        | ATTACHMENT A - CUNTAT                               | <u>IMENI KE</u> | FUELING UPERAIL                                             | <u>1K</u>                                   |
| A.5    | Check Fuel Transfer System G<br>Valve - CLOSED      | ate             | <u>IF</u> time permi<br><u>THEN</u> close Fu<br>Gate Valve. | ts valve closure,<br>el Transfer System     |
| A.6    | Check Manipulator Crane Mast<br>EMPTY               | -               | <u>IF</u> time permi<br><u>THEN</u> locate C<br>cavity.     | ts Crane movement,<br>Crane to north end of |
| A.7    | Evacuate All Personnel From<br>Containment          |                 |                                                             |                                             |
| A.8    | Close At Least One Door In Ea<br>Personnel Air Lock | ach             |                                                             |                                             |
|        | · -1                                                | END-            |                                                             |                                             |
|        |                                                     |                 |                                                             |                                             |
|        |                                                     |                 |                                                             |                                             |
|        |                                                     |                 |                                                             |                                             |
|        |                                                     |                 |                                                             |                                             |
|        |                                                     |                 |                                                             |                                             |
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|        |                                                     |                 |                                                             |                                             |
|        |                                                     |                 |                                                             |                                             |
|        |                                                     |                 |                                                             |                                             |
|        |                                                     |                 |                                                             |                                             |

| WISCONSI      | IN PUBLIC SERVICE CORPORATION                                             | NO.                           | E-FH-53B                                                                 |                                                          |
|---------------|---------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------|----------------------------------------------------------|
| KEWA          | UNEE NUCLEAR POWER PLANT                                                  | TITLE                         | LOSS OF REACT<br>DURING FUEL M                                           | DR CAVITY INVENTORY<br>DVEMENT                           |
| EMERC         | GENCY OPERATING PROCEDURES                                                | DATE                          | FEB 19 2004                                                              | PAGE 7 of 7                                              |
|               |                                                                           |                               |                                                                          |                                                          |
| STEP          | OPERATOR ACTIONS                                                          |                               | CONTINGEN                                                                | CY ACTIONS                                               |
| <u>NOTE</u> : | <u>ATTACHMENT B - SFI</u><br>Fuel handling will not be per-<br>refueling. | <u>P_REFUELI</u><br>formed in | <u>NG OPERATOR</u><br>the Canal Poo                                      | l during                                                 |
| B.1           | Check South Pool - NO IRRADIA                                             | ATED                          | Perform the                                                              | following:                                               |
|               | ASSEMBLIES IN IKANSII                                                     |                               | <ul> <li>Lower asser<br/>fuel rack.</li> </ul>                           | mbly into empty spent                                    |
|               |                                                                           |                               | <u> </u>                                                                 | <u>DR</u>                                                |
|               |                                                                           |                               | <ul> <li>Set assembing<br/>conveyor in<br/>do <u>NOT</u> unit</li> </ul> | ly down north of<br>n transfer Canal <u>AND</u><br>atch. |
|               |                                                                           |                               |                                                                          |                                                          |
| B.2           | Check Transfer Canal - NO<br>IRRADIATED ASSEMBLIES IN TRA                 | NSIT                          | Set assembly<br>conveyor <u>AND</u>                                      | down north of<br>do <u>NOT</u> unlatch.                  |
| B.3           | Check North Pool - NO IRRADI<br>ASSEMBLIES IN TRANSIT                     | ATED                          | Lower assemb<br>area floor <u>A</u>                                      | ly to cask loading<br><u>ND</u> do <u>NOT</u> unlatch.   |
| B.4           | Check SFP Level - GREATER TH<br>3'4" BELOW FLOOR                          | AN                            | Restore SFP                                                              | level per A-SFP-21.                                      |
| B.5           | Evacuate All Personnel From S<br>Area                                     | SFP                           |                                                                          |                                                          |
|               | -                                                                         | END-                          |                                                                          |                                                          |
|               |                                                                           |                               |                                                                          |                                                          |
|               |                                                                           |                               |                                                                          |                                                          |
|               |                                                                           |                               |                                                                          |                                                          |
|               |                                                                           |                               |                                                                          |                                                          |
|               |                                                                           |                               |                                                                          |                                                          |
|               |                                                                           |                               |                                                                          |                                                          |

| WISCONSIN PUBLIC SERVICE                                                          | CORPORATION                                                                                                     | <b>NO.</b> E               | S-0.1        | REV       | Р              |  |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------|--------------|-----------|----------------|--|
| KEWAUNEE NUCLEAR PO                                                               | WER PLANT                                                                                                       | TITLE R                    | EACTOR TRIP  | RESPONSE  |                |  |
| EMERGENCY OPERATING PR                                                            | ROCEDURES                                                                                                       | <b>date</b> A              | UG 03 2004   | PAGE      | 1 <b>of</b> 14 |  |
| REVIEWED BY                                                                       |                                                                                                                 | APPRO                      | AED BA       |           | ;              |  |
| NUCLEAR XES<br>SAFETY RELATED NO                                                  | RELATED NO PORC REVIEW YES SRO APPROVAL OF REQUIRED REQUIRED REQUIRED                                           |                            |              |           | ⊠ YES<br>□ NO  |  |
| 1.0 <u>INTRODUCTION</u>                                                           |                                                                                                                 |                            |              |           |                |  |
| 1.1 The purpose of this procedure is to:                                          |                                                                                                                 |                            |              |           |                |  |
| a. Place the Reactor in the Hot Shutdown condition following a Reactor Trip, and, |                                                                                                                 |                            |              |           |                |  |
| b. Secure the Turl<br>Turbine Trip.                                               | bine and assoc <sup>.</sup>                                                                                     | iated secon                | dary systems | followin  | g a            |  |
| 2.0 <u>SYMPTOMS_OR_ENTRY_CONDI</u>                                                | TIONS                                                                                                           |                            |              |           | 、              |  |
| 2.1 Reactor Trip follo                                                            | wed by a decre                                                                                                  | asing power                | level.       |           |                |  |
| 2.2 Turbine Trip follo                                                            | wed by a tripp                                                                                                  | ing of the                 | Generator OC | B.        |                |  |
| 2.3 This procedure is<br>Step 4 when SI is                                        | entered from Entertain entered from Entertain entertain entertain entertain entertain entertain entertain enter | -0, REACTOR<br>ed nor requ | TRIP OR SAF  | ETY INJEC | TION,          |  |
| 3.0 <u>AUTOMATIC_ACTIONS</u>                                                      |                                                                                                                 |                            |              |           |                |  |
| 3.1 Reactor and Primar                                                            | y System:                                                                                                       |                            |              |           |                |  |
| a. Reactor Trip B                                                                 | reakers open.                                                                                                   |                            |              |           |                |  |
| b. All rods on the                                                                | e bottom.                                                                                                       |                            |              |           |                |  |
| 3.2 Turbine and Associa                                                           | ated Systems:                                                                                                   |                            |              |           |                |  |
| a. Turbine trips.                                                                 |                                                                                                                 |                            |              |           |                |  |
| b. Turbine stop, e<br>reheater steam                                              | control, inter<br>supply valves                                                                                 | ceptor, reh<br>close.      | leater stop, | and       |                |  |
|                                                                                   |                                                                                                                 |                            |              |           |                |  |
|                                                                                   |                                                                                                                 |                            |              |           |                |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                      | NO.       | ES-0.1           |              | ·  |
|-----------------------------------------------------------|-----------|------------------|--------------|----|
| KEWAUNEE NUCLEAR POWER PLANT                              | TITLE     | REACTOR TRIP     | RESPONSE     |    |
| EMERGENCY OPERATING PROCEDURES                            | DATE      | AUG 03 2004      | PAGE 2       | of |
| c. Extraction steam check valves                          | s close f | for:             |              |    |
| 1) Feedwater Heaters 14A and                              | d 14B.    |                  |              |    |
| 2) Feedwater Heaters 15A and                              | d 15B.    |                  |              |    |
| d. Initiation of Steam Dump.                              |           |                  |              |    |
| e. Turbine Generator Breaker (G<br>trip after 30 seconds. | -1) and t | the Field Breake | er (41 BKR)  |    |
| f. 4160V auxiliary power shifts                           | from the  | e main auxiliary | 1.           |    |
| g. Turning Gear, Seal Oil Backu                           | p, and/or | r Emergency Oil  | Pumps start. |    |
|                                                           |           |                  |              |    |
|                                                           |           |                  |              |    |
|                                                           |           |                  |              |    |
|                                                           |           |                  |              |    |
|                                                           |           |                  |              |    |
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|                                                           |           |                  |              |    |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                   | NO. ES-0.1                                                                                                                                                                                                                          |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                           | TITLE REACTOR TRIP RESPONSE                                                                                                                                                                                                         |  |  |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                         | DATE AUG 03 2004 PAGE 3 of 14                                                                                                                                                                                                       |  |  |  |  |  |
|                                                                                                        |                                                                                                                                                                                                                                     |  |  |  |  |  |
| STEP OPERATOR ACTIONS                                                                                  | CONTINGENCY ACTIONS                                                                                                                                                                                                                 |  |  |  |  |  |
| 4.0 <u>DETAILED PROCEDURE</u>                                                                          |                                                                                                                                                                                                                                     |  |  |  |  |  |
| <u>CAU</u>                                                                                             | Γ <u>ΙΟΝ</u>                                                                                                                                                                                                                        |  |  |  |  |  |
| If SI actuation occurs at any time, E-0 should be performed starting at Step 1.                        | If SI actuation occurs at any time, E-O, REACTOR TRIP OR SAFETY INJECTION, should be performed starting at Step 1.                                                                                                                  |  |  |  |  |  |
| • • • • • • • • • • • • • • • • • • • •                                                                |                                                                                                                                                                                                                                     |  |  |  |  |  |
| <u>NOTE</u> : E-O Quick Reference Foldout page s                                                       | should be open.                                                                                                                                                                                                                     |  |  |  |  |  |
| 1 Check RCS Temperatures -                                                                             | Perform the following:                                                                                                                                                                                                              |  |  |  |  |  |
| RCS AVERAGE TEMPERATURE STABLE<br>AT OR TRENDING TO 547°F IF ANY<br>RXCP RUNNING                       | a. Transfer Steam Dump to Pressure<br>Control mode.                                                                                                                                                                                 |  |  |  |  |  |
| <u>OR</u>                                                                                              | b. <u>IF</u> temperature less than 547°F<br>and decreasing, <u>THEN</u> perform<br>the following:                                                                                                                                   |  |  |  |  |  |
| <ul> <li>RCS COLD LEG TEMPERATURES STABL<br/>AT OR TRENDING TO 547°F IF NO<br/>BYCP DUNNING</li> </ul> | -E 1) Stop dumping steam.                                                                                                                                                                                                           |  |  |  |  |  |
|                                                                                                        | 2) <u>IF</u> at least one Motor Driven<br>AFW Pump is running, <u>THEN</u><br>place the TDAFW Pump Control<br>Switch in PULLOUT position.                                                                                           |  |  |  |  |  |
|                                                                                                        | 3) <u>IF</u> cooldown continues, <u>THEN</u><br>control total feed flow.<br>Maintain total feed flow<br>greater than 200 gpm until<br>narrow range level greater<br>than 4% [15% FOR ADVERSE<br>CONTAINMENT] in at least one<br>SG. |  |  |  |  |  |
|                                                                                                        | 4) <u>IF</u> cooldown continues, <u>THEN</u><br>close MS-1A and B, SG A<br>and B Main Steam Isolation<br>Valves, and MS-2A and B,SG A<br>and B MSIV Bypass Valves.                                                                  |  |  |  |  |  |
|                                                                                                        | c. <u>IF</u> temperature greater than<br>547°F and increasing, <u>THEN</u><br>perform the following:                                                                                                                                |  |  |  |  |  |
|                                                                                                        | 1) Dump steam to Condenser.<br>OR                                                                                                                                                                                                   |  |  |  |  |  |
|                                                                                                        | 2) Dump Steam using Atmospheric<br>Steam Dumps.<br>OR                                                                                                                                                                               |  |  |  |  |  |
|                                                                                                        | 3) Dump Steam using SG PORVs.                                                                                                                                                                                                       |  |  |  |  |  |
|                                                                                                        |                                                                                                                                                                                                                                     |  |  |  |  |  |

| WISCO | NSIN PUBLIC SERVICE CORPORATION                                                     | NO.  |                 | ES-0.1                                                       |                                                       |
|-------|-------------------------------------------------------------------------------------|------|-----------------|--------------------------------------------------------------|-------------------------------------------------------|
| KE    | WAUNEE NUCLEAR POWER PLANT                                                          | TIT  | LE              | REACTOR TRIP                                                 | RESPONSE                                              |
| EM    | ERGENCY OPERATING PROCEDURES                                                        | DATI | 3               | AUG 03 2004                                                  | PAGE 4 of 14                                          |
|       |                                                                                     |      | Г               |                                                              |                                                       |
| STEP  | OPERATOR ACTIONS                                                                    |      | L               |                                                              | CY ACTIONS                                            |
| 2     | Check Feedwater Status:                                                             |      |                 |                                                              |                                                       |
|       | a. Check RCS temperature - LESS<br>THAN 554°F                                       |      | a.              | Continue with<br>temperature le<br>THEN perform S<br>and .d. | Step 3. <u>WHEN</u><br>ess than 554°F<br>Steps 2.b .c |
|       | b. Verify FW-7A and B, SG A and E<br>Main Feedwater Flow Control<br>Valves - CLOSED | 3    | b.              | Manually close                                               | e valves.                                             |
|       | c. Verify AFW flow to SGs -<br>GREATER THAN 200 GPM                                 |      | c.              | Establish feed<br>as necessary:                              | d flow to the SGs                                     |
| 1     |                                                                                     |      |                 | 1) AFW; conti                                                | nue with Step 2.d.                                    |
|       |                                                                                     |      |                 | <u>OR</u>                                                    |                                                       |
|       |                                                                                     |      |                 | 2) Main FW on<br>Step 3.                                     | bypass: <u>GO</u> <u>TO</u>                           |
|       | d. Stop both Main FW Pumps <u>AND</u><br>place in PULLOUT                           |      |                 |                                                              |                                                       |
| 3     | Verify All Control Rods - FULLY<br>INSERTED                                         |      | <u>IF</u><br>fu | one or more Co<br>lly inserted,                              | ontrol Rods <u>NOT</u><br>T <u>HEN</u> emergency      |
|       | <ul> <li>Rod Bottom Lights - ALL LIT</li> </ul>                                     |      | B0<br>B0        | RATION.                                                      | -35, EMERGENCI                                        |
|       | <ul> <li>Rod Position Indicators - ALL<br/>ZERO</li> </ul>                          |      |                 |                                                              |                                                       |
|       |                                                                                     |      |                 |                                                              |                                                       |
|       |                                                                                     |      |                 |                                                              |                                                       |
|       |                                                                                     |      |                 |                                                              |                                                       |
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| WISCONS | IN PUBLIC SERVICE CORPORATION                                  | NO.   | ES-0.1                                                                          |                                                                            |                   |
|---------|----------------------------------------------------------------|-------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------|
| KEW     | AUNEE NUCLEAR POWER PLANT                                      | TITLE | REACTOR TRIP                                                                    | RESPONSE                                                                   |                   |
| EMER    | GENCY OPERATING PROCEDURES                                     | DATE  | AUG 03 2004                                                                     | PAGE 5                                                                     | <b>of</b> 14      |
|         |                                                                | r     |                                                                                 |                                                                            |                   |
| STEP    | OPERATOR ACTIONS                                               |       | CONTINGEN                                                                       | CY ACTIONS                                                                 |                   |
| 4 C     | heck Pressurizer Level Control:                                |       |                                                                                 |                                                                            |                   |
| a       | . Level - GREATER THAN 19%                                     | a.    | Perform the fo                                                                  | ollowing:                                                                  |                   |
|         |                                                                |       | 1) Verify Leto<br><u>IF NOT, THI</u><br>isolate.                                | down Isolation.<br><u>EN</u> manually                                      |                   |
|         |                                                                |       | 2) Verify PRZI<br><u>NOT, THEN</u> m                                            | R Heaters off.<br>nanually turn o                                          | <u>IF</u><br>off. |
|         |                                                                |       | 3) Control Cha<br>PRZR level                                                    | arging to resto<br>greater than 1                                          | ore<br>.9%.       |
|         |                                                                |       | 4) <u>WHEN</u> PRZR 1<br>19%, <u>THEN</u> p<br>service <u>ANI</u><br>Heaters as | level greater t<br>blace Letdown i<br><u>)</u> re-energize P<br>necessary. | han<br>n<br>PRZR  |
|         |                                                                |       | 5) <u>GO TO</u> Step                                                            | 4.c.                                                                       |                   |
| b       | <ul> <li>Verify Charging and Letdown in<br/>service</li> </ul> | n b.  | Manually place<br>N-CVC-35B, CH/<br>CONTROL.                                    | e in service pe<br>ARGING AND VOLU                                         | er<br>IME         |
| c       | . Level - TRENDING to 21%                                      | c.    | Control Chargi<br>maintain level                                                | ing and Letdown<br>1 at 21%.                                               | ı to              |
|         |                                                                |       |                                                                                 |                                                                            |                   |
|         |                                                                |       |                                                                                 |                                                                            |                   |
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| I       |                                                                |       |                                                                                 |                                                                            |                   |

| WISCONSIN PUBLIC SERVICE CORPORATION                | NO. ES-0.1                                                                                                                                                                                            |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                        | TITLE REACTOR TRIP RESPONSE                                                                                                                                                                           |
| EMERGENCY OPERATING PROCEDURES                      | DATE AUG 03 2004 PAGE 6 of 14                                                                                                                                                                         |
| STEP OPERATOR ACTIONS                               | CONTINGENCY ACTIONS                                                                                                                                                                                   |
| 5 Check Pressurizer Pressure Contro                 | )]:                                                                                                                                                                                                   |
| a. Pressure – GREATER THAN<br>1815 PSIG             | a. Verify SI actuation. <u>IF NOT</u> ,<br><u>THEN</u> manually actuate SI. <u>GO</u><br><u>TO</u> E-O, REACTOR TRIP OR SAFETY<br>INJECTION, Step 1.                                                  |
| b. Pressure - STABLE AT OR<br>TRENDING TO 2235 PSIG | b. <u>IF</u> pressure less than 2235 psig<br><u>AND</u> decreasing, <u>THEN</u> :                                                                                                                     |
|                                                     | <ol> <li>Verify PRZR PORVs closed.<br/><u>IF NOT</u>, <u>THEN</u> manually close.<br/><u>IF</u> any valve can <u>NOT</u> be<br/>closed, <u>THEN</u> manually close<br/>its Block Valve.</li> </ol>    |
|                                                     | 2) Verify PRZR Spray Valves<br>closed. <u>IF NOT, THEN</u><br>manually close. <u>IF</u> valve(s)<br>can <u>NOT</u> be closed, <u>THEN</u> stop<br>RXCP(s) supplying failed<br>Spray Valve(s).         |
|                                                     | <ol> <li>Verify PRZR Heaters on. <u>IF</u><br/><u>NOT</u>, <u>THEN</u> manually turn on.</li> </ol>                                                                                                   |
|                                                     | <u>IF</u> pressure greater than<br>2235 psig <u>AND</u> increasing, <u>THEN</u> :                                                                                                                     |
|                                                     | 1) Verify PRZR Heaters off. <u>IF</u><br><u>NOT, THEN</u> manually turn off.                                                                                                                          |
|                                                     | 2) Control pressure using<br>normal PRZR spray. <u>IF NOT</u><br>available <u>AND</u> Letdown is in<br>service, <u>THEN</u> use auxiliary<br>spray. <u>IF NOT</u> , <u>THEN</u> use one<br>PRZR PORV. |
|                                                     |                                                                                                                                                                                                       |

| WISCONSIN PUBLIC SERVICE CORPORATION                                         | NO.   | ES-0.1                                                         |                                                                 |
|------------------------------------------------------------------------------|-------|----------------------------------------------------------------|-----------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                 | TITLE | REACTOR TRIP                                                   | RESPONSE                                                        |
| EMERGENCY OPERATING PROCEDURES                                               | DATE  | AUG 03 2004                                                    | PAGE 7 of 14                                                    |
| STEP OPERATOR ACTIONS                                                        |       | CONTINGEN                                                      | CY ACTIONS                                                      |
| 6 Check Steam Generator Levels:                                              |       |                                                                |                                                                 |
| a. Narrow range level - GREATER<br>THAN 4%                                   | g.    | Maintain tota<br>greater than<br>narrow range<br>4% in at leas | l feed flow<br>200 gpm until<br>level greater than<br>t one SG. |
| b. Control feed flow to maintain<br>narrow range level between 4%<br>and 50% | b.    | <u>IF</u> narrow ran<br>continues to<br>stop feed flo          | ge level in any SG<br>increase, <u>THEN</u><br>w to that SG.    |
|                                                                              |       |                                                                |                                                                 |
|                                                                              |       |                                                                |                                                                 |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                   | NO. ES-0.1                                                                                                                                    |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                           | TITLE REACTOR TRIP RESPONSE                                                                                                                   |
| EMERGENCY OPERATING PROCEDURES                                         | DATE AUG 03 2004 PAGE 8 of 14                                                                                                                 |
|                                                                        |                                                                                                                                               |
| STEP OPERATOR ACTIONS                                                  | CONTINGENCY ACTIONS                                                                                                                           |
| <u>NOTE</u> : The RWST must be used as suction to 42 are de-energized. | or the Charging Pumps if Buses 32 <u>AND</u>                                                                                                  |
| 7 Verify All AC Buses - ENERGIZED B                                    | Y Perform the following:                                                                                                                      |
|                                                                        | a. <u>IF</u> necessary, <u>THEN</u> verify the<br>DGs are supplying power to<br>Bus 5 and Bus 6 <u>AND</u> DG load is<br>- LESS THAN 2950 KW. |
|                                                                        | b. Verify Bus 5 or Bus 6 is<br>supplying the following loads:                                                                                 |
| · ·                                                                    | 1) Component Cooling Pump                                                                                                                     |
|                                                                        | 2) Pressurizer Backup Heaters<br>Group A or Group B.                                                                                          |
|                                                                        | 3) Motor Driven Auxiliary<br>Feedwater Pump.                                                                                                  |
|                                                                        | 4) Turbine Turning Gear Oil<br>Pump -ANN 47055-T LIT.                                                                                         |
|                                                                        | 5) Turbine Emergency Oil Pump<br>or Seal Oil Backup Pump<br>– ANN 47055–S OR 47055–U LIT.                                                     |
|                                                                        | 6) Station and Instrument Air<br>Compressor A, B or C.                                                                                        |
|                                                                        | 7) Service Water Pumps.                                                                                                                       |
|                                                                        | 8) MCC-5262.                                                                                                                                  |
|                                                                        | c. Restore offsite power.                                                                                                                     |
| 8 Transfer Steam Dump - TO PRESSURI<br>CONTROL MODE                    | <u>IF</u> Condenser <u>NOT</u> available, <u>THEN</u><br>use Atmospheric Steam Dumps or<br>Steam Generator PORVs.                             |

| WISCO           | )NSIN PUBLIC SERVICE CORPORATION                                                                | NO.             | ES-0.1                                                          |                                                              |              |  |  |
|-----------------|-------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------|--------------------------------------------------------------|--------------|--|--|
| к               | EWAUNEE NUCLEAR POWER PLANT                                                                     | TITLE           | REACTOR TRIP F                                                  | RESPONSE                                                     |              |  |  |
| EM              | EMERGENCY OPERATING PROCEDURES                                                                  |                 | AUG 03 2004                                                     | PAGE 9                                                       | <b>of</b> 14 |  |  |
|                 |                                                                                                 |                 | -                                                               |                                                              | ]            |  |  |
| STEP            | OPERATOR ACTIONS                                                                                |                 | CONTINGEN                                                       | CY ACTIONS                                                   |              |  |  |
| •••••           | <u>CAU</u>                                                                                      | <u>TION</u>     | • • • • • • • • • • • • • • • • • • • •                         |                                                              | ••••         |  |  |
| On na<br>not be | On natural circulation, RTD bypass temperatures and associated interlocks will not be accurate. |                 |                                                                 |                                                              |              |  |  |
| •••••           | • • • • • • • • • • • • • • • • • • • •                                                         | * * * * * * * * |                                                                 |                                                              | ••••         |  |  |
| 9               | Check RXCP Status - AT LEAST ONE                                                                | S               | tart one RXCP:                                                  |                                                              |              |  |  |
|                 |                                                                                                 | a               | . Establish cond<br>running RXCPs<br>REACTOR COOLA              | ditions for<br>per N-RC-36A<br>NT PUMP OPERA                 | TION.        |  |  |
|                 |                                                                                                 | b               | . Start one RXCI                                                | 2.                                                           | I            |  |  |
|                 |                                                                                                 | С               | . <u>IF</u> a RXCP can<br><u>THEN</u> refer to<br>verify natura | <u>NOT</u> be start<br>ATTACHMENT A<br>I circulation         | ed,<br>to    |  |  |
|                 |                                                                                                 | d               | . <u>IF</u> natural cin<br>verified, <u>THE</u><br>steam.       | rculation <u>NOT</u><br><u>N</u> increase du                 | mping        |  |  |
| 10              | Check Source Range Indication:                                                                  |                 |                                                                 |                                                              |              |  |  |
|                 | a. Check Intermediate Range flux<br>LESS THAN 1.0 X 10 <sup>-5</sup> %                          | - a             | . Continue with<br>flux less than<br>THEN perform S             | Step 11. <u>WH</u><br>n 1.0 X 10 <sup>-5</sup><br>Step 10.b. | EN<br>Z,     |  |  |
|                 | b. Activate the Audible Count Ra<br>drawer                                                      | te              |                                                                 |                                                              |              |  |  |
|                 |                                                                                                 |                 |                                                                 |                                                              |              |  |  |
|                 |                                                                                                 |                 |                                                                 |                                                              |              |  |  |
|                 |                                                                                                 |                 |                                                                 |                                                              |              |  |  |
| 1               |                                                                                                 |                 |                                                                 |                                                              |              |  |  |
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|                 | · · · ·                                                                                         |                 |                                                                 |                                                              |              |  |  |

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| wisco | ONSIN PUBLIC SERVICE CORPORATION                                                                    | NO.   | ES-0.1                |             |    |   |
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| KE    | WAUNEE NUCLEAR POWER PLANT                                                                          | TITLE | REACTOR TRIP          | RESPONSE    | _  | _ |
| EM    | EMERGENCY OPERATING PROCEDURES DATE AUG 03 2004 PAGE 10                                             |       |                       | 0 <b>of</b> | 14 |   |
|       |                                                                                                     | r     |                       |             |    |   |
| STEP  | OPERATOR ACTIONS                                                                                    |       | CONTINGEN             | CY ACTION   | S  |   |
| 11    | Shut Down Unnecessary Plant<br>Equipment:                                                           |       |                       |             |    |   |
|       | a. Stop both Heater Drain Pumps<br><u>AND</u> place in PULLOUT                                      |       |                       |             |    |   |
|       | b. Verify C-802A and B, Subcoolir<br>Valves - CLOSED                                                | ng    |                       |             |    |   |
|       | c. Check Condensate Pumps - TWO<br>RUNNING                                                          | c.    | <u>GO TO</u> Step 12. |             |    |   |
|       | d. Stop one condensate pump <u>AND</u><br>place in PULLOUT                                          |       |                       |             |    |   |
| 12    | Maintain Stable Plant Conditions:                                                                   | :     |                       |             |    |   |
|       | <ul> <li>Pressurizer pressure - AT<br/>2235 PSIG</li> </ul>                                         |       |                       |             |    |   |
|       | • Pressurizer level - AT 21%                                                                        |       |                       |             |    |   |
|       | <ul> <li>RCS temperature -</li> <li>AVERAGE TEMPERATURE AT 547°I<br/>IF ANY RXCP RUNNING</li> </ul> | 2     |                       |             |    |   |
|       | • COLD LEG TEMPERATURES AT<br>547°F IF NO RXCP RUNNING                                              |       |                       |             |    |   |
|       | <ul> <li>Steam Generator narrow range<br/>levels - BETWEEN 4% AND 50%</li> </ul>                    |       |                       |             |    |   |
| 13    | Set The Steam Generator PORVs<br>- AT 1005 PSIG                                                     |       |                       |             |    |   |
| 14    | Shut Down The Turbine Per N-TB-54<br>TURBINE AND GENERATOR OPERATION                                | ١.    |                       |             |    |   |
|       |                                                                                                     |       |                       |             |    |   |

| WISCO | DNSIN PUBLIC SERVICE CORPORATION                                                                                | NO.     | ES-0.1           |            |
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| KI    | WAUNEE NUCLEAR POWER PLANT                                                                                      | TITLE   | REACTOR TRIP     | RESPONSE   |
| EM    | ERGENCY OPERATING PROCEDURES                                                                                    | DATE    | AUG 03 2004      | PAGE 11    |
| STEP  | OPERATOR ACTIONS                                                                                                |         | CONTINGEN        | CY ACTIONS |
| 15    | Shift Chemical Injection From<br>Condensate To Auxiliary Feedwater<br>Per N-CI-28, CHEMICAL INJECTION<br>SYSTEM |         |                  |            |
| 16    | Verify Drain And Trap Bypass<br>Valves Are Aligned Per N-TD-13,<br>TURBINE ROOM TRAPS AND DRAINS                | A       | lign valves as i | necessary. |
| 17    | Align Secondary Plant Pumps For<br>Shutdown:                                                                    |         |                  |            |
|       | a. Main FW Pumps - refer to<br>N-FW-05A, FEEDWATER SYSTEM<br>NORMAL OPERATION                                   |         |                  |            |
|       | b. Heater Drain Pumps - refer to<br>N-HD-11, HEATER and MOISTURE<br>SEPERATOR DRAIN and BLEED<br>STEAM SYSTEM   |         |                  |            |
|       | c. Condensate Pumps - refer to<br>N-CD-03, CONDENSATE SYSTEM                                                    |         |                  |            |
| 18    | Shift Steam Generator Blowdown To<br>Mode I Per N-BT-07A, STEAM<br>GENERATOR BLOWDOWN TREATMENT SYST            | EM      |                  |            |
| 19    | Establish Secondary Plant Shutdow<br>Conditions Per N-MS-06, MAIN<br>STEAM AND STEAM DUMP SYSTEM                | 'n      |                  |            |
| 20    | Verify MS-312A-1 And B-1, Gland<br>Steam To Moisture Separator Relie<br>Valves - OPEN                           | M:<br>f | anually open va  | lves.      |

| wisco | DNSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                     | NO.   | ES-0.1       |            | ···=         |
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| KI    | EWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                          | TITLE | REACTOR TRIP | RESPONSE   |              |
| EM    | ERGENCY OPERATING PROCEDURES                                                                                                                                                                         | DATE  | AUG 03 2004  | PAGE 12    | <b>of</b> 14 |
|       |                                                                                                                                                                                                      | — r   |              |            |              |
| STEP  | OPERATOR ACTIONS                                                                                                                                                                                     |       | CONTINGEN    | CY ACTIONS |              |
| 21    | Place Control Switches For Main<br>AUX Transformer Supply Breakers<br>Buses 1 Through 6 - TO PULLOUT:<br>• Breaker 1-104<br>• Breaker 1-204<br>• Breaker 1-301<br>• Breaker 1-401<br>• Breaker 1-511 | Го    |              |            |              |
|       | • Breaker 1-610                                                                                                                                                                                      |       |              |            |              |
| 22    | <ul> <li>Investigate Cause Of Trip:</li> <li>a. Refer to N-ESF-55, POST TRIP<br/>REVIEW</li> <li>b. Refer to GNP 2.2.1, Guidelines<br/>For Post Trip Activities</li> </ul>                           | S     |              |            |              |
|       | c. Notity System Uperations                                                                                                                                                                          |       |              |            |              |
| 23    | Take Auxiliary MWH Readings In T<br>Relay Room                                                                                                                                                       | he    |              |            |              |
| 24    | Make Out A System Disturbance<br>Report                                                                                                                                                              |       |              |            |              |
| 25    | Place The Heating Boiler In<br>Operation If Required                                                                                                                                                 |       |              |            |              |
| 26    | Initiate An Action Request (AR)<br>Per NMC Procedure FP-PA-ARP-01,<br>Action Request Process.                                                                                                        |       |              |            |              |
|       |                                                                                                                                                                                                      |       |              |            |              |

| WISCO | NSIN PUBLIC SERVICE CORPORATION                                                     | NO.   | ES-0.1                |                                         |           |    |
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| KE    | WAUNEE NUCLEAR POWER PLANT                                                          | TITLE | REACTOR TRIP          | RESPONSE                                |           |    |
| EM    | ERGENCY OPERATING PROCEDURES                                                        | DATE  | AUG 03 2004           | PAGE 13                                 | of        | 14 |
| STEP  | OPERATOR ACTIONS                                                                    |       | CONTINGEN             | CY ACTIONS                              |           | ٦  |
| 27    | Perform NRC Event Notification:                                                     | L     |                       |                                         |           | J  |
|       | a. Refer to GNP 11.8.4,<br>Reportability Determinations                             |       |                       |                                         |           |    |
|       | b. Refer to GNP 11.4.4, Completie<br>and Use of the Event<br>Notification Worksheet | on    |                       |                                         |           |    |
| 28    | Determine If Natural Circulation<br>Cooldown Required:                              |       |                       |                                         |           |    |
|       | a. Check the following:                                                             | a.    | <u>IF</u> a natural ( | circulation                             | ~~        |    |
|       | • RXCPs - BOTH STOPPED                                                              |       | <u>TO</u> N-0-04, 35  | TEQUITED, <u>THEN</u><br>Z POWER TO HOT | <u>60</u> |    |
|       | AND                                                                                 |       | maintain Hot S        | Shutdown.                               |           |    |
|       | • Plant cooldown - REQUIRED                                                         |       |                       |                                         |           |    |
|       | b. <u>GO</u> <u>TO</u> ES-0.2, NATURAL<br>CIRCULATION COOLDOWN                      |       |                       |                                         |           |    |
|       | -1                                                                                  | END-  |                       |                                         |           |    |
|       |                                                                                     |       |                       |                                         |           |    |
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| WISCONSIN PUBLIC SERVICE CORPORATION           | NO.        | ES-0:1          |              |              |
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| KEWAUNEE NUCLEAR POWER PLANT                   | TITLE      | REACTOR TRIP    | RESPONSE     |              |
| EMERGENCY OPERATING PROCEDURES                 | DATE       | AUG 03 2004     | PAGE 14      | <b>of</b> 14 |
| ATTACHMEN                                      | <u>T_A</u> |                 |              |              |
| The following conditions support or indication | ate natu   | ral circulation | flow:        |              |
| l. RCS subcooling based on Core Exit TCs       | - GREATEI  | R THAN 30°F.    |              |              |
| 2. Steam Generator pressure - STABLE OR DI     | ECREASIN   | G.              |              |              |
| 3. RCS hot leg temperature - STABLE OR SLO     | OWLY DEC   | REASING.        |              |              |
| 4. Core Exit TCs - STABLE OR DECREASING.       |            |                 |              |              |
| 5. RCS cold leg temperature - NEAR SATURAT     | TION TEM   | PERATURE FOR ST | EAM PRESSURE | •            |
|                                                |            |                 |              |              |
|                                                |            |                 |              |              |
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| WISCONSIN PUBLIC SERVICE                                                                                                                                                                                                                      | WISCONSIN PUBLIC SERVICE CORPORATION  |             |                              | REV                                                                    | W              |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------|------------------------------|------------------------------------------------------------------------|----------------|--|--|
| KEWAUNEE NUCLEAR PO                                                                                                                                                                                                                           | WER PLANT                             | TITLE R     | RANSFER TO C<br>ECIRCULATION | ONTAINMEN                                                              | IT SUMP        |  |  |
| EMERGENCY OPERATING P                                                                                                                                                                                                                         | ROCEDURES                             | DATE N      | OV 25 2003                   | PAGE                                                                   | 1 <b>of</b> 19 |  |  |
| REVIEWED BY                                                                                                                                                                                                                                   |                                       | APPROVED BY |                              |                                                                        |                |  |  |
| NUCLEAR XES<br>SAFETY RELATED NO                                                                                                                                                                                                              | NUCLEAR SAFETY RELATED NO PORC REVIEW |             |                              | W 🖾 YES SRO APPROVAL OF 🖾 YES<br>TEMPORARY CHANGES<br>NO REQUIRED 🗆 NO |                |  |  |
| 1.0 <u>INTRODUCTION</u>                                                                                                                                                                                                                       |                                       |             |                              |                                                                        |                |  |  |
| 1.1 This procedure provides the necessary instructions for transferring<br>the Safety Injection System and Containment Spray System to the<br>recirculation mode.                                                                             |                                       |             |                              |                                                                        |                |  |  |
| 1.2 (CAS) indicates a "Continuous Action Statement." It signifies a step<br>of long duration and does <u>NOT</u> have to be completed before continuing<br><u>OR</u> the step requires a certain plant condition prior to being<br>performed. |                                       |             |                              |                                                                        |                |  |  |
| 2.0 <u>SYMPTOMS_OR_ENTRY_CONDI</u>                                                                                                                                                                                                            | TIONS                                 |             |                              |                                                                        |                |  |  |
| 2.1 This procedure is                                                                                                                                                                                                                         | entered from:                         |             |                              |                                                                        |                |  |  |
| a. E-1, LOSS OF R<br>RWST level.                                                                                                                                                                                                              | EACTOR OR SECO                        | NDARY COOLA | NT, Step 19,                 | on low                                                                 |                |  |  |
| b. ECA-2.1, UNCON<br>Step 9, on low                                                                                                                                                                                                           | TROLLED DEPRES                        | SURIZATION  | OF ALL STEAM                 | I GENERATO                                                             | IRS,           |  |  |
| c. Whenever RWST                                                                                                                                                                                                                              | level reaches                         | the switcho | over setpoint                | of 37%.                                                                |                |  |  |
| 3.0 <u>AUTOMATIC_ACTIONS</u>                                                                                                                                                                                                                  |                                       |             |                              |                                                                        |                |  |  |
| 3.1 None                                                                                                                                                                                                                                      |                                       |             |                              |                                                                        |                |  |  |
|                                                                                                                                                                                                                                               |                                       |             |                              |                                                                        |                |  |  |
|                                                                                                                                                                                                                                               |                                       |             |                              |                                                                        |                |  |  |
|                                                                                                                                                                                                                                               |                                       |             |                              |                                                                        |                |  |  |
|                                                                                                                                                                                                                                               |                                       |             |                              |                                                                        |                |  |  |
|                                                                                                                                                                                                                                               |                                       |             |                              |                                                                        |                |  |  |
| 1                                                                                                                                                                                                                                             |                                       |             |                              |                                                                        |                |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                  | NO. ES-1.3                                                                       |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                          | TITLE TRANSFER TO CONTAINMENT SUMP<br>RECIRCULATION                              |
| EMERGENCY OPERATING PROCEDURES                                        | DATE NOV 25 2003 PAGE 2 of 19                                                    |
|                                                                       |                                                                                  |
| STEP OPERATOR ACTIONS                                                 | CONTINGENCY ACTIONS                                                              |
| 4.0 <u>DETAILED PROCEDURE</u>                                         |                                                                                  |
| <u>Cau</u>                                                            | <u>TION</u>                                                                      |
| Steps 1 through 22 take precedence over performed without delay.      | CSF Status Tree actions and should be                                            |
| SI recirculation flow to RCS must be ma                               | intained at all times.                                                           |
| If offsite power is lost after SI reset restart safeguards equipment. | , manual action may be required to                                               |
| Switchover to recirculation may cause h                               | igh radiation in the Auxiliary Building.                                         |
| •••••••••••••••••••••••••••••••••••••••                               | ••••••••••••••••••                                                               |
| 1 Check Containment Sump B Level -<br>GREATER THAN 1.0 FEET           | <u>GO</u> <u>TO</u> ECA-1.1, LOSS OF EMERGENCY<br>COOLANT RECIRCULATION, Step 1. |
| • 4131703<br>• 4131704                                                |                                                                                  |
| 2 Perform The Following:                                              |                                                                                  |
| a. Reset SI                                                           |                                                                                  |
| b. Reset Internal Containment Sp                                      | ray                                                                              |
|                                                                       |                                                                                  |
|                                                                       |                                                                                  |
|                                                                       |                                                                                  |
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| · ·                                                                   |                                                                                  |
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| WISCO | NSIN PUBLIC SERVICE CORPORATION                                 | NO.                                                 | ES-1.3                                                              |                                                  | _                 |
|-------|-----------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------|-------------------|
| KE    | WAUNEE NUCLEAR POWER PLANT                                      | TITLE TRANSFER TO CONTAINMENT SUMP<br>RECIRCULATION |                                                                     | мр                                               |                   |
| EM    | ERGENCY OPERATING PROCEDURES                                    | DATE NOV 25 2003 PAGE 3 of                          |                                                                     | <b>of</b> 19                                     |                   |
|       |                                                                 |                                                     |                                                                     | • · · · · · · · · · · · · · · · · · · ·          |                   |
| STEP  | OPERATOR ACTIONS                                                |                                                     | CONTINGEN                                                           | CY ACTIONS                                       |                   |
| 3     | Establish One Train Of Injection                                | :                                                   |                                                                     |                                                  |                   |
|       | a. Verify Train A injection flow                                | : a.                                                | Start pumps a                                                       | s necessary to                                   | D                 |
|       | 1) SI Pump A - RUNNING <u>AND</u> PU<br>AMPS INDICATE FLOW      | MP                                                  | flow. <u>IF</u> inj<br>Train A can <u>N</u><br><u>THEN GO</u> TO St | ection flow fi<br><u>OT</u> be establis<br>ep 4. | n<br>rom<br>shed, |
|       | <u>OR</u>                                                       |                                                     |                                                                     | •                                                |                   |
|       | 2) RHR Pump A - RUNNING <u>AND</u><br>F626 INDICATES FLOW       |                                                     |                                                                     |                                                  |                   |
|       | b. Stop SI Pump B.                                              |                                                     |                                                                     |                                                  |                   |
|       | c. Stop RHR Pump B.                                             |                                                     |                                                                     |                                                  |                   |
| 4     | Check If One ICS Pump Should Be<br>Stopped:                     |                                                     |                                                                     |                                                  |                   |
|       | a. Check ICS pumps - TWO RUNNING                                | a.                                                  | <u>GO TO</u> Step 5.                                                |                                                  |                   |
|       | b. Stop one ICS pump.                                           |                                                     |                                                                     |                                                  |                   |
| 5     | Establish Component Cooling Flow<br>To The RHR Heat Exchangers: |                                                     |                                                                     |                                                  |                   |
|       | a. Verify both Component Cooling<br>Pumps - RUNNING             | a.                                                  | Start Compone                                                       | nt Cooling Pur                                   | mps.              |
|       | b. Perform the following:                                       | b.                                                  | Locally open                                                        | valve(s).                                        |                   |
|       | 1) Open SW-1300A, Comp Coolin<br>Heat Exchanger A Outlet        | <b>g</b> .                                          |                                                                     |                                                  |                   |
|       | 2) Open SW-1300B, Comp Cooling<br>Heat Exchanger B Outlet       | g                                                   |                                                                     |                                                  |                   |
|       | 3) Open CC-400A, Component<br>Cooling To RHR HX A               |                                                     |                                                                     |                                                  |                   |
|       | 4) Open CC-400B, Component<br>Cooling To RHR HX B               |                                                     |                                                                     |                                                  |                   |

| WISCONSI              | N PUBLIC SERVICE CORPORATION                                                      | NO.         | ES-1.3                                                                |                                                      |              |
|-----------------------|-----------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------|------------------------------------------------------|--------------|
| KEWA                  | UNEE NUCLEAR POWER PLANT                                                          | TITLE       | TRANSFER TO CORECIRCULATION                                           | DNTAINMENT SU                                        | MP           |
| EMERG                 | ENCY OPERATING PROCEDURES                                                         | DATE        | NOV 25 2003                                                           | PAGE 4                                               | <b>of</b> 19 |
|                       |                                                                                   |             |                                                                       |                                                      |              |
| STEP                  | OPERATOR ACTIONS                                                                  |             | CONTINGENO                                                            | CY ACTIONS                                           |              |
| 6 Ve<br>Is            | rify LD-6, Letdown Line<br>colation - CLOSED                                      | C<br>c<br>R | lose LD-6. <u>IF</u> L<br>lose, <u>THEN</u> local<br>eactor Coolant F | .D-6 will <u>NOT</u><br>ly close LD-<br>ilter Inlet. | 24,          |
| *******               | <u>CAU</u>                                                                        | <u>[10N</u> |                                                                       | *****                                                | •••••        |
| Any pumps<br>alarm at | taking suction from the RWST s                                                    | should be   | e stopped upon R                                                      | WST Lo-Lo Le                                         | vel          |
| ********              | *********                                                                         | *******     |                                                                       | *****                                                | ****         |
| 7 A1                  | ign Charging Pumps To VCT:                                                        |             |                                                                       |                                                      |              |
| a.                    | Establish normal VCT makeup<br>control:                                           | а.          | . <u>GO TO</u> Step 8.                                                |                                                      |              |
|                       | 1) Verify Makeup Boric Acid<br>Controller – SET TO 11.0                           |             |                                                                       |                                                      |              |
|                       | 2) Verify Makeup Mode Selector<br>- IN AUTO                                       |             |                                                                       |                                                      |              |
|                       | 3) Verify VCT level - GREATER<br>THAN 5%                                          |             |                                                                       |                                                      |              |
| b.                    | Align Charging Pumps suction t<br>VCT:                                            | ob.         | . <u>GO TO</u> Step 8.                                                |                                                      |              |
|                       | 1) Open CVC-1/MV-32057, Volume<br>Control Tank To Charging<br>Pumps Isol          | 2           |                                                                       |                                                      |              |
|                       | 2) Close CVC-301/MV-32056,<br>Refueling Water Emergency<br>Makeup To Charging Pmp |             |                                                                       |                                                      |              |
| c.                    | Check charging pumps – ANY<br>RUNNING                                             | c.          | <u>GO TO</u> Step 8.                                                  |                                                      |              |
| d.                    | Establish charging plus seal<br>injection flow less than VCT<br>makeup flow       |             |                                                                       |                                                      |              |

| wisco | ONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                    | NO.            | ES-1.3                                                                                                                  |                                                                           |              |
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| к     | EWAUNEE NUCLEAR POWER PLANT                                                                                                                                                         | TITLE          | TRANSFER TO CORECIRCULATION                                                                                             | DNTAINMENT SUM                                                            | IP           |
| EM    | ERGENCY OPERATING PROCEDURES                                                                                                                                                        | DATE           | NOV 25 2003                                                                                                             | PAGE 5                                                                    | <b>of</b> 19 |
| STEP  | OPERATOR ACTIONS                                                                                                                                                                    |                | CONTINGENO                                                                                                              | CY ACTIONS                                                                |              |
| 8     | (CAS) Check RCS Pressure - LESS<br>THAN 2100 PSIG [1900 PSIG FOR<br>Adverse containment]                                                                                            | St             | op both SI pump                                                                                                         | DS.                                                                       |              |
| 9     | Close Both SI Recirculation To<br>RWST Valves<br>• SI-208<br>• SI-209                                                                                                               | Pe<br>a.<br>b. | erform the follo<br>Locally close<br><u>IF</u> neither val<br><u>THEN GO TO</u> ECA<br>EMERGENCY COOL<br>RECIRCULATION, | owing:<br>valves.<br>Ive can be clo<br>A-1.1, LOSS OF<br>ANT<br>, Step 1. | sed,         |
| 10    | <ul> <li>Verify Train A Injection Flow:</li> <li>a. SI Pump A - RUNNING AND PUMP AMPS INDICATE FLOW</li> <li>DR</li> <li>b. RHR Pump A - RUNNING AND F626 INDICATES FLOW</li> </ul> | <u>60</u>      | <u>10</u> Step 16.                                                                                                      |                                                                           |              |

| WISCO | NSIN PUBLIC SERVICE CORPORATION                                                                                      | NO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ES-1.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KI    | WAUNEE NUCLEAR POWER PLANT                                                                                           | TITLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | TRANSFER TO CONTAINMENT SUMP<br>RECIRCULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| ЕМ    | ERGENCY OPERATING PROCEDURES                                                                                         | DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | NOV 25 2003 PAGE 6 of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|       | · · · · · · · · · · · · · · · · · · ·                                                                                | r                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| STEP  | OPERATOR ACTIONS                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 11    | Align Train B RHR Pump For<br>Recirculation:                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|       | a. Open SI-350B, CNTMT Sump B<br>Supply To RHR Pump B                                                                | a.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | . <u>GO TO</u> Step 14.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|       | b. Close SI-300B, RWST Supply to<br>RHR Pump B                                                                       | b.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | . Locally close SI-300B. <u>IF</u><br>valve can <u>NOT</u> be closed, <u>THEN</u><br><u>GO TO</u> Step 14.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|       | c. Do <u>NOT</u> continue until SI-300B<br>is closed                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|       | d. Open SI-351B, CNTMT Sump B<br>Supply To RHR Pump B                                                                | d.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | . Locally open SI-351B. <u>IF</u> valve<br>can <u>NOT</u> be opened, <u>THEN GO TO</u><br>Step 14.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | e                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|       | e. Close RHR-8B, RHR Heat<br>Exchanger B Flow CV                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|       | f. Start RHR Pump B                                                                                                  | f.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | . <u>GO</u> <u>TO</u> Step 14.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 12    | Verify Train B RHR Recirculation<br>Flow:                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|       | a. Check RCS pressure – LESS THA<br>150 PSIG                                                                         | N a.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | . <u>GO TO</u> Step 13.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|       | b. Throttle RHR-8B, RHR Heat<br>Exchanger B Flow CV as<br>necessary to maintain RHR<br>recirculation flow at 1500 gp | b.<br>m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | . Check valve alignment. <u>IF</u> RHR<br>Pump B recirculation flow on<br>F928 is less than 700 gpm, <u>THEI</u><br><u>GO</u> <u>TO</u> Step 13.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|       | c. <u>GO TO</u> Step 18                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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|       | WISCO<br>KE<br>EM<br>STEP<br>11                                                                                      | WISCONSIN FUBLIC SERVICE CORPORATION<br>KEWAUNEE NUCLEAR POWER PLANT<br>EMERGENCY OPERATING PROCEDURES<br>STEP OPERATOR ACTIONS<br>11 Align Train B RHR Pump For<br>Recirculation:<br>a. Open SI-350B, CNTMT Sump B<br>Supply To RHR Pump B<br>b. Close SI-300B, RWST Supply to<br>RHR Pump B<br>c. Do <u>NOT</u> continue until SI-300B<br>is closed<br>d. Open SI-351B, CNTMT Sump B<br>Supply To RHR Pump B<br>e. Close RHR-8B, RHR Heat<br>Exchanger B Flow CV<br>f. Start RHR Pump B<br>12 Verify Train B RHR Recirculation<br>Flow:<br>a. Check RCS pressure - LESS THA<br>150 PSIG<br>b. Throttle RHR-8B, RHR Heat<br>Exchanger B Flow CV as<br>necessary to maintain RHR<br>recirculation flow at 1500 gp<br>c. <u>60 T0</u> Step 18 | WISCONSIN PUBLIC SERVICE CORPORATION       NO.         KEWAUNEE NUCLEAR POWER PLANT       TITLE         EMERGENCY OPERATING PROCEDURES       DATE         STEP       OPERATOR ACTIONS       DATE         11       Align Train B RHR Pump For<br>Recirculation:       a.       Open SI-350B, CNTMT Sump B       a         a.       Open SI-350B, CNTMT Sump B       a       Supply To RHR Pump B       b         b.       Close SI-300B, RWST Supply to<br>RHR Pump B       b       c.       Do <u>NOT</u> continue until SI-300B<br>is closed       d         d.       Open SI-351B, CNTMT Sump B       d       Supply To RHR Pump B       d         e.       Close RHR-8B, RHR Heat<br>Exchanger B Flow CV       f.       Start RHR Pump B       f         12       Verify Train B RHR Recirculation<br>Flow:       a.       Check RCS pressure - LESS THAN<br>150 PSIG       a         b.       Throttle RHR-8B, RHR Heat<br>Exchanger B Flow CV as<br>necessary to maintain RHR<br>recirculation flow at 1500 gpm       c.       60 T0 Step 18 | WISCONSIN FUBLIC SERVICE CORFORATION<br>KEWAUNEE NUCLEAR POWER PLANT       NO.       ES-1.3         TITLE TRANSFER TO CONTAINMENT SUMP<br>RECIRCULATION       TITLE TRANSFER TO CONTAINMENT SUMP<br>RECIRCULATION         EMERGENCY OPERATING PROCEDURES       DATE NOV 25 2003       PAGE 6 of<br>of<br>eccirculation         STEP       OPERATOR ACTIONS       CONTINGENCY ACTIONS         11       Align Train B RHR Pump For<br>Recirculation:       a. GO TO Step 14.         a. Open SI-350B, CMTMT Sump B       a. GO TO Step 14.         b. Close SI-300B, RMST Supply to<br>RHR Pump B       b. Locally close SI-300B. IF<br>valve can NOI be closed. IHEN<br>GO ID Step 14.         c. Do NOI continue until SI-300B<br>is closed       d. Locally open SI-351B. IF valv<br>can MOI be opened. IHEN GO IO<br>Step 14.         e. Close RUR-8B, RHR Heat<br>Exchanger B Flow CV       f. GO IO Step 14.         12       Verify Train B RHR Recirculation<br>Flow:       a. GO IO Step 13.         a. Check RCS pressure - LESS THAN<br>ISO PSIG       a. GO IO Step 13.         b. Throtile RIR-8B, RHR Heat<br>Exchanger B Flow CV as<br>recirculation flow at 1500 gpm       b. Check valve alignment. IF RHR<br>Pump B recirculation flow on<br>F926 Step 18 |

| wisco                      | NSIN PUBLIC SERVICE CORPORATION                                                                         | NO.                    |            | ES-1.3                                                          |                               |                    | _                        |    |
|----------------------------|---------------------------------------------------------------------------------------------------------|------------------------|------------|-----------------------------------------------------------------|-------------------------------|--------------------|--------------------------|----|
| KE                         | WAUNEE NUCLEAR POWER PLANT                                                                              | TIT                    | LE         | TRANSFER TO CORECIRCULATION                                     | DNTAINMEN                     | IT SU              | MP                       |    |
| ЕМ                         | ERGENCY OPERATING PROCEDURES                                                                            | DAT                    | E          | NOV 25 2003                                                     | PAGE                          | 7                  | of                       | 19 |
|                            | frame                                                                                                   |                        |            |                                                                 |                               |                    |                          |    |
| STEP                       | OPERATOR ACTIONS                                                                                        |                        |            | CONTINGEN                                                       | CY ACTIO                      | ONS                |                          | ┛╏ |
|                            |                                                                                                         | *****                  |            |                                                                 |                               | ****               | * * * * *                |    |
|                            | CAU                                                                                                     | TION                   |            |                                                                 |                               |                    |                          |    |
| If a S<br>immedi<br>pressu | SI pump is required to establish relately following SI-5A(B) closure suring SI Pump A(B) suction piping | ecircu<br>will 1<br>g. | ıla<br>lim | tion flow, open<br>it the possibil                              | ing RHR-2<br>ity of ov        | 99A( <br>'er       | B)                       |    |
|                            |                                                                                                         | • • • • • •            | * * * :    |                                                                 |                               | ****               |                          |    |
| 13                         | Establish SI Pump B Recirculation Flow:                                                                 | n                      |            |                                                                 |                               |                    |                          |    |
|                            | a. Close SI-5B, SI Pump B Suction<br>Isolation                                                          | n                      | a          | . <u>IF</u> SI-5B can <u>I</u><br><u>THEN GO TO</u> St          | <u>NOT</u> be cl<br>ep 14.    | osed               | •                        |    |
|                            | b. Open RHR-299B, RHR HX Outlet<br>SI Pump B                                                            | То                     | b          | . <u>IF</u> RHR-299B de<br>immediately op<br><u>TO</u> Step 14. | oes <u>NOT</u> o<br>pen SI-5B | pen,<br><u>AND</u> | <u>then</u><br><u>Go</u> |    |
|                            | c. Start SI Pump B                                                                                      |                        | С          | . <u>GO TO</u> Step 14                                          | •                             |                    |                          | 1  |
|                            | d. Check SI Pump A discharge<br>pressure - LESS THAN 2100 PSI<br>[1900 PSIG FOR ADVERSE<br>CONTAINMENT] | G                      | d          | . Stop SI Pump /<br>PULLOUT.                                    | A <u>AND</u> pla              | ice i              | n                        |    |
|                            | e. Verify SI cold leg injection<br>flow, F925 – GREATER THAN<br>400 GPM                                 |                        | e          | . <u>IF</u> SI flow can<br><u>THEN GO TO</u> St                 | n <u>NOT</u> be<br>ep 14.     | veri               | fied,                    | -  |
|                            | f. <u>GO</u> <u>TO</u> Step 18                                                                          |                        |            |                                                                 |                               |                    |                          |    |
|                            |                                                                                                         |                        |            |                                                                 |                               |                    |                          |    |
| l                          |                                                                                                         |                        |            |                                                                 |                               |                    |                          |    |
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| wisco | NSIN PUBLIC SERVICE CORPORATION                       | NO.  |    | ES-1.3                                                                                                                                              |
|-------|-------------------------------------------------------|------|----|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| KE    | WAUNEE NUCLEAR POWER PLANT                            | TITL | E  | TRANSFER TO CONTAINMENT SUMP<br>RECIRCULATION                                                                                                       |
| EMI   | ERGENCY OPERATING PROCEDURES                          | DATE |    | NOV 25 2003 PAGE 8 of 19                                                                                                                            |
|       |                                                       |      | _  |                                                                                                                                                     |
| STEP  | OPERATOR ACTIONS                                      |      | L  | CONTINGENCY ACTIONS                                                                                                                                 |
| 14    | Align Train A RHR Using Alternate<br>Method:          | e    |    |                                                                                                                                                     |
|       | a. Check RWST Level - LESS THAN (<br>EQUAL TO 10%     | DR   | a. | Do <u>NOT</u> continue until RWST<br>level is less than or equal to<br>10%.                                                                         |
|       | b. Check SI Pump A - RUNNING                          |      | b. | Start SI Pump A. <u>IF</u> SI Pump A<br>can <u>NOT</u> be started, <u>THEN GO TO</u><br>ECA-1.1, LOSS OF EMERGENCY<br>COOLANT RECIRCULATION, Step 1 |
|       | c. Stop SI Pump B                                     |      |    |                                                                                                                                                     |
|       | d. Stop Both RHR Pumps                                | •    |    |                                                                                                                                                     |
|       | e. Stop Both ICS Pumps                                |      |    |                                                                                                                                                     |
|       | f. Open SI-350A, CNTMT Sump B<br>Supply To RHR Pump A |      | f. | <u>GO TO</u> ECA-1.1, LOSS OF<br>EMERGENCY COOLANT<br>RECIRCULATION, Step 1                                                                         |
|       | g. Close SI-300A, RWST Supply to<br>RHR Pump A        |      | g. | Locally close SI-300A.                                                                                                                              |
|       | h. Do <u>NOT</u> continue until SI-300A<br>is closed  |      |    |                                                                                                                                                     |
|       | i. Open SI-351A, CNTMT Sump B<br>Supply To RHR Pump A |      | i. | Locally open SI-351A.                                                                                                                               |
| ļ     | j. Close RHR-8A, RHR Heat<br>Exchanger A Flow CV      |      |    |                                                                                                                                                     |
|       | k. Start RHR Pump A                                   | ;    | k. | <u>GO TO</u> ECA-1.1, LOSS OF<br>EMERGENCY COOLANT<br>RECIRCULATION, Step 1                                                                         |
|       |                                                       | -    |    |                                                                                                                                                     |
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| WISCO | NSIN PUBLIC SERVICE CORPORATION                                                                                       | NO.    | ES-1.3                      |               |              |
|-------|-----------------------------------------------------------------------------------------------------------------------|--------|-----------------------------|---------------|--------------|
| KE    | WAUNEE NUCLEAR POWER PLANT                                                                                            | TITLE  | TRANSFER TO CORECIRCULATION | ONTAINMENT SU | MP           |
| EM    | ERGENCY OPERATING PROCEDURES                                                                                          | DATE   | NOV 25 2003                 | PAGE 9        | <b>of</b> 19 |
| STEP  | OPERATOR ACTIONS                                                                                                      |        | CONTINGEN                   | CY ACTIONS    |              |
| 15    | Verify Train A RHR Recirculation<br>Flow:                                                                             |        |                             |               |              |
|       | a. Check RCS pressure - LESS THAN<br>150 PSIG                                                                         | 1   a. | <u>GO TO</u> Step 18.       |               |              |
|       | b. Throttle RHR-8A, RHR Heat<br>Exchanger A Flow CV as<br>necessary to maintain RHR<br>recirculation flow at 1500 gpr | b.     | Check valve a               | lignment.     |              |
|       | c. <u>GO</u> <u>TO</u> Step 18                                                                                        |        |                             |               |              |
|       |                                                                                                                       |        |                             |               |              |
|       |                                                                                                                       |        |                             |               |              |
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| 1     |                                                                                                                       |        |                             |               | i            |
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| WISCON | NSIN PUBLIC SERVICE CORPORATION                       | NO.   | ES-1.3                                                                                                                                                |
|--------|-------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| KEV    | WAUNEE NUCLEAR POWER PLANT                            | TITLE | TRANSFER TO CONTAINMENT SUMP<br>RECIRCULATION                                                                                                         |
| EME    | RGENCY OPERATING PROCEDURES                           | DATE  | NOV 25 2003 PAGE 10 of 19                                                                                                                             |
|        |                                                       |       |                                                                                                                                                       |
| STEP   | OPERATOR ACTIONS                                      |       | CONTINGENCY ACTIONS                                                                                                                                   |
| 16     | Align Train B RHR Using Alternate<br>Method:          | e.    |                                                                                                                                                       |
|        | a. Check RWST Level - LESS THAN (<br>EQUAL TO 10%     | OR a  | . Do <u>NOT</u> continue until RWST<br>level is less than or equal to<br>10%.                                                                         |
|        | b. Check SI Pump B - RUNNING                          | b.    | . Start SI Pump B. <u>IF</u> SI Pump B<br>can <u>NOT</u> be started, <u>THEN GO TO</u><br>ECA-1.1, LOSS OF EMERGENCY<br>COOLANT RECIRCULATION, Step 1 |
|        | c. Stop SI Pump A                                     |       |                                                                                                                                                       |
|        | d. Stop Both RHR Pumps                                |       |                                                                                                                                                       |
|        | e. Stop Both ICS Pumps                                |       |                                                                                                                                                       |
|        | f. Open SI-350B, CNTMT Sump B<br>Supply To RHR Pump B | f     | . <u>GO TO</u> ECA-1.1, LOSS OF<br>EMERGENCY COOLANT<br>RECIRCULATION, Step 1                                                                         |
|        | g. Close SI-300B, RWST Supply to<br>RHR Pump B        | g     | . Locally close SI-300B.                                                                                                                              |
|        | h. Do <u>NOT</u> continue until SI-300B<br>is closed  |       |                                                                                                                                                       |
|        | i. Open SI-351B, CNTMT Sump B<br>Supply To RHR Pump B | i.    | . Locally open SI-351B.                                                                                                                               |
|        | j. Close RHR-8B, RHR Heat<br>Exchanger B Flow CV      |       |                                                                                                                                                       |
|        | k. Start RHR Pump B                                   | k.    | . <u>GO TO</u> ECA-1.1, LOSS OF<br>EMERGENCY COOLANT<br>RECIRCULATION, Step 1                                                                         |
|        |                                                       |       |                                                                                                                                                       |
|        |                                                       |       |                                                                                                                                                       |
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| WISCO | ONSIN PUBLIC SERVICE CORPORATION                                                                                      | NO. |                                                 | ES-1.3                                                                     |                                                |                               |                    |    |
|-------|-----------------------------------------------------------------------------------------------------------------------|-----|-------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------|-------------------------------|--------------------|----|
| KI    | KEWAUNEE NUCLEAR POWER PLANT                                                                                          |     | E TRANSFER TO CONTAINMENT SUMP<br>RECIRCULATION |                                                                            |                                                |                               |                    |    |
| ЕМ    | EMERGENCY OPERATING PROCEDURES                                                                                        |     |                                                 | NOV 25 2003                                                                | PAGE                                           | 11                            | of                 | 19 |
| STEP  | OPERATOR ACTIONS                                                                                                      |     |                                                 | CONTINGEN                                                                  | CY ACTIO                                       | ONS                           |                    | ]  |
| 17    | Verify Train B RHR Recirculation<br>Flow:                                                                             |     |                                                 |                                                                            |                                                |                               |                    |    |
|       | a. Check RCS pressure – LESS THA<br>150 PSIG                                                                          | N   | a.                                              | <u>GO TO</u> Step 18.                                                      | •                                              |                               |                    |    |
|       | b. Throttle RHR-8B, RHR Heat<br>Exchanger B Flow CV as<br>necessary to maintain RHR<br>recirculation flow at 1500 gpm | n   | b.                                              | Check valve al                                                             | lignment.                                      |                               |                    |    |
| 18    | Check RWST Level - LESS THAN OR<br>Foual to 4%                                                                        |     | Pe                                              | rform the follo                                                            | owing:                                         |                               |                    | 1  |
|       |                                                                                                                       |     | a.                                              | Perform action<br>procedures and<br>Functions in e<br>level is less<br>4%. | ns of oth<br>I Critica<br>Effect un<br>than or | er<br>1 Saf<br>til F<br>equal | Tety<br>RWST<br>to |    |
|       |                                                                                                                       |     | b.                                              | Do <u>NOT</u> continu<br>procedure unti<br>less than or e                  | ue in thi<br>il RWST l<br>equal to             | s<br>evel<br>4%.              | is                 |    |
| 19    | Stop All Pumps Taking Suction Fro<br>RWST:                                                                            | Dm  |                                                 |                                                                            |                                                |                               |                    |    |
|       | <ul> <li>SI pumps</li> <li>ICS pumps</li> <li>RHR pumps</li> <li>Charging pumps</li> </ul>                            |     |                                                 |                                                                            |                                                |                               |                    |    |
|       |                                                                                                                       |     |                                                 |                                                                            |                                                |                               |                    |    |
|       |                                                                                                                       |     |                                                 |                                                                            |                                                |                               |                    |    |
|       |                                                                                                                       |     |                                                 |                                                                            |                                                |                               |                    |    |
| 1     |                                                                                                                       |     |                                                 |                                                                            |                                                |                               |                    |    |

| WISCONSIN                           | N PUBLIC SERVICE CORPORATION                                                                                                                                                                      | NO. |       | ES-1.3                                                                                      |                                                                                |                                           |    |  |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------|----|--|
| KEWA                                | UNEE NUCLEAR POWER PLANT                                                                                                                                                                          | TIT | LE    | TRANSFER TO CORECIRCULATION                                                                 | DNTAINMENT SU                                                                  | IMP                                       |    |  |
| EMERGI                              | ENCY OPERATING PROCEDURES                                                                                                                                                                         | DAT | E     | NOV 25 2003                                                                                 | <b>PAGE</b> 12                                                                 | of                                        | 19 |  |
|                                     |                                                                                                                                                                                                   |     | ſ     |                                                                                             |                                                                                |                                           |    |  |
|                                     | OPERATOR ACTIONS                                                                                                                                                                                  |     |       | CONTINGEN                                                                                   | CY ACTIONS                                                                     |                                           |    |  |
| •••••                               | CAUTION                                                                                                                                                                                           |     |       |                                                                                             |                                                                                |                                           |    |  |
| If a SI p<br>immediate<br>pressuriz | If a SI pump is required to establish recirculation flow, opening RHR-299A(B) immediately following SI-5A(B) closure will limit the possibility of over pressurizing SI Pump A(B) suction piping. |     |       |                                                                                             |                                                                                |                                           |    |  |
|                                     | ••••••                                                                                                                                                                                            |     | * * 1 |                                                                                             |                                                                                | *****                                     |    |  |
| 20 Ch<br>Sh                         | eck If Train A SI Recirculation<br>ould Be Established:                                                                                                                                           | n   |       |                                                                                             |                                                                                |                                           |    |  |
| a.                                  | Check SI Pump A - STOPPED                                                                                                                                                                         |     | a.    | . <u>GO TO</u> Step 21.                                                                     | •                                                                              |                                           |    |  |
| b.                                  | Check RHR Pump A - RUNNING IN<br>RECIRCULATION MODE                                                                                                                                               |     | b.    | . <u>GO TO</u> Step 21.                                                                     |                                                                                |                                           |    |  |
| c.                                  | Check RCS pressure - GREATER<br>THAN OR EQUAL TO 150 PSIG                                                                                                                                         |     | C.    | . <u>IF</u> Train A RHF<br>flow on F626 i<br>700 gpm, <u>THEN</u>                           | R recirculati<br>is greater th<br><u>GO TO</u> Step 2                          | on<br>1an<br>22.                          |    |  |
| d.                                  | Close SI-5A, SI Pump A Suction<br>Isolation                                                                                                                                                       | n   | d.    | . <u>IF</u> SI-5A can <u>M</u><br><u>THEN GO TO</u> ECA<br>EMERGENCY COOL<br>RECIRCULATION, | <u>HOT</u> be closed<br>A-1.1, LOSS (<br>LANT<br>, Step 1.                     | l.<br>)F                                  |    |  |
| e.                                  | Open RHR-299A, RHR HX Outlet<br>SI Pump A                                                                                                                                                         | Го  | e.    | . <u>IF</u> RHR-299A do<br>immediately op<br><u>TO</u> ECA-1.1, LO<br>COOLANT RECIRO        | bes <u>NOT</u> open,<br>ben SI-5A <u>ANI</u><br>DSS OF EMERGI<br>CULATION, Ste | <u>THEN</u><br><u>GO</u><br>ENCY<br>ep 1. |    |  |
| f.                                  | Start SI Pump A                                                                                                                                                                                   |     | f.    | . <u>GO TO</u> ECA-1.1,<br>EMERGENCY COOL<br>RECIRCULATION,                                 | , LOSS OF<br>_ANT<br>, Step 1.                                                 |                                           |    |  |
| g.                                  | Verify SI cold leg injection<br>flow, F925 - GREATER THAN<br>400 GPM                                                                                                                              |     | g.    | . <u>IF</u> SI flow car<br><u>THEN GO TO</u> ECA<br>EMERGENCY COOL<br>RECIRCULATION,        | n <u>NOT</u> be vert<br>A-1.1, LOSS (<br>_ANT<br>, Step 1.                     | ified,<br>)F                              |    |  |
|                                     |                                                                                                                                                                                                   |     |       |                                                                                             |                                                                                |                                           |    |  |
|                                     |                                                                                                                                                                                                   |     |       |                                                                                             |                                                                                |                                           |    |  |

| wisco | NSIN PUBLIC SERVICE CORPORATION                                         | NO.  | ES-1.3                                                                                                                                                                   |
|-------|-------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KE    | KEWAUNEE NUCLEAR POWER PLANT                                            |      | TRANSFER TO CONTAINMENT SUMP<br>RECIRCULATION                                                                                                                            |
| EM    | ERGENCY OPERATING PROCEDURES                                            | DATE | NOV 25 2003 PAGE 13 of 19                                                                                                                                                |
| STEP  | OPERATOR ACTIONS                                                        |      | CONTINGENCY ACTIONS                                                                                                                                                      |
| 21    | Check If Train B SI Recirculation<br>Should Be Established:             | n    |                                                                                                                                                                          |
|       | a. Check SI Pump B - STOPPED                                            | a    | . <u>GO TO</u> Step 22.                                                                                                                                                  |
|       | b. Check RHR Pump B - RUNNING IN<br>RECIRCULATION MODE                  | b.   | . <u>GO</u> <u>TO</u> Step 22.                                                                                                                                           |
|       | c. Check RCS pressure - GREATER<br>THAN OR EQUAL TO 150 PSIG            | c.   | . <u>IF</u> Train B RHR recirculation<br>flow on F928 is greater than<br>700 gpm, <u>THEN GO TO</u> Step 22.                                                             |
|       | d. Close SI-5B, SI Pump B Suctio<br>Isolation                           | n d. | . <u>IF SI-5B can NOT</u> be closed,<br><u>THEN GO TO</u> ECA-1.1, LOSS OF<br>EMERGENCY COOLANT<br>RECIRCULATION, Step 1.                                                |
|       | e. Open RHR-299B, RHR HX Outlet<br>SI Pump B                            | To e | . <u>IF</u> RHR-299B does <u>NOT</u> open, <u>THEN</u><br>immediately open SI-5B <u>AND GO</u><br><u>TO</u> ECA-1.1, LOSS OF EMERGENCY<br>COOLANT RECIRCULATION, Step 1. |
|       | f. Start SI Pump B                                                      | f    | . <u>GO TO</u> ECA-1.1, LOSS OF<br>EMERGENCY COOLANT<br>RECIRCULATION, Step 1.                                                                                           |
|       | g. Verify SI cold leg injection<br>flow, F925 - GREATER THAN<br>400 GPM | g g  | . <u>IF</u> SI flow can <u>NOT</u> be verified,<br><u>THEN GO TO</u> ECA-1.1, LOSS OF<br>EMERGENCY COOLANT<br>RECIRCULATION, Step 1.                                     |
|       |                                                                         |      |                                                                                                                                                                          |
|       |                                                                         |      |                                                                                                                                                                          |
|       |                                                                         |      |                                                                                                                                                                          |
|       |                                                                         |      |                                                                                                                                                                          |


| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | NO. ES-1.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TITLE TRANSFER TO CONTAINMENT SUMP<br>RECIRCULATION                                                                                                                                                                                                                                                                                                                                                                                                                         |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | DATE NOV 25 2003 PAGE 15 of 19                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| STEP OPERATOR ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <ul> <li><u>NOTE</u>: Function Restoration procedures mainted</li> <li>23 Check If ICS Is Required: <ul> <li>a. Check containment radiation greater than 2 R/hr <u>AND</u> ICS Pumps run time less than 55 minutes</li> <li><u>OR</u></li> <li>b. Check all of the following conditions satisfied: <ul> <li>1) Containment pressure - GREATER THAN 4 PSIG</li> <li>2) Containment maximum pressure - WAS GREATER THAN 23 PSIG</li> <li>3) Wide range Containment pressure - INCREASING</li> <li>4) Containment Fan Coil Units LESS THAN 2 RUNNING IN EMERGENCY MODE</li> </ul> </li> </ul></li></ul> | <ul> <li>ay now be implemented as necessary.</li> <li>Perform the following: <ol> <li>Close all Cntmt Spray Pump A(B) Discharge Isolation valves.</li> <li>ICS-5A</li> <li>ICS-5B</li> <li>ICS-6A</li> <li>ICS-6B</li> </ol> </li> <li>2. Close CI-1001A and B, Caustic Additive To CNTMT Spray. <u>IF</u> either valve can <u>NOT</u> be closed, <u>THEN</u> locally close associated Manual Isolation Valve. CI-1000A and B.</li> <li>3. <u>GO TO</u> Step 27.</li> </ul> |
| <ul> <li>24 Close Both ICS Pump Suction From RWST Valves:</li> <li>ICS-2A</li> <li>ICS-2B</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Locally close valves.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |



| WISCO | NSIN PUBLIC SERVICE CORPORATION                         | NO.   | ES-1.3                          |                      |              |
|-------|---------------------------------------------------------|-------|---------------------------------|----------------------|--------------|
| KE    | WAUNEE NUCLEAR POWER PLANT                              | TITLE | TRANSFER TO CO<br>RECIRCULATION | ONTAINMENT SU        | MP           |
| EM    | ERGENCY OPERATING PROCEDURES                            | DATE  | NOV 25 2003                     | PAGE 17              | <b>of</b> 19 |
| STEP  | OPERATOR ACTIONS                                        |       | CONTINGENO                      | CY ACTIONS           |              |
| 26    | Establish Containment Spray Using<br>Idle RHR/SI Train: | g     |                                 |                      |              |
|       | a. On idle train, open                                  | a.    | Perform the fo                  | ollowing:            |              |
|       | Supply To ICS Pump A(B)                                 |       | 1) On operatin<br>RHR-400A(B)   | ng train, ope<br>).  | n .          |
|       |                                                         |       | 2) <u>GO</u> <u>TO</u> Step     | 27.                  |              |
|       | b. On idle train, start RHR pump                        | b.    | Perform the fo                  | llowing:             |              |
|       |                                                         |       | 1) On operatin<br>RHR-400A(B)   | ng train, open<br>). | n            |
|       |                                                         |       | 2) <u>GO TO</u> Step            | 27.                  |              |
|       | c. On idle train, start ICS pump                        | c.    | Perform the fo                  | ollowing:            |              |
|       |                                                         |       | 1) On idle tra                  | in, stop RHR         | pump.        |
|       |                                                         |       | 2) On operatin<br>RHR-400A(B)   | ng train, open<br>). | n            |
|       |                                                         |       |                                 |                      |              |
|       |                                                         |       |                                 |                      | ĺ            |
|       |                                                         |       |                                 |                      |              |
|       |                                                         |       |                                 |                      |              |
|       |                                                         |       |                                 |                      |              |
|       |                                                         |       |                                 |                      |              |
|       |                                                         |       |                                 |                      |              |
|       |                                                         |       |                                 |                      |              |
|       |                                                         |       |                                 |                      |              |
|       |                                                         |       |                                 |                      |              |

| WISCON              | SIN PUBLIC SERVICE CORPORATION                                        | NO.              | ES-1.3                                                                                                             |                                                                                                          |  |  |
|---------------------|-----------------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--|--|
| KEW                 | KEWAUNEE NUCLEAR POWER PLANT                                          |                  | TRANSFER TO CO<br>RECIRCULATION                                                                                    | DNTAINMENT SUMP                                                                                          |  |  |
| EMER                | RGENCY OPERATING PROCEDURES                                           | DATE             | NOV 25 2003                                                                                                        | <b>PAGE</b> 18 of 19                                                                                     |  |  |
|                     |                                                                       |                  |                                                                                                                    |                                                                                                          |  |  |
| STEP                | OPERATOR ACTIONS                                                      |                  | CONTINGEN                                                                                                          | CY ACTIONS                                                                                               |  |  |
|                     | <u>CAU</u>                                                            | <u>TION</u>      |                                                                                                                    | •••••                                                                                                    |  |  |
| RHR flow<br>400 gpm | w greater than 700 gpm to the Rea<br>shall be maintained at all times | actor Ve<br>s.   | essel <u>OR</u> SI flow                                                                                            | greater than                                                                                             |  |  |
| If suct             | ion is lost to any SI, RHR, or I(                                     | CS pump,         | stop the pump.                                                                                                     |                                                                                                          |  |  |
| *******             | •••••                                                                 | ******           |                                                                                                                    | •••••                                                                                                    |  |  |
| 27                  | (CAS) Check Operating RHR Pump(s)<br>a. Motor current - LESS THAN     | ): <u>]</u><br>c | <u>F</u> RHR Pump A(B)<br>avitating, <u>THEN</u><br>reduce flow:                                                   | is in runout <u>OR</u><br>take action to                                                                 |  |  |
|                     | 18 AMPS <u>AND</u> STABLE                                             |                  | 1. Maintain minimum RCS injectio                                                                                   |                                                                                                          |  |  |
|                     | b. Discharge pressure – STABLE                                        | _                | flow:                                                                                                              | 0                                                                                                        |  |  |
|                     | c. RHR Pump flow - STABLE                                             |                  | a) RHR Pump A<br>(F928) - GI                                                                                       | (B) flow, F626<br>REATER THAN 700 GPM                                                                    |  |  |
|                     |                                                                       |                  | <u>OR</u>                                                                                                          |                                                                                                          |  |  |
|                     |                                                                       |                  | b) SI Pump A(H<br>GREATER TH/                                                                                      | 3) flow, F925 -<br>AN 400 GPM                                                                            |  |  |
|                     |                                                                       | 2                | . Check valve al                                                                                                   | lignment.                                                                                                |  |  |
|                     |                                                                       | 3                | IF only an RHI<br><u>THEN</u> throttle<br>necessary to r<br>amps while matinjection flow                           | R Pump is running,<br>RHR-8A(B) as<br>minimize RHR pump<br>intaining minimum<br>M.                       |  |  |
|                     |                                                                       | 4                | . <u>IF</u> RHR Pump is<br>Pump or an ICS<br>perform the for<br>necessary to r<br>amps while mat<br>injection flow | s supplying a SI<br>5 Pump, <u>THEN</u><br>5 Dilowing as<br>ninimize RHR pump<br>intaining minimum<br>v: |  |  |
|                     |                                                                       |                  | a) Throttle R                                                                                                      | IR-8A(B).                                                                                                |  |  |
|                     |                                                                       |                  | b) Locally th                                                                                                      | rottle ICS-7A(B).                                                                                        |  |  |
|                     |                                                                       |                  | c) Locally th                                                                                                      | rottle SI-7A(B).                                                                                         |  |  |
|                     |                                                                       |                  |                                                                                                                    |                                                                                                          |  |  |

| WISCO | INSIN PUBLIC SERVICE CORPORATION                                                                                                             | NO.     | ES-1.3                                                                                        |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------|
| KE    | WAUNEE NUCLEAR POWER PLANT                                                                                                                   | TITLE   | TRANSFER TO CONTAINMENT SUMP<br>RECIRCULATION                                                 |
| EM    | ERGENCY OPERATING PROCEDURES                                                                                                                 | DATE    | NOV 25 2003 PAGE 19 of 19                                                                     |
| STEP  | OPERATOR ACTIONS                                                                                                                             |         | CONTINGENCY ACTIONS                                                                           |
| 28    | Request TSC Perform The Following                                                                                                            | g:      |                                                                                               |
|       | a. Trend containment wide range<br>sump level                                                                                                |         |                                                                                               |
|       | b. Check sump level - STABLE                                                                                                                 | b.      | Perform the following:                                                                        |
|       |                                                                                                                                              |         | <ol> <li>Determine if unexpected<br/>sources of water are<br/>entering the sump.</li> </ol>   |
|       |                                                                                                                                              |         | <ol> <li>Determine if recirculation<br/>piping is leaking outside<br/>containment.</li> </ol> |
|       | c. Obtain containment sump sample<br>for pH and boron concentration                                                                          | es<br>n |                                                                                               |
|       | d. Evaluate the following:                                                                                                                   |         |                                                                                               |
|       | <ul> <li>Alternate core injection path</li> <li>Alternate means of filling<br/>RWST</li> <li>Long-term sump blockage<br/>concerns</li> </ul> | ths     |                                                                                               |
| 29    | Return To Procedure And Step In<br>Effect                                                                                                    |         |                                                                                               |
|       | -1                                                                                                                                           | END-    |                                                                                               |
|       |                                                                                                                                              |         |                                                                                               |
|       |                                                                                                                                              |         |                                                                                               |
|       |                                                                                                                                              |         |                                                                                               |
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|       |                                                                                                                                              |         |                                                                                               |
|       |                                                                                                                                              |         |                                                                                               |









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| WISCONSIN PUBLIC SERVICE                                                                                                                                                         | CORPORATION                                                         | NO. F                                 | R-C.1                               | REV              | N              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------|-------------------------------------|------------------|----------------|
| KEWAUNEE NUCLEAR PO                                                                                                                                                              | WER PLANT                                                           | <b>TITLE</b> R                        | ESPONSE TO I                        | NADEQUATE        | CORE COOLING   |
| EMERGENCY OPERATING PR                                                                                                                                                           | OCEDURES                                                            | DATE M                                | IAR 21 2004                         | PAGE             | 1 <b>of</b> 11 |
| REVIEWED BY                                                                                                                                                                      |                                                                     | APPRO                                 | VED BY                              |                  |                |
| NUCLEAR SAFETY RELATED NO                                                                                                                                                        | PORC REVIEW<br>REQUIRED                                             | ⊠ YES<br>□ NO                         | SRO APPROV<br>TEMPORARY<br>REQUIRED | AL OF<br>Changes | ⊠ YES<br>□ NO  |
| <ol> <li>1.0 <u>INTRODUCTION</u></li> <li>1.1 This procedure prov</li> <li>2.0 <u>SYMPTOMS OR ENTRY CONDIT</u></li> <li>2.1 This procedure is of Function Status Tree</li> </ol> | vides actions f<br><u>TIONS</u><br>entered from F<br>ees on a RED c | to restore<br>-0.2, CORE<br>ondition. | core cooling<br>COOLING Crit        | ical Safe        | ty             |
| 3.0 <u>AUTOMATIC ACTIONS</u><br>3.1 None                                                                                                                                         | ees on a KEU Co                                                     | ondition.                             |                                     |                  |                |

| WISCO            | NSIN PUBLIC SERVICE CORPORATION                                                             | NO.           | FR-C.1                                                            |                                         |            |
|------------------|---------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------|-----------------------------------------|------------|
| KE               | WAUNEE NUCLEAR POWER PLANT                                                                  | TITI          | E RESPONSE TO II                                                  | NADEQUATE CORE CO                       | OLING      |
| EME              | ERGENCY OPERATING PROCEDURES                                                                | DATE          | MAR 21 2004                                                       | PAGE 2 of                               | : 11       |
|                  |                                                                                             |               |                                                                   |                                         |            |
| STEP             | OPERATOR ACTIONS                                                                            |               | CONTINGEN                                                         | CY ACTIONS                              |            |
| 4.0 <u>DE</u>    | TAILED PROCEDURE                                                                            |               |                                                                   |                                         |            |
| •••••            | CAU                                                                                         | <br>TION      |                                                                   |                                         | •          |
| If RWS<br>recirc | T level decreases to less than 375<br>ulation using ES-1.3, TRANSFER TO                     | the<br>CONTAI | SI System should<br>(NMENT SUMP RECIR(                            | be aligned for<br>CULATION.             |            |
| RHR Pu           | mps should <u>NOT</u> be operated with Co                                                   | omporien      | at Cooling to RHR                                                 | Heat Exchangers                         |            |
| out of           | service if RHR System temperature                                                           | e is gr       | reater than 200°F.                                                | •                                       |            |
| ******           | • • • • • • • • • • • • • • • • • • • •                                                     |               |                                                                   |                                         | •          |
| 1                | Verify SI Valve Alignment - PROP<br>EMERGENCY ALIGNMENT                                     | ER            | Manually align va                                                 | alves as necessar                       | у <b>.</b> |
|                  |                                                                                             |               |                                                                   |                                         |            |
| 2                | Verify SI Flow In Both Trains:                                                              |               | Align valves <u>AND</u><br>necessary. Estal                       | start pumps as<br>plish any other       |            |
|                  | • SI and RHR Pumps - RUNNING                                                                |               | high pressure in;                                                 | jection:                                |            |
|                  | • SI cold leg injection flow<br>indication, F925 - CHECK FOR F                              | LOW           | a. Align Charging<br>RWST.                                        | g Pump suction to                       | )          |
|                  | <ul> <li>RHR Pump flow indication, F626<br/>or F928 - CHECK FOR FLOW</li> </ul>             |               | b. Operate two Cl<br>maximum rate.                                | harging Pumps at                        |            |
| 3                | Check RXCP Support Conditions Pe<br>N-RC-36A, REACTOR COOLANT PUMP<br>OPERATION - AVAILABLE | r             | Establish support                                                 | t conditions.                           |            |
| 4                | Check SI-20A And B, Accumulator A<br>And B Isolation Valves - OPEN                          | A             | <u>IF</u> SI Accumulator<br>discharged, <u>THEN</u><br>following: | r A(B) <u>NOT</u> alread<br>perform the | ly         |
|                  |                                                                                             |               | a. Turn on break<br>at MCC-52B(62)                                | er for SI-20A(B)<br>B) cubicle C4(A3)   |            |
|                  |                                                                                             |               | b. Open SI-20A(B                                                  | ).                                      |            |
|                  |                                                                                             |               |                                                                   |                                         |            |
|                  |                                                                                             |               | I.                                                                |                                         |            |

| WISCONSIN PUBLIC SERVICE CORPORATION | NO.   | FR-C.1      |               | _      |      |
|--------------------------------------|-------|-------------|---------------|--------|------|
| KEWAUNEE NUCLEAR POWER PLANT         | TITLE | RESPONSE TO | INADEQUATE CO | RE COC | LING |
| EMERGENCY OPERATING PROCEDURES       | DATE  | MAR 21 2004 | PAGE 3        | of     | 11   |
| STEP OPERATOR ACTIONS                |       | CONTINGE    | NCY ACTIONS   | -      |      |
| Frit Trit - 1899 This                | £Q    | TO Sten 7.  | OPSERVE NOTE  | PETUB  | •,   |

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| J             | 1200° F                                                              | TO STEP 7.                                                                                                                                                     |
|---------------|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6             | Return To Procedure And Step In<br>Effect                            |                                                                                                                                                                |
| <u>NOTE</u> : | This procedure should be continued wh<br>Step 7.                     | ile obtaining hydrogen sample in                                                                                                                               |
| 7             | Check Containment Hydrogen<br>Concentration:                         |                                                                                                                                                                |
|               | a. Obtain a hydrogen concentration measurement from Chemistry        |                                                                                                                                                                |
| r.            | b. Hydrogen concentration - LESS<br>THAN 6% IN DRY AIR               | <ul> <li>b. Consult with Emergency Director<br/>for additional recovery<br/>actions. <u>GO TO</u> Step 8.<br/>OBSERVE CAUTIONS PRIOR TO<br/>STEP 8.</li> </ul> |
|               | <pre>c. Hydrogen concentration - LESS<br/>THAN 0.5% IN DRY AIR</pre> | c. Reduce hydrogen concentration<br>per N-RBV-18C, POST-LOCA<br>HYDROGEN CONTROL.                                                                              |
|               |                                                                      |                                                                                                                                                                |
|               |                                                                      |                                                                                                                                                                |
|               |                                                                      |                                                                                                                                                                |
|               |                                                                      |                                                                                                                                                                |
|               |                                                                      |                                                                                                                                                                |
|               |                                                                      |                                                                                                                                                                |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                          | NO. FR-C.1                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                  | TITLE RESPONSE TO INADEQUATE CORE COOLING                                                                                                                                                                                       |
| EMERGENCY OPERATING PROCEDURES                                                                                | DATE MAR 21 2004 PAGE 4 of 11                                                                                                                                                                                                   |
| STEP OPERATOR ACTIONS                                                                                         | CONTINGENCY ACTIONS                                                                                                                                                                                                             |
|                                                                                                               |                                                                                                                                                                                                                                 |
| <u>CAU</u>                                                                                                    | <u>ΓΙΟΝ</u>                                                                                                                                                                                                                     |
| If CST level decreases to less than 8%, pumps will be necessary per A-FW-05B.                                 | use of alternate water sources for AFW                                                                                                                                                                                          |
| A faulted or ruptured SG should not be SG is available.                                                       | used in subsequent steps unless no intact                                                                                                                                                                                       |
|                                                                                                               |                                                                                                                                                                                                                                 |
| 8 Check Intact Steam Generator<br>Levels:                                                                     |                                                                                                                                                                                                                                 |
| a. Narrow range level - GREATER<br>THAN 4% [15% FOR ADVERSE<br>CONTAINMENT]                                   | a. Maintain total feed flow<br>greater than 200 gpm until<br>narrow range level greater than<br>4% [15% FOR ADVERSE<br>CONTAINMENT] in at least one<br>intact SG.                                                               |
|                                                                                                               | <u>IF</u> total feed flow greater than<br>200 gpm can <u>NOT</u> be established,<br><u>THEN</u> continue attempts to<br>establish a heat sink in at<br>least one SG <u>AND GO TO</u> Step 17.<br>OBSERVE NOTE PRIOR TO STEP 17. |
| b. Control feed flow to maintain<br>narrow range level between 4%<br>[15% FOR ADVERSE CONTAINMENT]<br>and 50% |                                                                                                                                                                                                                                 |
|                                                                                                               |                                                                                                                                                                                                                                 |
|                                                                                                               |                                                                                                                                                                                                                                 |
|                                                                                                               |                                                                                                                                                                                                                                 |

| WISCO         | DNSIN PUBLIC SERVICE CORPORATION                                                                                                                          | NO.      |    | FR-C.1                                                                                                   |                                                                         |                                                |                      |      |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------|----------------------|------|
| к             | EWAUNEE NUCLEAR POWER PLANT                                                                                                                               | TITLE    | \$ | RESPONSE TO IN                                                                                           | IADEQUATE                                                               | CORE                                           | C00                  | LING |
| EM            | IERGENCY OPERATING PROCEDURES                                                                                                                             | DATE     |    | MAR 21 2004                                                                                              | PAGE                                                                    | 5                                              | of                   | 11   |
|               |                                                                                                                                                           |          |    |                                                                                                          |                                                                         |                                                |                      |      |
| STEP          | OPERATOR ACTIONS                                                                                                                                          |          |    | CONTINGEN                                                                                                | CY ACTIO                                                                | NS                                             |                      |      |
| 9             | Check RCS Vent Paths:                                                                                                                                     |          |    |                                                                                                          |                                                                         |                                                |                      |      |
|               | a. Power to PR-1A and B,<br>Pressurizer PORV Block Valves<br>AVAILABLE                                                                                    | -<br>-   | ۱. | Restore power<br>MCC-52B(62B).                                                                           | to PR-1A(                                                               | B), ā                                          | at                   |      |
|               | b. PR-2A and B, PRZR PORVs - CLO                                                                                                                          | SED b    | ). | Manually close<br>any valve can<br><u>THEN</u> manually<br>Valve.                                        | e PRZR POR<br><u>NOT</u> be cl<br>close its                             | RVs.<br>osed,<br>Bloc                          | <u>IF</u><br>,<br>;k |      |
|               | c. Block Valves - AT LEAST ONE O                                                                                                                          | PEN C    | :. | Open Block Val<br>closed to isol<br>PORV.                                                                | ve unless<br>late an op                                                 | it w<br>Den Pf                                 | vas<br>RZR           |      |
|               | d. Other RCS vent paths - CLOSED                                                                                                                          | : d      | 1. | Close any oper                                                                                           | n RCS vent                                                              | ; path                                         | ٦.                   |      |
|               | <ul> <li>PR-33A, PRZR Head Vent Train</li> <li>RC-45A, Reactor Head Vent<br/>Train A</li> <li>RC-46, RX/PRZR Head Vent to<br/>PRZR Relief Tank</li> </ul> | n A      |    |                                                                                                          |                                                                         |                                                |                      |      |
|               | <ul> <li>PR-33B, PRZR Head Vent Train</li> <li>RC-45B, Reactor Head Vent<br/>Train B</li> <li>RC-49, RX/PRZR Head Vent to<br/>Containment</li> </ul>      | n B      |    |                                                                                                          |                                                                         |                                                |                      |      |
| <u>NOTE</u> : | Partial uncovery of SG tubes is a                                                                                                                         | cceptabl | e  | in the follow                                                                                            | ing steps.                                                              |                                                |                      |      |
| 10            | Depressurize All Intact Steam<br>Generators To Depressurize The R                                                                                         | cs:      |    |                                                                                                          |                                                                         |                                                |                      |      |
|               | a. Dump steam with Steam Dump at maximum rate                                                                                                             | а        | 1. | Dump steam at<br>using SG PORVs                                                                          | maximum r<br>5.                                                         | rate                                           |                      |      |
|               | b. Check RCS pressure - LESS<br>THAN OR EQUAL TO 210 PSIG                                                                                                 | b        | ). | <u>IF</u> RCS pressur<br><u>THEN</u> return to<br>CAUTION PRIOR<br><u>NOT, THEN GO</u><br>OBSERVE NOTE F | re is decr<br>5 Step 8.<br>TO STEP 8<br><u>TO</u> Step 17<br>PRIOR TO S | reasin<br>OBSI<br>3. <u>II</u><br>7.<br>STEP 1 | ng,<br>ERVE<br>E     |      |
|               | c. Stop SG depressurization                                                                                                                               |          |    |                                                                                                          |                                                                         |                                                |                      |      |

| WISCO          | DNSIN PUBLIC SERVICE CORPORATION                                                                        | NC                  | ).        | FR-C.1                                                |                                                |                                         |
|----------------|---------------------------------------------------------------------------------------------------------|---------------------|-----------|-------------------------------------------------------|------------------------------------------------|-----------------------------------------|
| к              | EWAUNEE NUCLEAR POWER PLANT                                                                             | TJ                  | TLE       | RESPONSE TO IN                                        | NADEQUATE COR                                  | E COOLING                               |
| EM             | IERGENCY OPERATING PROCEDURES                                                                           | Dž                  | TE        | MAR 21 2004                                           | PAGE 6                                         | <b>of</b> 11                            |
|                |                                                                                                         |                     | <b> </b>  |                                                       |                                                | — – – – – – – – – – – – – – – – – – – – |
|                | OPERATOR ACTIONS                                                                                        |                     |           | CONTINGEN                                             | CI ACTIONS                                     |                                         |
| •••••          | <u>CAU</u>                                                                                              | ••••<br><u>FION</u> | * * * * * |                                                       |                                                | ••••                                    |
| If of<br>resta | If offsite power is lost after SI reset, manual action may be required to restart safeguards equipment. |                     |           |                                                       |                                                |                                         |
| 11             | Isolate SI Accumulators:                                                                                |                     |           |                                                       |                                                |                                         |
|                | a. Check power to isolation valve<br>- AVAILABLE                                                        | es                  | a.        | Restore power valves.                                 | to isolation                                   |                                         |
|                |                                                                                                         |                     |           | 1) Turn on bro<br>at MCC-52B                          | eaker for SI-<br>cubicle C4.                   | 20A                                     |
|                |                                                                                                         |                     |           | 2) Turn on bro<br>at MCC-62B                          | eaker for SI-<br>cubicle A3.                   | 20B                                     |
|                | b. Reset SI                                                                                             |                     |           |                                                       |                                                |                                         |
|                | c. Close SI-20A and B, Accumulate<br>A and B Isolation Valves                                           | or                  | c.        | . Perform the fo                                      | ollowing:                                      |                                         |
|                |                                                                                                         |                     |           | 1) Place cont<br>LD-4A, B, a<br>Orifice Iso<br>CLOSE. | rol switches<br>and C, Letdow<br>olation Valve | for<br>n<br>s, to                       |
|                |                                                                                                         |                     |           | 2) Depress bot<br>Isolation I                         | th Containmen<br>Reset pushbut                 | t<br>tons.                              |
|                |                                                                                                         |                     |           | 3) Verify Inst<br>Containment                         | trument Air t<br>t - ESTABLISH                 | o<br>ED.                                |
|                |                                                                                                         |                     |           | 4) Vent any u<br>Accumulato                           | nisolated<br>r.                                |                                         |
| 12             | Stop Both RXCPs                                                                                         |                     |           |                                                       |                                                |                                         |



| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                            | NO. FR-C.1                                                                                                                                                                                                                                                                                                                                                |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                    | TITLE RESPONSE TO INADEQUATE CORE COOLING                                                                                                                                                                                                                                                                                                                 |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                                                                                                                                                  | DATE MAR 21 2004 PAGE 8 of 11                                                                                                                                                                                                                                                                                                                             |
| STEP OPERATOR ACTIONS                                                                                                                                                                                                                                                                                                                                                                                           | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                                                       |
| NOTE: Normal conditions are desired but<br>17 Check If RXCPs Should Be Started<br>a. Core Exit TCs - GREATER THAN<br>1200°F<br>b. Check if an idle RCS cooling<br>loop is available:<br>• Narrow range SG level -<br>GREATER THAN 4% [15% FOR<br>ADVERSE CONTAINMENT]<br>• RXCP in associated loop -<br>AVAILABLE AND NOT OPERATING<br>c. Start RXCP in one idle RCS<br>cooling loop<br>d. Return to Step 17.a. | not required for starting the RXCPs.<br>a. GO TO Step 18.<br>b. Perform the following:<br>1) Verify Instrument Air to<br>Containment - ESTABLISHED<br>2) Open all PRZR PORVs and<br>block valves.<br>3) <u>IF</u> core exit TCs remain<br>greater than 1200°F, <u>THEN</u><br>open all other RCS vent<br>paths to containment.<br>4) <u>GO TO</u> Step 18 |
| 18 Locally Depressurize Intact Stear<br>Generators To Atmospheric Pressu<br>a. Use PORV<br><u>OR</u><br>b. Use Steam Dumps                                                                                                                                                                                                                                                                                      | m Use faulted or ruptured SG.<br>re:                                                                                                                                                                                                                                                                                                                      |

| v | WISCONSIN PUBLIC SERVICE CORPORATION |                              | NO.           | FR-C.1         |                                                                                                                                                                                |                                                                                                                             |                                                                     |    |
|---|--------------------------------------|------------------------------|---------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|----|
|   | KEWAUNEE NUCLEAR POWER PLANT         |                              | TITLE         | RESPONSE TO IN | ADEQUATE (                                                                                                                                                                     | CORE COO                                                                                                                    | LING                                                                |    |
|   | EMER                                 | GENCY OPERATING PR           | OCEDURES      | DATE           | MAR 21 2004                                                                                                                                                                    | PAGE 9                                                                                                                      | of                                                                  | 11 |
|   |                                      | 00703700                     |               |                |                                                                                                                                                                                | TT ROMITON                                                                                                                  |                                                                     | ٦  |
|   | TEP                                  | OPERATOR                     | ACTIONS       |                | CONTINGEN                                                                                                                                                                      | JI ACTION                                                                                                                   | 15                                                                  |    |
|   | 19 C                                 | Sheck Core Exit TCs<br>200°F | S - LESS THAN |                | <u>E core exit TCs</u><br>eturn to Step 17<br>RIOR TO STEP 17.<br>Cs increasing <u>AM</u><br>n all available<br>oops, <u>THEN GO TC</u><br>CCIDENT CONTROL<br>NITIAL RESPONSE, | decreasing<br>. OBSERVI<br><u>IF</u> core<br><u>ID</u> RXCPs ru<br>RCS coolin<br><u>)</u> SACRG-1,<br>ROOM GUIDI<br>Step 1. | g, <u>THEN</u><br>E NOTE<br>exit<br>unning<br>1g<br>SEVERE<br>ELINE |    |
|   |                                      |                              |               |                |                                                                                                                                                                                |                                                                                                                             |                                                                     |    |
|   |                                      |                              |               |                |                                                                                                                                                                                |                                                                                                                             |                                                                     |    |

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| WISCONS            | SIN PUBLIC SERVICE CORPORATION                                                                                                       | NO.         | FR-C.1                                        |                                                             |               |  |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------|-------------------------------------------------------------|---------------|--|
| KEW                | AUNEE NUCLEAR POWER PLANT                                                                                                            | TITLE       | RESPONSE TO IN                                | NADEQUATE COR                                               | E COOLING     |  |
| EMER               | GENCY OPERATING PROCEDURES                                                                                                           | DATE        | MAR 21 2004                                   | PAGE 10                                                     | <b>of</b> 11  |  |
|                    |                                                                                                                                      | — , r       |                                               |                                                             |               |  |
| STEP               | OPERATOR ACTIONS                                                                                                                     |             | CONTINGEN                                     | CY ACTIONS                                                  |               |  |
| •••••••            | <u>Caut</u>                                                                                                                          | <u>FION</u> |                                               |                                                             | • • • • •     |  |
| If offs<br>restart | ite power is lost after SI reset,<br>safeguards equipment.                                                                           | , manual    | action may be n                               | required to                                                 |               |  |
| ******             | • • • • • • • • • • • • • • • • • • • •                                                                                              |             |                                               |                                                             | ****          |  |
| 20                 | Check If SI Accumulators Should E<br>Isolated:                                                                                       | Зе          |                                               |                                                             |               |  |
| i                  | a. RHR Pump flow indication, F626 a. <u>GO TO</u> Step 17. OBSERVE NOTE<br>or F928 - AT LEAST INTERMITTENT PRIOR TO STEP 17.<br>FLOW |             |                                               |                                                             |               |  |
| 1                  | b. Isolate SI Accumulators:                                                                                                          |             |                                               |                                                             |               |  |
|                    | <ol> <li>Check power to isolation<br/>valves - AVAILABLE</li> </ol>                                                                  |             | 1) Restore pov<br>valves.                     | wer to isolat                                               | ion           |  |
|                    |                                                                                                                                      |             | a) Turn on<br>SI-20A a<br>C4.                 | breaker for<br>at MCC-52B cu                                | bicle         |  |
|                    |                                                                                                                                      |             | b) Turn on<br>SI-20B a<br>A3.                 | breaker for<br>at MCC-62B cu                                | bicle         |  |
|                    | 2) Reset SI                                                                                                                          |             |                                               |                                                             |               |  |
|                    | 3) Close SI-20A and B,<br>Accumulator A and B                                                                                        |             | 3) Perform the                                | e following:                                                |               |  |
|                    | Isolation Valves                                                                                                                     |             | a) Place co<br>for LD-4<br>Letdown<br>Valves, | ontrol switch<br>4A, B, and C,<br>Orifice Isol<br>to CLOSE. | es<br>ation   |  |
|                    |                                                                                                                                      |             | b) Depress<br>Isolatic<br>pushbutt            | both Contain<br>on Reset<br>tons.                           | ment          |  |
|                    |                                                                                                                                      |             | c) Verify<br>Contain                          | Instrument Ai<br>nent - ESTABL                              | r to<br>ISHED |  |
|                    |                                                                                                                                      |             | d) Vent any<br>Accumula                       | y unisolated<br>ator.                                       |               |  |



| WISCONSIN PUBLIC SERVICE                                                                                                                                        | NO. FR-C.2 REV M                    |                                         |              |             |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------|--------------|-------------|--|--|
| KEWAUNEE NUCLEAR PO                                                                                                                                             | WER PLANT                           | TITLE RESPONSE TO DEGRADED CORE COOLING |              |             |  |  |
| EMERGENCY OPERATING PR                                                                                                                                          | OCEDURES                            | DATE M                                  | AR 21 2004   | PAGE 1 of 9 |  |  |
| REVIEWED BY                                                                                                                                                     |                                     | APPRO                                   | VED BY       |             |  |  |
| NUCLEAR XES<br>SAFETY RELATED NO                                                                                                                                | SRO APPROV<br>TEMPORARY<br>REQUIRED | AL OF 🖾 YES<br>CHANGES 🔲 NO             |              |             |  |  |
| 1.0 <u>INTRODUCTION</u><br>1.1 This procedure prov                                                                                                              | vides actions i                     | to restore                              | adequate cor | e cooling.  |  |  |
| 2.0 <u>SYMPTOMS OR ENTRY CONDITIONS</u> 2.1 This procedure is entered from F-0.2, CORE COOLING Critical Safety<br>Function Status Trees on an ORANGE condition. |                                     |                                         |              |             |  |  |
| 3.0 <u>AUTOMATIC ACTIONS</u><br>3.1 None                                                                                                                        | ·                                   |                                         |              |             |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                | NO. FR-C.2                                                                                                                                            |  |  |  |  |  |  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                        | TITLE RESPONSE TO DEGRADED CORE COOLING                                                                                                               |  |  |  |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                      | DATE MAR 21 2004 PAGE 2 of 9                                                                                                                          |  |  |  |  |  |  |
|                                                                                     |                                                                                                                                                       |  |  |  |  |  |  |
| STEP OPERATOR ACTIONS                                                               | CONTINGENCY ACTIONS                                                                                                                                   |  |  |  |  |  |  |
| 4.0 <u>DETAILED PROCEDURE</u>                                                       |                                                                                                                                                       |  |  |  |  |  |  |
| CAL                                                                                 | <u>ITION</u>                                                                                                                                          |  |  |  |  |  |  |
| If RWST level decreases to less than 37 recirculation using ES-1.3, TRANSFER TO     | If RWST level decreases to less than 37%, the SI System should be aligned for recirculation using ES-1.3, TRANSFER TO CONTAINMENT SUMP RECIRCULATION. |  |  |  |  |  |  |
|                                                                                     |                                                                                                                                                       |  |  |  |  |  |  |
| <u>NOTE</u> : Normal conditions for running RXO<br>tripped if normal conditions can | CPs are desired, but RXCPs should not be not be not be established or maintained.                                                                     |  |  |  |  |  |  |
| 1 Verify SI Valve Alignment - PROF<br>EMERGENCY ALIGNMENT                           | PER Manually align valves as necessary.                                                                                                               |  |  |  |  |  |  |
| 2 Verify SI Flow In Both Trains:                                                    |                                                                                                                                                       |  |  |  |  |  |  |
| a. SI cold leg injection flow<br>indication, F925 – CHECK FOR<br>FLOW               | a. Align valves <u>AND</u> start pumps as<br>necessary. Establish any other<br>high pressure injection:                                               |  |  |  |  |  |  |
|                                                                                     | 1) Align Charging Pump suction to RWST.                                                                                                               |  |  |  |  |  |  |
|                                                                                     | <ol> <li>Operate two Charging Pumps<br/>at maximum rate.</li> </ol>                                                                                   |  |  |  |  |  |  |
| b. RCS pressure - LESS THAN<br>150 PSIG                                             | b. <u>GO</u> <u>TO</u> Step 3.                                                                                                                        |  |  |  |  |  |  |
| c. RHR Pump flow indication, F62<br>or F928 – CHECK FOR FLOW                        | 26 c. Align valves <u>AND</u> start pumps as necessary.                                                                                               |  |  |  |  |  |  |
|                                                                                     |                                                                                                                                                       |  |  |  |  |  |  |
|                                                                                     |                                                                                                                                                       |  |  |  |  |  |  |
|                                                                                     |                                                                                                                                                       |  |  |  |  |  |  |
|                                                                                     |                                                                                                                                                       |  |  |  |  |  |  |
|                                                                                     |                                                                                                                                                       |  |  |  |  |  |  |

| WISCO | WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                     |       |    | FR-C.2                                                                    |                                                                    |      |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----|---------------------------------------------------------------------------|--------------------------------------------------------------------|------|
| KE    | KEWAUNEE NUCLEAR POWER PLANT                                                                                                                             |       |    | RESPONSE TO DE                                                            | EGRADED CORE COO                                                   | LING |
| EM    | ERGENCY OPERATING PROCEDURES                                                                                                                             | DATE  |    | MAR 21 2004                                                               | PAGE 3 of                                                          | E 9  |
| STEP  | OPERATOR ACTIONS                                                                                                                                         |       |    | CONTINGENCY ACTIONS                                                       |                                                                    |      |
| 3     | Check RCS Vent Paths:                                                                                                                                    |       |    |                                                                           |                                                                    |      |
|       | a. Power to PR-1A and B,<br>Pressurizer PORV Block Valves<br>AVAILABLE                                                                                   | -     | 9. | Restore power<br>MCC-52B(62B).                                            | to PR-1A(B), at                                                    |      |
|       | b. PR-2A and B, PRZR PORVs - CLO                                                                                                                         | SED I | b. | Manually close<br>any valve can<br><u>THEN</u> manually<br>Valve.         | e PRZR PORVs. <u>I</u><br><u>NOT</u> be closed,<br>close its Block | E    |
|       | c. Block Valves - AT LEAST ONE OPEN                                                                                                                      |       |    | Open Block Valve unless it was<br>closed to isolate an open PRZR<br>PORV. |                                                                    |      |
|       | d. Other RCS vent paths - CLOSED                                                                                                                         | : (   | d. | Close any oper                                                            | n RCS vent path.                                                   |      |
|       | <ul> <li>PR-33A, PRZR Head Vent Trai</li> <li>RC-45A, Reactor Head Vent<br/>Train A</li> <li>RC-46, RX/PRZR Head Vent to<br/>PRZR Relief Tank</li> </ul> | n A   |    |                                                                           |                                                                    |      |
|       | <ul> <li>PR-33B, PRZR Head Vent Trai</li> <li>RC-45B, Reactor Head Vent<br/>Train B</li> <li>RC-49, RX/PRZR Head Vent to<br/>Containment</li> </ul>      | n B   |    |                                                                           |                                                                    |      |
| 4     | Check RXCP Status:                                                                                                                                       |       |    |                                                                           |                                                                    |      |
|       | a. At least one RXCP - RUNNING                                                                                                                           |       | a. | <u>GO TO</u> Step 7.                                                      |                                                                    |      |
|       | b. Support conditions for the operating RXCP(s) - per N-RC-36A, REACTOR COOLANT PUM OPERATION - AVAILABLE                                                | P     | b. | Establish cond<br>operating RXCI                                          | ditions for the<br>P(s).                                           |      |
|       |                                                                                                                                                          |       |    |                                                                           |                                                                    |      |

| wisco | WISCONSIN PUBLIC SERVICE CORPORATION                                                             |      |    | FR-C.2                                                                           |                                                                  |                     |
|-------|--------------------------------------------------------------------------------------------------|------|----|----------------------------------------------------------------------------------|------------------------------------------------------------------|---------------------|
| KE    | EWAUNEE NUCLEAR POWER PLANT                                                                      | TITI | LE | RESPONSE TO DE                                                                   | EGRADED CORE                                                     | COOLING             |
| EM    | ERGENCY OPERATING PROCEDURES                                                                     | DATI | 3  | MAR 21 2004                                                                      | PAGE 4                                                           | of 9                |
|       |                                                                                                  |      | Г  |                                                                                  |                                                                  |                     |
| STEP  | OPERATOR ACTIONS                                                                                 |      | L  | CONTINGEN                                                                        | CY ACTIONS                                                       |                     |
| 5     | Check Core Cooling:                                                                              |      |    |                                                                                  |                                                                  |                     |
|       | a. RVLIS RCS Void Fraction % (At<br>Least 1 RXCP Running)<br>indication - DECREASING             |      | a. | <u>GO TO</u> Step 6.                                                             |                                                                  |                     |
|       | b. RCS subcooling based on Core<br>Exit TCs - GREATER THAN 30°F<br>[65°F FOR ADVERSE CONTAINMENT | ]    | b. | <u>IF</u> increasing,<br>Step 1. OBSER<br>NOTE PRIOR TO<br><u>THEN GO</u> TO Ste | THEN <u>GO TO</u><br>RVE CAUTION A<br>STEP 1. <u>IF</u><br>Pp 6. | AND<br><u>NOT</u> . |
|       | c. Return to procedure and step<br>effect                                                        | in   |    |                                                                                  |                                                                  |                     |
| 6     | Check If One RXCP Should Be<br>Stopped:                                                          |      |    |                                                                                  |                                                                  |                     |
|       | a. Both RXCPs - RUNNING                                                                          |      | a. | <u>GO TO</u> Step 8.                                                             |                                                                  |                     |
| ļ     | b. Stop RXCP in Loop B                                                                           |      |    |                                                                                  |                                                                  |                     |
|       | c. <u>GO</u> <u>TO</u> Step 8                                                                    |      |    |                                                                                  |                                                                  | -                   |
| 7     | Check Core Cooling:                                                                              |      |    |                                                                                  |                                                                  |                     |
|       | a. Core Exit TCs - LESS THAN 700                                                                 | ۰E   | a. | <u>IF</u> decreasing,<br>Step 1. OBSE<br>AND NOTE PRIO<br><u>NOT, THEN GO</u>    | , <u>THEN GO TO</u><br>RVE CAUTION<br>R TO STEP 1.<br>FO Step 8. | <u>IF</u>           |
|       | b. Return to procedure and step<br>effect                                                        | in   |    |                                                                                  |                                                                  |                     |
|       |                                                                                                  |      |    |                                                                                  |                                                                  |                     |
|       |                                                                                                  |      |    |                                                                                  |                                                                  |                     |
| Í     |                                                                                                  |      |    |                                                                                  |                                                                  |                     |
|       |                                                                                                  |      |    |                                                                                  |                                                                  |                     |

| WISCO                                   | ONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                           | NO.                       | FR-C.2                                                                                                                        |                                                                                                                   |  |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--|
| KF                                      | WAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                 | TITLE                     | RESPONSE TO DI                                                                                                                | EGRADED CORE COOLING                                                                                              |  |
| EM                                      | ERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                                                                                                               | DATE                      | MAR 21 2004                                                                                                                   | PAGE 5 of 9                                                                                                       |  |
|                                         | f                                                                                                                                                                                                                                                                                                                                                                          |                           |                                                                                                                               |                                                                                                                   |  |
| STEP                                    | OPERATOR ACTIONS                                                                                                                                                                                                                                                                                                                                                           |                           | CONTINGEN                                                                                                                     | CY ACTIONS                                                                                                        |  |
| 8                                       | 8 Check SI-20A And B, Accumulator A <u>IF</u> SI Accumulator A(B) <u>NOT</u> alread<br>And B Isolation Valves - OPEN discharged, <u>THEN</u> perform the<br>following:                                                                                                                                                                                                     |                           |                                                                                                                               |                                                                                                                   |  |
|                                         |                                                                                                                                                                                                                                                                                                                                                                            | а                         | . Turn on breake<br>at MCC-52B(62B                                                                                            | er for SI-20A(B)<br>3) cubicle C4(A3).                                                                            |  |
|                                         |                                                                                                                                                                                                                                                                                                                                                                            | b                         | . Open SI-20A(B)                                                                                                              | ).                                                                                                                |  |
| If CST<br>pumps<br>A faul<br>SG is<br>9 | CAU<br>T level decreases to less than 8%,<br>will be necessary per A-FW-05B.<br>Ited or ruptured SG should not be<br>available.<br>Check Intact Steam Generator<br>Levels:<br>a. Narrow range level - GREATER<br>THAN 4% [15% FOR ADVERSE<br>CONTAINMENT]<br>b. Control feed flow to maintain<br>narrow range level between 4%<br>[15% FOR ADVERSE CONTAINMENT]<br>and 50% | TION<br>use of<br>used in | alternate water<br>subsequent steps<br>. Increase tota<br>restore narrow<br>greater than 4<br>ADVERSE CONTA<br>least one inta | sources for AFW<br>s unless no intact<br>feed flow to<br>w range level<br>4% [15% FOR<br>INMENT] in at<br>act SG. |  |
|                                         |                                                                                                                                                                                                                                                                                                                                                                            |                           |                                                                                                                               |                                                                                                                   |  |

| wisco                            | ONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                             | NO.                                     | FR-C.2                                   |                                         |  |  |
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| к                                | EWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                  | TITLE RESPONSE TO DEGRADED CORE COOLING |                                          |                                         |  |  |
| EM                               | IERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                | DATE                                    | MAR 21 2004                              | PAGE 6 of 9                             |  |  |
| STEP                             | OPERATOR ACTIONS                                                                                                                                                                                                                                             |                                         | CONTINGEN                                | CY ACTIONS                              |  |  |
|                                  |                                                                                                                                                                                                                                                              |                                         |                                          |                                         |  |  |
| ******                           | <u>CAU</u>                                                                                                                                                                                                                                                   | <u>TION</u>                             | ***************                          | ****                                    |  |  |
| The f<br>condi<br>befor<br>CONDI | The following step will cause Accumulator injection which may cause a red path<br>condition in F-0.4, INTEGRITY Status Tree. This procedure should be completed<br>before transition to FR-P.1, RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK<br>CONDITION. |                                         |                                          |                                         |  |  |
| •••••                            | ••••••••••                                                                                                                                                                                                                                                   | ******                                  | **************                           | • • • • • • • • • • • • • • • • • • • • |  |  |
| 10                               | Depressurize All Intact Steam<br>Generators To Depressurize The R                                                                                                                                                                                            | CS:                                     |                                          |                                         |  |  |
|                                  | a. Maintain cooldown rate in RCS<br>cold legs - LESS THAN 100°F/H                                                                                                                                                                                            | R                                       |                                          |                                         |  |  |
|                                  | b. Dump steam with Steam Dumps                                                                                                                                                                                                                               |                                         | b. Manually or 10<br>from SGs with       | ocally dump steam<br>SG PORV.           |  |  |
|                                  | c. Check RCS pressure - LESS<br>THAN OR EQUAL TO 210 PSIG                                                                                                                                                                                                    |                                         | c. <u>GO TO</u> Step 9.<br>PRIOR TO STEP | OBSERVE CAUTIONS<br>9.                  |  |  |
|                                  | d. Stop SG depressurization                                                                                                                                                                                                                                  |                                         |                                          |                                         |  |  |
|                                  | <u>CAU</u>                                                                                                                                                                                                                                                   | <u>TION</u>                             |                                          | •••••                                   |  |  |
| RHR P<br>out o                   | umps should <u>NOT</u> be operated with C<br>f service if RHR System temperatur                                                                                                                                                                              | omponen<br>e is gr                      | t Cooling to RHR<br>eater than 200°F     | Heat Exchangers<br>•                    |  |  |
| 11                               | Check DHR Dumps - RIINNING                                                                                                                                                                                                                                   | • • • • • • •                           | start numns as n                         | ****************                        |  |  |
|                                  | oncer and tumps Romand                                                                                                                                                                                                                                       |                                         |                                          |                                         |  |  |
|                                  |                                                                                                                                                                                                                                                              |                                         |                                          |                                         |  |  |
|                                  |                                                                                                                                                                                                                                                              |                                         |                                          |                                         |  |  |
|                                  |                                                                                                                                                                                                                                                              |                                         |                                          |                                         |  |  |
|                                  |                                                                                                                                                                                                                                                              |                                         |                                          |                                         |  |  |

| wisco           | ONSIN PUBLIC SERVICE CORPORATION                                                                                          | NO.                                     | FR-C.2                                             |                                                          |  |  |  |
|-----------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------|----------------------------------------------------------|--|--|--|
| ка              | EWAUNEE NUCLEAR POWER PLANT                                                                                               | TITLE RESPONSE TO DEGRADED CORE COOLING |                                                    |                                                          |  |  |  |
| EM              | IERGENCY OPERATING PROCEDURES                                                                                             | DATE                                    | MAR 21 2004                                        | PAGE 7 of 9                                              |  |  |  |
| STEP            | OPERATOR ACTIONS                                                                                                          |                                         | CONTINGENCY ACTIONS                                |                                                          |  |  |  |
| If of<br>restar | <u>CAUTION</u><br>If offsite power is lost after SI reset, manual action may be required to restart safeguards equipment. |                                         |                                                    |                                                          |  |  |  |
| 12              | Isolate SI Accumulators:                                                                                                  | ******                                  | ************                                       |                                                          |  |  |  |
|                 | a. Check power to isolation valve<br>- AVAILABLE                                                                          | es a                                    | a. Restore power<br>valves.                        | to isolation                                             |  |  |  |
|                 |                                                                                                                           |                                         | 1) Turn on br<br>at MCC-52B                        | eaker for SI-20A<br>cubicle C4.                          |  |  |  |
|                 |                                                                                                                           |                                         | 2) Turn on br<br>at MCC-62B                        | eaker for SI-20B<br>cubicle A3.                          |  |  |  |
|                 | b. Reset SI                                                                                                               |                                         |                                                    |                                                          |  |  |  |
| 1               | c. Close SI-20A and B, Accumulate                                                                                         | or (                                    | . Perform the f                                    | ollowing:                                                |  |  |  |
|                 |                                                                                                                           |                                         | 1) Place cont<br>LD-4A, B,<br>Orifice Is<br>CLOSE. | rol switches for<br>and C, Letdown<br>olation Valves, to |  |  |  |
|                 |                                                                                                                           |                                         | 2) Depress bo<br>Isolation                         | th Containment<br>Reset pushbuttons.                     |  |  |  |
|                 |                                                                                                                           |                                         | 3) Verify Ins<br>Containmen                        | trument Air to<br>t - ESTABLISHED                        |  |  |  |
|                 |                                                                                                                           |                                         | 4) Vent any u<br>Accumulato                        | nisolated<br>r.                                          |  |  |  |
|                 |                                                                                                                           |                                         |                                                    | 、                                                        |  |  |  |
|                 |                                                                                                                           |                                         |                                                    |                                                          |  |  |  |
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| WISCO            | INSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                    | NO.           |                                   | FR-C.2                                                                                                                                        | -                                                                   |                              |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------|
| KE               | WAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                          | TII           | LF                                | RESPONSE TO DE                                                                                                                                | EGRADED CORE                                                        | COOLING                      |
| EM               | ERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                        | DAT           | E                                 | MAR 21 2004                                                                                                                                   | PAGE 8                                                              | <b>of</b> 9                  |
| STEP             | OPERATOR ACTIONS                                                                                                                                                                                                                                                    |               |                                   | CONTINGEN                                                                                                                                     | CY ACTIONS                                                          |                              |
| During<br>INADEC | <u>CAUTION</u><br>During subsequent steps, if Core Exit TCs exceed 1200°F, FR-C.1, RESPONSE TO<br>INADEQUATE CORE COOLING, should be implemented.                                                                                                                   |               |                                   |                                                                                                                                               |                                                                     |                              |
| 13               | Stop Both RXCPs                                                                                                                                                                                                                                                     |               |                                   |                                                                                                                                               |                                                                     |                              |
| 14               | <ul> <li>Depressurize All Intact Steam<br/>Generators To Atmospheric Pressur</li> <li>a. Maintain cooldown rate in RCS<br/>cold legs - LESS THAN 100°F/H</li> <li>b. Dump steam from the intact SG<br/>using the Steam Dump System in<br/>STM PRESS mode</li> </ul> | re:<br>R<br>n | b                                 | . Manually or lo<br>from SGs with                                                                                                             | ocally dump s<br>SG PORVs.                                          | steam                        |
| 15               | <ul> <li>Verify SI/RHR Flow:</li> <li>a. SI cold leg injection flow indication, F925 - CHECK FOR FLOW</li> <li>OR</li> <li>D. RHR Pump flow indication, F620 or F928 - CHECK FOR FLOW</li> </ul>                                                                    | 6             | 0<br>f<br>p<br>1<br>2<br><u>0</u> | Continue efforts<br>Tow. Establish<br>Pressure injection<br>. Align Charging<br>RWST.<br>2. Operate two Cl<br>maximum rate.<br>30 TO Step 14. | to establis<br>any other h<br>on:<br>g Pump suction<br>harging Pump | h SI<br>igh<br>on to<br>s at |
| 16               | Check Core Cooling:<br>• RCS hot leg temperatures - LES<br>THAN 350°F                                                                                                                                                                                               | S             | <u>G</u>                          | <u>60 TO</u> Step 14.                                                                                                                         |                                                                     |                              |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                   | NO.   | FR-C.2         |                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------|----------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                           | TITLE | RESPONSE TO DI | EGRADED CORE COOLING |
| EMERGENCY OPERATING PROCEDURES                                                                                                                         | DATE  | MAR 21 2004    | PAGE 9 of 9          |
|                                                                                                                                                        |       |                |                      |
| STEP OPERATOR ACTIONS                                                                                                                                  |       | CONTINGEN      | CY ACTIONS           |
| 17 <u>GO TO</u> E-1, LOSS OF REACTOR OR<br>SECONDARY COOLANT, Step 17.<br>OBSERVE NOTE PRIOR TO E-1, LOSS<br>REACTOR OR SECONDARY COOLANT,<br>Step 17. | OF    |                |                      |
| -                                                                                                                                                      | END-  |                |                      |
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| WISCONSIN PUBLIC SERVICE                                                                                                                                                                                                                                                                                                                                                                       | NO. FR-H.1 REV T        |                                               |                                                                      |                     |  |  |
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| KEWAUNEE NUCLEAR PO'                                                                                                                                                                                                                                                                                                                                                                           | WER PLANT               | TITLE RESPONSE TO LOSS OF SECONDARY HEAT SINK |                                                                      |                     |  |  |
| EMERGENCY OPERATING PR                                                                                                                                                                                                                                                                                                                                                                         | ROCEDURES               | date J                                        | UL 15 2004                                                           | <b>PAGE</b> 1 of 19 |  |  |
| REVIEWED BY                                                                                                                                                                                                                                                                                                                                                                                    |                         | APPRO                                         | VKD BY                                                               |                     |  |  |
| NUCLEAR SAFETY RELATED NO                                                                                                                                                                                                                                                                                                                                                                      | PORC REVIEW<br>REQUIRED | YES                                           | ☑ YES     SRO APPROVAL OF     ☑ YES       □ NO     REQUIRED     □ NO |                     |  |  |
| 1.0 <u>INTRODUCTION</u> 1.1 This procedure provides actions to respond to a loss of secondary heat sink in both Steam Generators.                                                                                                                                                                                                                                                              |                         |                                               |                                                                      |                     |  |  |
| <ul> <li>2.0 <u>SYMPTOMS OR ENTRY CONDITIONS</u></li> <li>2.1 This procedure is entered from: <ul> <li>a) E-O, REACTOR TRIP OR SAFETY INJECTION, Step 16, when minimum AFW flow is not verified AND narrow range level in all SGs is less than 4% [15% FOR ADVERSE CONTAINMENT].</li> <li>b) F-O.3, HEAT SINK Critical Safety Function Status Trees on a RED condition.</li> </ul> </li> </ul> |                         |                                               |                                                                      |                     |  |  |
| 3.0 AUTOMATIC ACTIONS<br>3.1 None                                                                                                                                                                                                                                                                                                                                                              |                         |                                               |                                                                      |                     |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                    |                                                              | NO. FR-H.1                                    |                                                                                                                                                                                                                                                                                                                                                      |            |              |  |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                            |                                                              | TITLE RESPONSE TO LOSS OF SECONDARY HEAT SINK |                                                                                                                                                                                                                                                                                                                                                      |            |              |  |  |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                          |                                                              | DATE                                          | JUL 15 2004                                                                                                                                                                                                                                                                                                                                          | PAGE 2     | <b>of</b> 19 |  |  |  |  |  |
|                                                                                                         |                                                              |                                               |                                                                                                                                                                                                                                                                                                                                                      |            |              |  |  |  |  |  |
|                                                                                                         |                                                              |                                               | CONTINGEN                                                                                                                                                                                                                                                                                                                                            | CY ACTIONS |              |  |  |  |  |  |
| 4.0 <u>UE17</u>                                                                                         | 4.0 <u>DETAILED PROCEDURE</u>                                |                                               |                                                                                                                                                                                                                                                                                                                                                      |            |              |  |  |  |  |  |
| CAUTION                                                                                                 |                                                              |                                               |                                                                                                                                                                                                                                                                                                                                                      |            |              |  |  |  |  |  |
| If total feed flow is less than 200 gpm due to operator action, this procedure should not be performed. |                                                              |                                               |                                                                                                                                                                                                                                                                                                                                                      |            |              |  |  |  |  |  |
| Feed flow shall not be reestablished to any faulted SG if a non-faulted SG is available.                |                                                              |                                               |                                                                                                                                                                                                                                                                                                                                                      |            |              |  |  |  |  |  |
| •••••                                                                                                   |                                                              |                                               |                                                                                                                                                                                                                                                                                                                                                      |            |              |  |  |  |  |  |
| 1 Check If Secondary Heat Sink Is<br>Required:                                                          |                                                              |                                               |                                                                                                                                                                                                                                                                                                                                                      |            |              |  |  |  |  |  |
|                                                                                                         | a. RCS pressure - GREATER THAN AN<br>NON-FAULTED SG PRESSURE | NY a                                          | Return to procedure and step in effect.                                                                                                                                                                                                                                                                                                              |            |              |  |  |  |  |  |
|                                                                                                         | b. Hottest RCS wide range<br>temperature - GREATER THAN 400  | b<br>)° F                                     | Place RHR System in service<br>while continuing in this<br>procedure. Refer to N-RHR-34,<br>RESIDUAL HEAT REMOVAL SYSTEM<br>OPERATION, <u>OR</u> A-RHR-34B.<br>RESIDUAL HEAT REMOVAL<br>SPLIT-TRAIN MODE, as<br>appropriate. <u>IF</u> adequate<br>cooling with RHR System is<br>established, <u>THEN</u> return to<br>procedure and step in effect. |            |              |  |  |  |  |  |
|                                                                                                         |                                                              |                                               |                                                                                                                                                                                                                                                                                                                                                      |            |              |  |  |  |  |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                               | NO. FR-H.1                                                                                                                                   |  |  |  |  |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                       | TITLE RESPONSE TO LOSS OF SECONDARY HEAT SINK                                                                                                |  |  |  |  |  |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                                                     | DATE JUL 15 2004 PAGE 3 of 19                                                                                                                |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                    |                                                                                                                                              |  |  |  |  |  |  |  |  |
| STEP OPERATOR ACTIONS                                                                                                                                                                                                                                                                                              | CONTINGENCY ACTIONS                                                                                                                          |  |  |  |  |  |  |  |  |
| CAUTION                                                                                                                                                                                                                                                                                                            |                                                                                                                                              |  |  |  |  |  |  |  |  |
| If all Yarway wide range level indications in both SGs are less than 5% [20% FOR ADVERSE CONTAINMENT] <u>OR</u> PRZR pressure is greater than or equal to 2335 psig due to <u>loss</u> of secondary heat sink, RXCPs should be tripped and Steps 11 through 19 should be immediately initiated for bleed and feed. |                                                                                                                                              |  |  |  |  |  |  |  |  |
| If CST level decreases to less than 8%, use of alternate water sources for AFW pumps will be necessary per A-FW-05B.                                                                                                                                                                                               |                                                                                                                                              |  |  |  |  |  |  |  |  |
| <u>NOTE</u> : If the CST is unavailable and neither Main Feedwater or Condensate<br>System flow can be established to a SG, it is permissible to align<br>Service Water to the AFW Pumps.                                                                                                                          |                                                                                                                                              |  |  |  |  |  |  |  |  |
| 2 Establish AFW Flow To At Least O<br>Steam Generator:                                                                                                                                                                                                                                                             | ne                                                                                                                                           |  |  |  |  |  |  |  |  |
| a. Check SG Blowdown isolation:                                                                                                                                                                                                                                                                                    | a. Manually close valves.                                                                                                                    |  |  |  |  |  |  |  |  |
| <ul> <li>BT-2A(B) and BT-3A(B), SG<br/>A(B) Blowdown Isolation<br/>Valves - CLOSED</li> <li>BT-31A(B) and BT-32A(B), SG<br/>Sample Isolation Valves -<br/>CLOSED</li> </ul>                                                                                                                                        |                                                                                                                                              |  |  |  |  |  |  |  |  |
| b. Check Control Room indicators<br>for cause of AFW failure:                                                                                                                                                                                                                                                      | b. <u>IF</u> AFW-2A(B), AFWP A(B) Flow<br>Control Valve, has failed<br>closed due to controller                                              |  |  |  |  |  |  |  |  |
| <ul> <li>AFW Pump power supply -<br/>AVAILABLE</li> <li>AFW valve alignment - CORRE</li> </ul>                                                                                                                                                                                                                     | failure, <u>IHEN</u> perform the<br>following:<br>CT                                                                                         |  |  |  |  |  |  |  |  |
| • CST level - GREATER THAN 8%                                                                                                                                                                                                                                                                                      | 1) Behind Mechanical Control<br>Console A, at bottom of<br>controller, locate AFW-2A<br>(AFW-2B) signal output cable<br>43003-01 (43003-02). |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                    | 2) Unplug signal output cable<br>43003-01 (43003-02).                                                                                        |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                    | 3) Locally verify AFW-2A<br>(AFW-2B) - OPEN                                                                                                  |  |  |  |  |  |  |  |  |
| c. Restore AFW flow                                                                                                                                                                                                                                                                                                |                                                                                                                                              |  |  |  |  |  |  |  |  |
| d. Check total flow to SGs -<br>GREATER THAN 200 GPM                                                                                                                                                                                                                                                               | d. Dispatch operator to locally<br>restore AFW flow. <u>GO</u> <u>TO</u> Step 3.                                                             |  |  |  |  |  |  |  |  |
| e. Return to procedure and step<br>effect                                                                                                                                                                                                                                                                          | in                                                                                                                                           |  |  |  |  |  |  |  |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION | NU.   |                                       |           |    |    |  |
| KEWAUNEE NUCLEAR POWER PLANT         | TITLE | LE RESPONSE TO LOSS OF SECONDARY HEAT |           |    |    |  |
| EMERGENCY OPERATING PROCEDURES       | DATE  | JUL 15 2004                           | PAGE 4    | of | 19 |  |
| STEP OPERATOR ACTIONS                | r     | CONTINGEN                             | Y ACTIONS |    | ٦  |  |
|                                      | [     |                                       |           |    |    |  |
| 3 Stop Both RXCPs                    |       |                                       |           |    |    |  |
|                                      |       |                                       |           |    |    |  |
|                                      |       |                                       |           |    |    |  |
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| WISCO          | WISCONSIN PUBLIC SERVICE CORPORATION                                                                  |             | FR-H.1                                                                           |                                                                                         |   |  |  |
|----------------|-------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---|--|--|
| . K            | KEWAUNEE NUCLEAR POWER PLANT                                                                          |             | RESPONSE TO LO                                                                   | DSS OF SECONDARY HEAT                                                                   | T |  |  |
| EN             | IERGENCY OPERATING PROCEDURES                                                                         | DATE        | JUL 15 2004                                                                      | PAGE 5 of 19                                                                            | 9 |  |  |
|                |                                                                                                       |             |                                                                                  |                                                                                         |   |  |  |
| STEP           | OPERATOR ACTIONS                                                                                      |             | CONTINGEN                                                                        | CY ACTIONS                                                                              |   |  |  |
|                | •••••                                                                                                 |             | **********                                                                       | • • • • • • • • • • • • • • • • • • • •                                                 |   |  |  |
|                | <u>CAU</u>                                                                                            | <u>FION</u> |                                                                                  |                                                                                         | ; |  |  |
| lt of<br>resta | tsite power is lost after SI reset<br>rt safeguards equipment.                                        | , manual    | action may be i                                                                  | required to                                                                             |   |  |  |
|                | ••••••••••••••••••••••••••••••••                                                                      |             |                                                                                  |                                                                                         |   |  |  |
| 4              | Establish Main Feedwater Flow To<br>At Least One Steam Generator:                                     |             |                                                                                  |                                                                                         |   |  |  |
|                | a. Check Condensate System – IN<br>SERVICE                                                            | a           | . Place Condensa<br>service per N-<br>condensate can<br>service, <u>THEN</u>     | ate System in<br>-CD-03. <u>IF</u><br>1 <u>NOT</u> be placed in<br><u>GO IO</u> Step 9. |   |  |  |
|                | b. Check FW-12A and B, SG A and I                                                                     | B b         | . Perform the fo                                                                 | ollowing:                                                                               |   |  |  |
|                | Peedwater Isolation Valves -<br>OPEN                                                                  |             | 1) Reset SI if necessary.                                                        |                                                                                         |   |  |  |
|                |                                                                                                       |             | 2) Reset FW Is                                                                   | solation.                                                                               |   |  |  |
|                |                                                                                                       |             | 3) Open FW Iso                                                                   | plation Valves.                                                                         |   |  |  |
|                |                                                                                                       |             | <u>IF</u> no FW Isola<br>opened, <u>THEN (</u>                                   | ation Valve can be<br><u>30 TO</u> Step 9.                                              |   |  |  |
|                | c. Fast start Main FW pump:                                                                           | C           | . Establish Main<br>N-FW-05A, FEE                                                | n FW flow per<br>DWATER SYSTEM                                                          |   |  |  |
|                | <ol> <li>Check condensate pumps - A<br/>LEAST ONE HAS REMAINED<br/>RUNNING SINCE MFWP TRIP</li> </ol> | Г           | NORMAL OPERAT<br>flow can <u>NOT</u> I<br><u>THEN GO TO</u> Sto<br>CAULION PRIOR | ION. <u>IF</u> Main FW<br>be established,<br>ep 6. OBSERVE<br>TO STEP 6                 |   |  |  |
|                | 2) Check Feedwater Pump A(B)<br>Aux Lube Oil System -<br>OPERATING                                    |             |                                                                                  |                                                                                         |   |  |  |
|                | 3) Check Feedwater Pump A(B)<br>Seal Water System - OPERAT                                            | ING         |                                                                                  |                                                                                         |   |  |  |
|                | 4) Verify C-17A(B), Feedwater<br>Pump A(B) Suction - OPEN                                             |             |                                                                                  |                                                                                         |   |  |  |
|                | 5) Position FW-2A/MV-32025<br>(FW-2B/MV-32026), Feedwate<br>Pump A(B) and Discharge<br>Valve to START | r           |                                                                                  |                                                                                         |   |  |  |
|                | 6) Slowly open FW-10A or B, S<br>A or B Main Feedwater Bypa<br>Flow Control Valve                     | G<br>S S    |                                                                                  |                                                                                         |   |  |  |
|                |                                                                                                       |             |                                                                                  |                                                                                         |   |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                              | NO. FR-H.1                                                                                                                                                                                                                                                            |  |  |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                      | TITLE RESPONSE TO LOSS OF SECONDARY HEAT SINK                                                                                                                                                                                                                         |  |  |  |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                                                    | DATE JUL 15 2004 PAGE 6 of 19                                                                                                                                                                                                                                         |  |  |  |  |  |  |
|                                                                                                                                   | CONTINCENCY ACTIONS                                                                                                                                                                                                                                                   |  |  |  |  |  |  |
| NOTE: Indications of core exit TCs decreasing and/or SG wide range level increasing are verification of feed flow.                |                                                                                                                                                                                                                                                                       |  |  |  |  |  |  |
| 5 Check Steam Generator Levels:<br>a. Narrow range level in at least<br>one SG - GREATER THAN 4% [15%<br>FOR ADVERSE CONTAINMENT] | a. <u>IF</u> feed flow to at least one SG<br>verified, <u>THEN</u> maintain flow to<br>restore narrow range level to<br>greater than 4% [15% FOR<br>ADVERSE CONTAINMENT]. <u>IF NOT</u><br>verified, <u>THEN GO TO</u> Step 6.<br>OBSERVE CAUTION PRIOR TO<br>STEP 6. |  |  |  |  |  |  |
| b. Return to procedure and step i<br>effect                                                                                       | n                                                                                                                                                                                                                                                                     |  |  |  |  |  |  |

| wisco            | WISCONSIN PUBLIC SERVICE CORPORATION                                                                  |                                                                     |     |     | FR-H.1                                                                                        |                                                                                                        |                                 |  |  |
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| к                | EWA                                                                                                   | UNEE NUCLEAR POWER PLANT                                            | TIT | LE  | RESPONSE TO LO<br>SINK                                                                        | DSS OF SECOND                                                                                          | DARY HEAT                       |  |  |
| EM               | ÍERG                                                                                                  | ENCY OPERATING PROCEDURES                                           | DAT | E   | JUL 15 2004                                                                                   | PAGE 7                                                                                                 | <b>of</b> 19                    |  |  |
|                  | -<br>-                                                                                                |                                                                     |     | ٢   |                                                                                               |                                                                                                        |                                 |  |  |
| STEP             | L                                                                                                     | OPERATOR ACTIONS                                                    |     | L   | CONTINGEN(                                                                                    | CY ACTIONS                                                                                             |                                 |  |  |
|                  | CAUTION                                                                                               |                                                                     |     |     |                                                                                               |                                                                                                        |                                 |  |  |
| Follow<br>if con | Following block of automatic SI actuation, manual SI actuation may be required if conditions degrade. |                                                                     |     |     |                                                                                               |                                                                                                        |                                 |  |  |
| 6                | De                                                                                                    | nrescurize RCS.                                                     |     | *** |                                                                                               |                                                                                                        |                                 |  |  |
|                  | а.                                                                                                    | Depressurize RCS to less than<br>1950 psig                          |     |     |                                                                                               |                                                                                                        |                                 |  |  |
|                  |                                                                                                       | 1) Check Letdown - IN SERVICE                                       |     |     | 1) Place Letdo<br><u>IF NOT</u> poss<br>one PRZR P(<br>available,<br>auxiliary s<br>Step 6.b. | own in servic<br>sible, <u>THEN</u> u<br>DRV. <u>IF</u> PORV<br><u>THEN</u> use<br>spray. <u>GO TC</u> | ce.<br>Ise<br>/ <u>NOT</u><br>) |  |  |
|                  |                                                                                                       | 2) Use auxiliary spray                                              |     |     | 2) Use one PRZ                                                                                | ZR PORV.                                                                                               |                                 |  |  |
|                  | b.                                                                                                    | Block SI signals when LESS TH/<br>1950 PSIG                         | AN  |     |                                                                                               |                                                                                                        |                                 |  |  |
|                  | c.                                                                                                    | Depressurize at least one SG 1<br>less than 410 psig:               | to  |     |                                                                                               |                                                                                                        |                                 |  |  |
|                  |                                                                                                       | <ol> <li>Dump steam with Steam Dumps<br/>at maximum rate</li> </ol> | 5   |     | 1) Manually or<br>steam from<br>possible, ]                                                   | r locally dum<br>SG PORVs. <u>l</u><br><u>THEN GO TO</u> St                                            | np<br>( <u>F NOT</u><br>cep 9.  |  |  |
|                  |                                                                                                       |                                                                     |     |     |                                                                                               | ·                                                                                                      |                                 |  |  |
|                  |                                                                                                       |                                                                     |     |     |                                                                                               |                                                                                                        |                                 |  |  |
|                  |                                                                                                       |                                                                     |     |     |                                                                                               |                                                                                                        |                                 |  |  |
|                  |                                                                                                       |                                                                     |     |     |                                                                                               |                                                                                                        |                                 |  |  |
|                  |                                                                                                       |                                                                     |     |     |                                                                                               |                                                                                                        |                                 |  |  |
|                  |                                                                                                       |                                                                     |     |     |                                                                                               |                                                                                                        |                                 |  |  |

| WISCO | NSIN PUBLIC SERVICE CORPORATION                                                                | NO.       | FR-H.1                                                                                                                 |                                                                                                                  | · · · · · · · · · · · · · · · · · · ·    |  |  |
|-------|------------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------|--|--|
| KE    | WAUNEE NUCLEAR POWER PLANT                                                                     | TITLE     | RESPONSE TO LOSS OF SECONDARY HEA<br>SINK                                                                              |                                                                                                                  |                                          |  |  |
| EME   | ERGENCY OPERATING PROCEDURES                                                                   | DATE      | JUL 15 2004                                                                                                            | PAGE 8                                                                                                           | <b>of</b> 19                             |  |  |
| STEP  | OPERATOR ACTIONS                                                                               |           | CONTINGEN                                                                                                              | CY ACTIONS                                                                                                       |                                          |  |  |
| 7     | Establish Feed Flow From<br>Condensate System:                                                 | <u>G(</u> | <u>) TO</u> Step 9.                                                                                                    |                                                                                                                  |                                          |  |  |
|       | a. Verify Condensate Pump - ON                                                                 |           |                                                                                                                        |                                                                                                                  |                                          |  |  |
|       | b. Verify FW Pump seal water -<br>OPERABLE                                                     |           |                                                                                                                        |                                                                                                                  |                                          |  |  |
|       | c. Verify FW Pump Oil Pump –<br>RUNNING                                                        |           |                                                                                                                        |                                                                                                                  |                                          |  |  |
|       | d. Reset both trains of FW<br>Isolation                                                        |           |                                                                                                                        |                                                                                                                  |                                          |  |  |
|       | e. Locally open FW-2A or B, FW<br>Discharge Valve                                              |           |                                                                                                                        |                                                                                                                  |                                          |  |  |
|       | f. Open FW-12A or B, SG A or B<br>Feedwater Isolation Valve                                    |           |                                                                                                                        |                                                                                                                  |                                          |  |  |
|       | g. Slowly open FW-10A or B, SG A<br>or B Main Feedwater Bypass Flo<br>Control Valve            | DW        |                                                                                                                        |                                                                                                                  |                                          |  |  |
| 8     | Check Steam Generator Levels:                                                                  |           |                                                                                                                        |                                                                                                                  |                                          |  |  |
|       | a. Narrow range level in at least<br>one SG - GREATER THAN 4% [15%<br>FOR ADVERSE CONTAINMENT] | ta.       | <u>IF</u> feed flow<br>verified, <u>THE</u><br>restore narrow<br>greater than<br>ADVERSE CONTA<br>verified, <u>THE</u> | to at least o<br><u>N</u> maintain fl<br>w range level<br>4% [15% FOR<br>INMENT]. <u>IF</u><br><u>GO TO</u> Step | ne SG<br>ow to<br>to<br><u>NOT</u><br>9. |  |  |
|       | b. Return to procedure and step to effect                                                      | in        |                                                                                                                        |                                                                                                                  |                                          |  |  |
|       |                                                                                                |           |                                                                                                                        |                                                                                                                  |                                          |  |  |



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| WISCO          | DNSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                   | NO.         | FR-H.1                                                                                                                                |                                                                                                            |                                          |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------|
| к              | EWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                        | TITL        | RESPONSE TO LO<br>SINK                                                                                                                | DSS OF SECOND                                                                                              | DARY HEAT                                |
| EM             | IERGENCY OPERATING PROCEDURES                                                                                                                                                                      | DATE        | JUL 15 2004                                                                                                                           | PAGE 10                                                                                                    | <b>of</b> 19                             |
| STEP           | OPERATOR ACTIONS                                                                                                                                                                                   |             | CONTINGENO                                                                                                                            | CY ACTIONS                                                                                                 |                                          |
| 12             | <ul> <li>Verify RCS Injection Path:</li> <li>a. Check SI Pumps - AT LEAST ONE<br/>RUNNING</li> <li>b. Check SI valve alignment for<br/>operating pumps - PROPER<br/>EMERGENCY ALIGNMENT</li> </ul> |             | Manually align va<br>pumps, as necessa<br>injection path.<br>path can <u>NOT</u> be e<br><u>GO TO</u> Step 2. OF<br>AND NOTE PRIOR TO | alves <u>AND</u> sta<br>ary to establ<br><u>IF</u> an inject<br>established,<br>BSERVE CAUTIC<br>D STEP 2. | irt<br>ish<br>tion<br><u>THEN</u><br>DNS |
| 13             | Establish RCS Bleed Path:<br>a. Verify power to PR-1A and B,<br>Pressurizer PORV Block Valves<br>AVAILABLE<br>b. Verify PR-1A and B - BOTH OPE<br>c. Open both PR-2A and B, PRZR<br>PORVs          | -<br>N      | a. Restore power<br>MCC-52B(62B).<br>b. Open Block Val                                                                                | to PR-1A(B)<br>lves.                                                                                       | at                                       |
| 14             | Isolate Letdown:<br>a. Place control switches for<br>LD-4A, B, and C, Letdown<br>Orifice Isolation Valves, to<br>CLOSE                                                                             |             |                                                                                                                                       |                                                                                                            |                                          |
| *****          | <u>CAU</u>                                                                                                                                                                                         | <u>TION</u> |                                                                                                                                       |                                                                                                            | *****                                    |
| If of<br>resta | fsite power is lost after SI reset<br>rt safeguards equipment.                                                                                                                                     | , manua     | l action may be ı                                                                                                                     | required to                                                                                                |                                          |
| 15             | Reset SI                                                                                                                                                                                           | ••••        |                                                                                                                                       |                                                                                                            | *****                                    |

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| WISCO  | ONSIN PUBLIC SERVICE CORPORATION                                                           | NO. FR-H.1                                                                                                                                                                                                                                                                                              |  |  |  |  |  |
|--------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
| KE     | WAUNEE NUCLEAR POWER PLANT                                                                 | TITLE RESPONSE TO LOSS OF SECONDARY HEA                                                                                                                                                                                                                                                                 |  |  |  |  |  |
| EM     | ERGENCY OPERATING PROCEDURES                                                               | DATE JUL 15 2004 PAGE 11 of 19                                                                                                                                                                                                                                                                          |  |  |  |  |  |
| CITTED | OPERATOR ACTIONS                                                                           | CONTINCENCY ACTIONS                                                                                                                                                                                                                                                                                     |  |  |  |  |  |
|        |                                                                                            |                                                                                                                                                                                                                                                                                                         |  |  |  |  |  |
| 16     | Reset Containment Isolation:<br>a. Depress both Containment<br>Isolation Reset pushbuttons |                                                                                                                                                                                                                                                                                                         |  |  |  |  |  |
| 17     | Verify Instrument Air To<br>Containment - ESTABLISHED                                      | Start one Air Compressor <u>AND</u><br>establish Instrument Air to<br>Containment.                                                                                                                                                                                                                      |  |  |  |  |  |
| 18     | Verify MCC-5262 - ENERGIZED                                                                | <u>IF</u> Bus 62 is energized, <u>THEN</u> align<br>MCC-5262 to Bus 62 per N-ELV-40.                                                                                                                                                                                                                    |  |  |  |  |  |
| 19     | Verify Adequate RCS Bleed Path:                                                            | Perform the following:                                                                                                                                                                                                                                                                                  |  |  |  |  |  |
|        | • PRZR PORVs - BOTH OPEN                                                                   | a. Open all RCS high point vents:                                                                                                                                                                                                                                                                       |  |  |  |  |  |
|        | • PRZR PORV Block Valves - BOTH<br>OPEN                                                    | <ul> <li>PR-33A, PRZR Head Vent Train A</li> <li>RC-45A, Reactor Head Vent<br/>Train A</li> <li>RC-46, RX/PRZR Head Vent to<br/>PRZR Relief Tank</li> <li>PR-33B, PRZR Head Vent Train B</li> <li>RC-45B, Reactor Head Vent<br/>Train B</li> <li>RC-49, RX/PRZR Head Vent to<br/>Containment</li> </ul> |  |  |  |  |  |
|        |                                                                                            | b. Align any available low<br>pressure water source to the<br>depressurized SG(s). <u>IF</u> no low<br>pressure water source can be<br>aligned, <u>THEN GO TO</u> Step 20.                                                                                                                              |  |  |  |  |  |
|        |                                                                                            | c. Depressurize at least one<br>intact SG to atmospheric<br>pressure using SG PORV to<br>inject low pressure water<br>source.                                                                                                                                                                           |  |  |  |  |  |

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| WISCO            | NSIN PUBLIC SERVICE CORPORATION                                                                                  | NO.         | FR-H.1                                                             |                                                             |
|------------------|------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------------------|-------------------------------------------------------------|
| KE               | WAUNEE NUCLEAR POWER PLANT                                                                                       | TITL        | E RESPONSE TO LO<br>SINK                                           | OSS OF SECONDARY HEAT                                       |
| EM               | ERGENCY OPERATING PROCEDURES                                                                                     | DATE        | JUL 15 2004                                                        | <b>PAGE</b> 12 of 19                                        |
|                  |                                                                                                                  |             | <b></b>                                                            |                                                             |
| STEP             | OPERATOR ACTIONS                                                                                                 |             | CONTINGEN                                                          | CY ACTIONS                                                  |
| 20               | Perform Steps 3 Through 14 Of E-0<br>REACTOR TRIP OR SAFETY INJECTION<br>While Continuing With This<br>Procedure | D,          |                                                                    |                                                             |
| •••••            | <u>CAU</u>                                                                                                       | <u>TION</u> | ••••••                                                             | •••••                                                       |
| The R(<br>SI Pun | CS bleed path must be maintained ev<br>np shutoff head.                                                          | ven if      | RCS pressure rem                                                   | ains greater than                                           |
| 21               | Maintain RCS Heat Removal:                                                                                       |             |                                                                    |                                                             |
|                  | a. Maintain SI flow                                                                                              |             |                                                                    |                                                             |
|                  | b. Maintain PRZR PORVs - BOTH OPI                                                                                | EN          | b. Maintain RCS I<br>- OPEN                                        | high point vents                                            |
| 22               | Establish Charging Flow:                                                                                         |             |                                                                    |                                                             |
|                  | a. Check for CC flow to RXCP(s)<br>Thermal Barrier                                                               | •           | a. Locally close<br>isolate seal<br>affected RXCP<br>starting Char | CVC-204A(B) to<br>injection to<br>(s) before<br>ging Pumps. |
|                  | b. Start a Charging Pump                                                                                         |             |                                                                    |                                                             |
|                  | c. Align Charging Pump suction to RWST                                                                           | D           |                                                                    |                                                             |
|                  | d. Start a second Charging Pump                                                                                  |             |                                                                    |                                                             |
|                  | e. Establish maximum charging flo                                                                                | DW          |                                                                    |                                                             |
| 23               | Establish Letdown Per N-CVC-35B,<br>CHARGING AND VOLUME CONTROL                                                  |             | Establish Excess<br>N-CVC-35B, CHARG<br>CONTROL.                   | Letdown per<br>ING AND VOLUME                               |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                               | NO. FR-H.1                                                                                                                                                                                                     |  |  |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                       | TITLE RESPONSE TO LOSS OF SECONDARY HEAT SINK                                                                                                                                                                  |  |  |  |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                     | DATE JUL 15 2004 PAGE 13 of 19                                                                                                                                                                                 |  |  |  |  |  |  |
|                                                                                                    |                                                                                                                                                                                                                |  |  |  |  |  |  |
| STEP OPERATOR ACTIONS                                                                              | CONTINGENCY ACTIONS                                                                                                                                                                                            |  |  |  |  |  |  |
| CAUTION                                                                                            |                                                                                                                                                                                                                |  |  |  |  |  |  |
| If RWST level decreases to less than 37<br>recirculation using ES-1.3, TRANSFER TO                 | 6, the SI system should be aligned for<br>CONTAINMENT SUMP RECIRCULATION.                                                                                                                                      |  |  |  |  |  |  |
| If Containment pressure increases to gro<br>should be verified.                                    | eater than 23 psig, Containment Spray                                                                                                                                                                          |  |  |  |  |  |  |
| If RCS pressure is greater than 150 psig<br>than 30 minutes on miniflow line withou<br>Exchangers. | g, RHR Pumps should <u>NOT</u> be run longer<br>t Component Cooling to RHR Heat                                                                                                                                |  |  |  |  |  |  |
| •••••••••••••••••••••••••••••••••••••••                                                            |                                                                                                                                                                                                                |  |  |  |  |  |  |
| 24 Check If Containment Spray Should<br>Be Stopped:                                                | đ                                                                                                                                                                                                              |  |  |  |  |  |  |
| a. ICS Pumps - ANY RUNNING                                                                         | a. <u>GO TO</u> Step 25.                                                                                                                                                                                       |  |  |  |  |  |  |
| b. ICS Pumps run time - GREATER<br>THAN 55 MINUTES                                                 | b. <u>IF</u> Containment radiation is<br>greater than 2 R/hr, <u>THEN</u><br>continue with Step 25. <u>WHEN</u><br>ICS Pumps have run for greater<br>than 55 minutes, <u>THEN</u> do Steps<br>24.c through .g. |  |  |  |  |  |  |
|                                                                                                    | <u>IF NOT, THEN</u> continue with Step 24.c.                                                                                                                                                                   |  |  |  |  |  |  |
| c. Containment pressure - LESS<br>THAN 4 PSIG                                                      | c. Continue with Step 25. <u>WHEN</u><br>Containment pressure less than<br>4 psig, <u>THEN</u> do Steps 24.d<br>through .g.                                                                                    |  |  |  |  |  |  |
| d. Reset Internal Containment<br>Spray signal                                                      |                                                                                                                                                                                                                |  |  |  |  |  |  |
| e. Stop ICS Pumps <u>AND</u> place in A                                                            | ито                                                                                                                                                                                                            |  |  |  |  |  |  |
| f. Close ICS-5A and B and ICS-6A<br>and B, ICS Pump Discharge<br>Isolation Valves                  | f. Locally close valves.                                                                                                                                                                                       |  |  |  |  |  |  |
| g. Close CI-1001A and B, Caustic<br>Additive To CNTMT Spray                                        | g. Locally close Manual Isolation<br>Valves, CI-1000A and B.                                                                                                                                                   |  |  |  |  |  |  |

| WISCO | ONSIN PUBLIC SERVICE CORPORATION                                                                                                                                            | NO.                                                  | FR-H.1                                                      |                                           |              |  |
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| к     | EWAUNEE NUCLEAR POWER PLANT                                                                                                                                                 | <b>TITLE</b> RESPONSE TO LOSS OF SECONDARY HEAT SINK |                                                             |                                           |              |  |
| EN    | MERGENCY OPERATING PROCEDURES                                                                                                                                               | DATE                                                 | JUL 15 2004                                                 | PAGE 14                                   | <b>of</b> 19 |  |
| STEP  | OPERATOR ACTIONS                                                                                                                                                            |                                                      | CONTINGENO                                                  | CY ACTIONS                                |              |  |
| 25    | Continue Attempts To Establish<br>Secondary Heat Sink In At Least<br>One Steam Generator:<br>• AFW flow<br>• Main FW flow<br>• Condensate flow<br>• Other low pressure flow |                                                      |                                                             |                                           |              |  |
| 26    | <ul> <li>Check RCS Temperatures:</li> <li>Core Exit TCs - DECREASING</li> <li>RCS wide range hot leg<br/>temperatures - DECREASING</li> </ul>                               | De<br>es<br>on                                       | crease RCS temp<br>tablishing maxi<br>e SG <u>AND GO TO</u> | peratures by<br>imum feed flo<br>Step 25. | w to         |  |
|       |                                                                                                                                                                             |                                                      |                                                             |                                           |              |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | NO. FR-H.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>TITLE</b> RESPONSE TO LOSS OF SECONDARY HEAT SINK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | DATE JUL 15 2004 PAGE 15 of 19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |  |
| STEP       OPERATOR ACTIONS         CAU         Steam supply to Turbine-Driven AFW Pump         NOTE:       A faulted SG is any SG with press<br>manner or which is completely dep         NOTE:       A ruptured SG is any SG with leve<br>or which has abnormal radiation.         27       Check Steam Generator Integrity:         • Check both SGs - NOT FAULTED       • Check both SGs - NOT RUPTURED         • Check wide range level in both<br>SGs - GREATER THAN 52 [202] FOR<br>ADVERSE CONTAINMENT] | <ul> <li>CONTINGENCY ACTIONS</li> <li>TION must be maintained from at least one SG.</li> <li>ure decreasing in an uncontrolled ressurized.</li> <li>l increasing in an uncontrolled manner</li> <li>Perform the following: <ul> <li>a. Establish feed flow to best available SG.</li> <li>b. If wide range level in available SG is &lt;5Z [202 FOR ADVERSE CONTAINMENT]. THEN maintain feed flow between 60 gpm and 100 gpm until wide range level is &gt;5Z [202 FOR ADVERSE CONTAINMENT].</li> <li>c. If any faulted, ruptured, or dry SG is <u>NOT</u> needed for secondary heat sink, THEN isolate affected SG as follows: <ol> <li>Verify BT-2A(B) and BT-3A(B). SG A(B) Blowdown Isolation Valves - CLOSED.</li> <li>Verify SG PORV - CLOSED. IF <u>NOT. THEN</u> manually close.</li> <li>Close AFW-2A(B), AFWP A(B) Flow Control Valve.</li> <li>Close MS-100A(B). SG A(B) Steam Supply To T/D AFW Pump.</li> <li>Verify BT-31A(B) and BT-32A(B). SG Sample Isolation Valves, - CLOSED.</li> <li>Close FW-10A(B). AFW Train A(B) Crossover Valve.</li> </ol> </li> <li>Close FW-12A(B). SG A(B) Feedwater Isolation Valve.</li> </ul></li></ul> |  |  |  |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION |                                                                                                                                                                                                                                                                                   | NO. FR-H.1 |                                             |                |              |  |  |
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| KF                                   | KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                      |            | TITLE RESPONSE TO LOSS OF SECONDARY<br>SINK |                |              |  |  |
| EM                                   | ERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                      | DATE       | JUL 15 2004                                 | <b>PAGE</b> 16 | <b>of</b> 19 |  |  |
| STEP                                 | OPERATOR ACTIONS                                                                                                                                                                                                                                                                  |            | CONTINGEN                                   | CY ACTIONS     |              |  |  |
| 28                                   | <ul> <li>Check For Adequate Secondary Heat Sink:</li> <li>a. Check narrow range level in at least one SG - GREATER THAN 42 [15% FOR ADVERSE CONTAINMENT]</li> <li>b. Control feed flow to maintain narrow range level between 4% [15% FOR ADVERSE CONTAINMENT] and 50%</li> </ul> | a          | . <u>60 TO</u> Step 25.                     |                |              |  |  |
| 29                                   | Yerify Reactor Head Vent Valves                                                                                                                                                                                                                                                   | - М.       | anually close va                            | alves.         |              |  |  |

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| WISCONSIN PUBLIC S                                                                                                                                                                                                                                               | WISCONSIN PUBLIC SERVICE CORPORATION                      |                      |                                               | FR-H.1                                                               |                            |                                      |                              | l   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------|-----------------------------------------------|----------------------------------------------------------------------|----------------------------|--------------------------------------|------------------------------|-----|
| KEWAUNEE NUC                                                                                                                                                                                                                                                     | LEAR POWER PLA                                            | NT                   | TITLE RESPONSE TO LOSS OF SECONDARY HEAT SINK |                                                                      |                            |                                      |                              | EAT |
| EMERGENCY OPER                                                                                                                                                                                                                                                   | ATING PROCEDUR                                            | ES                   | DATE                                          | JUL 15 2004                                                          | PAC                        | <b>HE 17</b>                         | of                           | 19  |
| STEP OF                                                                                                                                                                                                                                                          | PERATOR ACTIO                                             | NS                   |                                               | CONTINGEN                                                            | CY AC                      | TIONS                                |                              | ]   |
| <u>NOTE</u> : After stoppi<br>or increase                                                                                                                                                                                                                        | ng any SI Pump,<br>before stopping                        | , RCS pi<br>g anothe | ressure sh<br>er pump.                        | ould be allowe                                                       | ed to                      | stabili                              | ze                           |     |
| 30 Check If Or<br>Stopped:                                                                                                                                                                                                                                       | e SI Pump Shoul                                           | ld Be                |                                               |                                                                      |                            |                                      |                              |     |
| a. Any SI F                                                                                                                                                                                                                                                      | a. Any SI Pumps - RUNNING a. <u>GO</u> <u>TO</u> Step 32. |                      |                                               |                                                                      |                            |                                      |                              |     |
| b. Determin<br>subcooli                                                                                                                                                                                                                                          | b. Determine required RCS<br>subcooling from table:       |                      |                                               |                                                                      |                            |                                      |                              |     |
|                                                                                                                                                                                                                                                                  | CHARGING                                                  | REQU                 | IRED RCS S                                    | SUBCOOLING (°F)                                                      | )                          |                                      |                              |     |
|                                                                                                                                                                                                                                                                  | PUMP<br>STATUS                                            | ONE<br>RI            | SI PUMP<br>UNNING                             | TWO SI PUMA<br>RUNNING                                               | PS                         |                                      |                              |     |
|                                                                                                                                                                                                                                                                  | NONE RUNNING                                              | USE<br>CON           | STEP 30.c<br>FINGENCY                         | 57°F<br>[97°F]                                                       |                            |                                      |                              |     |
|                                                                                                                                                                                                                                                                  | ONE RUNNING                                               | USE<br>CON           | STEP 30.c<br>FINGENCY                         | 54°F<br>[95°F]                                                       |                            |                                      |                              |     |
|                                                                                                                                                                                                                                                                  | TWO RUNNING                                               | USE<br>CON           | STEP 30.c<br>FINGENCY                         | 53°F<br>[93°F]                                                       |                            |                                      |                              |     |
|                                                                                                                                                                                                                                                                  | [] denotes A                                              | ADVERSE              | CONTAINME                                     | ENT values                                                           |                            |                                      |                              |     |
| c. RCS sub<br>Exit TCs<br>REQUIRED                                                                                                                                                                                                                               | cooling based or<br>- GREATER THAN<br>SUBCOOLING          | n Core<br>N          | c.                                            | <u>IF</u> RCS hot leg<br>greater than 3<br>Step 31. OBSI<br>STEP 31. | g temp<br>330°F,<br>ERVE N | erature<br><u>THEN (</u><br>IOTE PR] | 25<br><u>30 to</u><br>10r to |     |
| <u>IF</u> RCS hot leg temperatures<br>less than 330°F, <u>THEN</u> start one<br>RHR Pump in SI mode if none<br>running. <u>IF</u> at least one RHR<br>Pump can <u>NOT</u> be started in SI<br>mode, <u>THEN GO TO</u> Step 31.<br>OBSERVE NOTE PRIOR TO STEP 31. |                                                           |                      |                                               |                                                                      |                            |                                      |                              |     |
| d. PRZR lev<br>[42% FOI                                                                                                                                                                                                                                          | Vel - GREATER TH<br>ADVERSE CONTAL                        | HAN 19%<br>[NMENT]   | d.                                            | <u>GO TO</u> Step 31<br>PRIOR TO STEP                                | . OBS<br>31.               | SERVE NO                             | DTE                          |     |
| e. Stop one                                                                                                                                                                                                                                                      | e SI Pump                                                 |                      |                                               |                                                                      |                            |                                      |                              |     |
| f. <u>GO</u> <u>TO</u> S                                                                                                                                                                                                                                         | tep 30.a                                                  |                      |                                               |                                                                      |                            |                                      |                              |     |
|                                                                                                                                                                                                                                                                  |                                                           |                      |                                               |                                                                      |                            |                                      |                              |     |

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| WISC          | ONSIN PUBLIC SERVICE CORPORATION                                       | NO.                  | FR-H.1                                                                                                                                                                 |
|---------------|------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| к             | EWAUNEE NUCLEAR POWER PLANT                                            | TITLI                | RESPONSE TO LOSS OF SECONDARY HEAT                                                                                                                                     |
| EN            | MERGENCY OPERATING PROCEDURES                                          | DATE                 | JUL 15 2004 PAGE 18 of 19                                                                                                                                              |
|               |                                                                        |                      |                                                                                                                                                                        |
| STEP          | OPERATOR ACTIONS                                                       | ]                    | CONTINGENCY ACTIONS                                                                                                                                                    |
| <u>NOTE</u> : | After closing a PORV, it may be n<br>increase to permit stopping SI Pu | ecessary<br>mps in S | / to wait for RCS pressure to<br>Step 30.                                                                                                                              |
| 31            | Check Pressurizer PORV Status:                                         |                      |                                                                                                                                                                        |
|               | a. PRZR PORVs - ANY OPEN                                               | ā                    | a. Close any open Reactor Head<br>Vent Valves. <u>GO TO</u> E-1, LOSS<br>OF REACTOR OR SECONDARY<br>COOLANT, Step 1.                                                   |
|               | b. Close one PRZR PORV                                                 | t                    | D. Close associated PORV block<br>valve. <u>IF</u> block valve can <u>NOT</u><br>be closed, <u>THEN GO TO</u> E-1, LOSS<br>OF REACTOR OR SECONDARY<br>COOLANT, Step 1. |
|               | c. <u>GO TO</u> Step 30. OBSERVE NOTE<br>PRIOR TO STEP 30.             |                      |                                                                                                                                                                        |
| 32            | Check Pressurizer PORVs - BOTH<br>CLOSED                               | C<br>F<br>n          | Close both PRZR PORVs. <u>IF</u> any<br>PRZR PORV can <u>NOT</u> be closed, <u>THEN</u><br>manually close its block valve.                                             |
|               |                                                                        |                      |                                                                                                                                                                        |
|               |                                                                        |                      |                                                                                                                                                                        |
|               |                                                                        |                      |                                                                                                                                                                        |
|               |                                                                        |                      |                                                                                                                                                                        |
|               |                                                                        |                      |                                                                                                                                                                        |

| WISCO | NSIN PUBLIC SERVICE CORPORATION                                                                            | NO.    |    | FR-H.1                                     | -         |            |    |      |
|-------|------------------------------------------------------------------------------------------------------------|--------|----|--------------------------------------------|-----------|------------|----|------|
| KE    | WAUNEE NUCLEAR POWER PLANT                                                                                 | TITL   | E  | RESPONSE TO LOSS OF SECONDARY HEA          |           |            |    | IEAT |
| EMI   | ERGENCY OPERATING PROCEDURES                                                                               | DATE   |    | JUL 15 2004                                | PAGE      | 19         | of | 19   |
| []    |                                                                                                            |        | ſ  |                                            |           |            |    |      |
| STEP  | OPERATOR ACTIONS                                                                                           |        | L  | CONTINGEN                                  | CY ACTI   | ons<br>——— |    |      |
| 33    | Check If RHR Pumps Should Be<br>Stopped:                                                                   |        |    |                                            |           |            |    |      |
|       | a. RCS pressure -                                                                                          |        | a. | $\underline{GO}$ $\underline{TO}$ E-1, LOS | SS OF REA |            | OR |      |
|       | 1) GREATER THAN 150 PSIG                                                                                   |        |    | SECONDART COO                              | LANT, JU  | εμ τ       |    |      |
|       | AND                                                                                                        |        |    |                                            |           |            |    |      |
|       | 2) STABLE OR INCREASING                                                                                    |        |    |                                            |           |            |    |      |
|       | b. RHR injection flow, F626 and F928 - EQUAL TO O GPM                                                      |        | b. | <u>GO TO</u> Step 34.                      | •         |            |    |      |
|       | c. Check RHR Pumps <u>NOT</u> supplying<br>Containment Sump recirculation<br>flow to SI Pumps or ICS Pumps | n      | c. | <u>GO TO</u> Step 34.                      | •         |            |    |      |
|       | d. Stop any RHR Pump that is<br>operating in SI mode <u>AND</u> place<br>in AUTO                           | e      |    |                                            |           |            |    |      |
| 34    | Control Charging Flow To Maintai<br>Pressurizer Level - GREATER THAN<br>19% [42% FOR ADVERSE CONTAINMENT]  | n<br>] |    |                                            |           |            |    |      |
|       |                                                                                                            |        |    |                                            |           |            |    |      |
| 35    | <u>GO 10</u> ES-1.1, SI TERMINATION,<br>Step 8                                                             |        |    |                                            |           |            |    |      |
|       | `-                                                                                                         | END-   |    |                                            |           |            |    | •    |
|       |                                                                                                            |        |    |                                            |           |            |    |      |
|       |                                                                                                            |        |    |                                            |           |            |    |      |
|       |                                                                                                            |        |    |                                            |           |            |    |      |
| ·     |                                                                                                            |        |    |                                            |           |            |    |      |
|       |                                                                                                            |        |    |                                            |           |            |    |      |
|       |                                                                                                            |        |    |                                            |           |            |    |      |
|       | CONTIN                                                                                                     | UOUS   | US | E                                          |           | <u>.</u>   |    |      |

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| WISCONSIN PUBLIC SERVICE                                           | WISCONSIN PUBLIC SERVICE CORPORATION             |                                                                       |                                     | REV                    | Р              |
|--------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------|-------------------------------------|------------------------|----------------|
| KEWAUNEE NUCLEAR PO                                                | WER PLANT                                        | <b>TITLE</b> RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION |                                     |                        |                |
| EMERGENCY OPERATING PI                                             | ROCEDURES                                        | DATE M                                                                | AR 21 2004                          | PAGE                   | 1 <b>of</b> 12 |
| REVIEWED BY                                                        |                                                  | APPRO                                                                 | VED BY                              |                        |                |
| NUCLEAR SAFETY RELATED NO                                          | PORC REVIEW<br>REQUIRED                          | YES                                                                   | SRO APPROV<br>TEMPORARY<br>REQUIRED | AL OF<br>Changes       | ⊠ YES<br>□ NO  |
| 1.0 <u>INTRODUCTION</u>                                            |                                                  |                                                                       |                                     |                        |                |
| 1.1 This procedure pro<br>or pressurized the<br>overpressure condi | vides actions<br>rmal shock to<br>tions at low t | to avoid, o<br>the Reactor<br>emperature.                             | r limit, the<br>Pressure Ve         | rmal shock<br>ssel, or | <              |
| 2.0 <u>SYMPTOMS OR ENTRY CONDI</u>                                 | TIONS                                            |                                                                       |                                     |                        |                |
| 2.1 This procedure is<br>Function Status Tr                        | entered from F<br>ee on a RED or                 | -0.4, INTEG<br>ORANGE con                                             | RITY Critica                        | 1 Safety               |                |
| 3.0 AUTOMATIC ACTIONS                                              |                                                  |                                                                       |                                     |                        |                |
| 3.1 None                                                           |                                                  |                                                                       |                                     |                        |                |
|                                                                    |                                                  |                                                                       |                                     |                        |                |
|                                                                    |                                                  |                                                                       |                                     |                        |                |
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| WISCO           | NSIN PUBLIC SERVICE CORPORATION                                                 | NO.         | FR-P.1                                                                             |                                                            |              |  |
|-----------------|---------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------|------------------------------------------------------------|--------------|--|
| KE              | KEWAUNEE NUCLEAR POWER PLANT                                                    |             | TITLE RESPONSE TO IMMINENT PRESSURIZED<br>THERMAL SHOCK CONDITION                  |                                                            |              |  |
| EM              | ERGENCY OPERATING PROCEDURES                                                    | DATE        | MAR 21 2004                                                                        | PAGE 2                                                     | <b>of</b> 12 |  |
| STEP            | OPERATOR ACTIONS                                                                | ן ר         | CONTINGENO                                                                         | TY ACTIONS                                                 |              |  |
| 4.0 <u>D</u> E  | 4.0 <u>DETAILED_PROCEDURE</u>                                                   |             |                                                                                    |                                                            |              |  |
|                 | <u>CAU</u>                                                                      | <u>TION</u> | *******                                                                            | *******                                                    | • • • • •    |  |
| If CST<br>pumps | <pre>level decreases to less than 8%,<br/>will be necessary per A-FW-05B.</pre> | use of a    | alternate water                                                                    | sources for a                                              | AFW          |  |
|                 |                                                                                 | *******     |                                                                                    | *****                                                      | • • • • •    |  |
| 1               | Check If Procedure FR-P.1<br>Implementation Is Required:                        |             |                                                                                    |                                                            |              |  |
|                 | a. RCS pressure - GREATER THAN<br>150 PSIG                                      | a           | . <u>IF</u> each RHR ir<br>FI-626 and FI-<br>375 gpm. <u>THEN</u><br>procedure and | ijection flow<br>928, greater<br>return to<br>step in effe | than<br>ct.  |  |
|                 | b. <u>GO TO</u> Step 2. OBSERVE CAUTIO<br>PRIOR TO STEP 2.                      | N           |                                                                                    |                                                            |              |  |
|                 |                                                                                 |             |                                                                                    |                                                            |              |  |
|                 |                                                                                 |             |                                                                                    |                                                            |              |  |
|                 |                                                                                 |             |                                                                                    |                                                            |              |  |
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|                 |                                                                                 |             |                                                                                    |                                                            | 1            |  |
|                 |                                                                                 |             |                                                                                    |                                                            |              |  |
|                 |                                                                                 |             |                                                                                    |                                                            |              |  |
|                 |                                                                                 |             |                                                                                    |                                                            |              |  |
|                 |                                                                                 |             |                                                                                    |                                                            |              |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                    | NO. FR-P.1                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                            | TITLE RESPONSE TO IMMINENT PRESSURIZED<br>THERMAL SHOCK CONDITION                                                                                                                                                          |
| EMERGENCY OPERATING PROCEDURES                                                          | DATE MAR 21 2004 PAGE 3 of 12                                                                                                                                                                                              |
|                                                                                         |                                                                                                                                                                                                                            |
| STEP OPERATOR ACTIONS                                                                   | CONTINGENCY ACTIONS                                                                                                                                                                                                        |
| <u>CAU</u>                                                                              | <u>TION</u>                                                                                                                                                                                                                |
| If the turbine-driven AFW pump is the or<br>supply to the turbine-driven AFW pump mu    | nly available source of feed flow, steam<br>ust be maintained from one SG.                                                                                                                                                 |
|                                                                                         | ••••••                                                                                                                                                                                                                     |
| <u>NOTE</u> : A faulted SG is any SG that is deposition or is completely depressurized. | pressurizing in an uncontrolled manner                                                                                                                                                                                     |
| 2 Check RCS Cold Leg Temperatures                                                       | - Stop the RCS cooldown:                                                                                                                                                                                                   |
| STADLE UK INCKEASING                                                                    | a. Verify SG PORVs closed.                                                                                                                                                                                                 |
|                                                                                         | b. Verify Steam Dump Valves closed.                                                                                                                                                                                        |
|                                                                                         | c. <u>IF</u> RHR System in service, <u>THEN</u><br>stop any cooldown from RHR<br>System.                                                                                                                                   |
|                                                                                         | d. Control feed flow to<br>non-faulted SG to stop RCS<br>cooldown. Maintain total feed<br>flow greater than 200 gpm until<br>narrow range level greater than<br>4% [15% FOR ADVERSE<br>CONTAINMENT] in non-faulted SG.     |
|                                                                                         | e. Minimize cooldown from faulted<br>SG(s):                                                                                                                                                                                |
|                                                                                         | <ol> <li>Verify MS-1A(B) and<br/>MS-2A(B), SG A(B) Main Steam<br/>Isolation and Bypass Valves,<br/>- CLOSED, for each faulted<br/>SG.</li> </ol>                                                                           |
|                                                                                         | <pre>2) Close MS-100A(B). SG A(B)    Steam Supply To T/D AFW    Pump, from faulted SG(s).</pre>                                                                                                                            |
|                                                                                         | 3) Isolate all feedwater to<br>faulted SG unless necessary<br>for RCS temperature control.<br><u>IF</u> a faulted SG is necessary<br>for RCS temperature control.<br><u>THEN</u> control AFW flow at<br>60 gpm to that SG. |
|                                                                                         | 4) <u>IF</u> both SGs are faulted.<br><u>THEN</u> control AFW flow at<br>60 gpm to each SG.                                                                                                                                |

| wisco            | NSIN PUBLIC SERVICE CORPORATION                                                                  | NO.               | FR-P.1                                                                                                                                                                                                                                                                                 |
|------------------|--------------------------------------------------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KI               | WAUNEE NUCLEAR POWER PLANT                                                                       | TITL              | RESPONSE TO IMMINENT PRESSURIZED<br>THERMAL SHOCK CONDITION                                                                                                                                                                                                                            |
| ЕМ               | ERGENCY OPERATING PROCEDURES                                                                     | DATE              | MAR 21 2004 PAGE 4 of 12                                                                                                                                                                                                                                                               |
|                  |                                                                                                  |                   |                                                                                                                                                                                                                                                                                        |
| STEP             | OPERATOR ACTIONS                                                                                 |                   | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                    |
|                  | <u>CAU</u>                                                                                       | <u>TION</u>       |                                                                                                                                                                                                                                                                                        |
| If any<br>Step 3 | / Pressurizer PORV opens because o<br>3.b after pressure drops below POR                         | f high<br>V setpo | pressure, verify PORV closed per<br>Dint.                                                                                                                                                                                                                                              |
| •••••            | • • • • • • • • • • • • • • • • • • • •                                                          |                   | ,                                                                                                                                                                                                                                                                                      |
| 3                | Check Pressurizer PORVs And Bloc<br>Valves:                                                      | k                 |                                                                                                                                                                                                                                                                                        |
|                  | a. Power to PR-1A and B,<br>Pressurizer PORV Block Valves<br>AVAILABLE                           | -                 | a. Restore power to PR-1A(B), at MCC-52B(62B).                                                                                                                                                                                                                                         |
|                  | b. PORVs - CLOSED                                                                                |                   | b. <u>IF</u> PRZR pressure less than<br>2315 psig, <u>THEN</u> manually close<br>PORVs. <u>IF</u> any valve can <u>NOT</u> be<br>closed, <u>THEN</u> manually close its<br>Block Valve.                                                                                                |
|                  | c. Block Valves - AT LEAST ONE O                                                                 | PEN               | c. Open one Block Valve unless it<br>was closed to isolate a faulty<br>PORV.                                                                                                                                                                                                           |
| 4                | Check SI Pumps - EITHER RUNNING                                                                  |                   | <u>GO TO</u> Step 12.                                                                                                                                                                                                                                                                  |
| 5                | Check If SI Can Be Terminated:                                                                   |                   | Perform the following:                                                                                                                                                                                                                                                                 |
|                  | a. RCS subcooling based on Core<br>Exit TCs - GREATER THAN 80°F<br>[115°F FOR ADVERSE CONTAINMEN | T]                | 1. <u>IF</u> RCS subcooling based on Core<br>Exit TCs is greater than 30°F<br>[65°F FOR ADVERSE CONTAINMENT]<br><u>AND</u> no RXCP is running, <u>THEN</u><br>establish conditions for<br>running RXCPs per N-RC-36A,<br>REACTOR COOLANT PUMP OPERATION,<br><u>AND</u> start one RXCP. |
|                  |                                                                                                  |                   | 2. <u>GO TO</u> Step 24.                                                                                                                                                                                                                                                               |

| wisco | ONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                | NO.         | FR-P.1                                              |                                    |              |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------|------------------------------------|--------------|
| К     | EWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                     | TITLE       | RESPONSE TO IN<br>THERMAL SHOCK                     | MINENT PRESSUR<br>CONDITION        | RIZED        |
| EM    | IERGENCY OPERATING PROCEDURES                                                                                                                                                                   | DATE        | MAR 21 2004                                         | PAGE 5                             | <b>of</b> 12 |
|       |                                                                                                                                                                                                 |             |                                                     |                                    |              |
| STEP  | OPERATOR ACTIONS                                                                                                                                                                                |             | CONTINGEN                                           | Y ACTIONS                          |              |
| 6     | Isolate Letdown:                                                                                                                                                                                |             |                                                     |                                    |              |
|       | a. Place control switches for<br>LD-4A, B, and C, Letdown<br>Orifice Isolation Valves, to<br>CLOSE                                                                                              |             |                                                     |                                    |              |
|       | CAU                                                                                                                                                                                             | TION        | • • • • • • • • • • • • • • • • • • • •             | ••••••                             | • • •        |
| 166   |                                                                                                                                                                                                 |             | sation will be                                      | nonvined to                        |              |
| resta | rt safeguards equipment.                                                                                                                                                                        | , Mariudi   | action with be                                      | required to                        |              |
| ***** |                                                                                                                                                                                                 |             |                                                     |                                    | •••          |
| 7     | Reset SI                                                                                                                                                                                        |             |                                                     |                                    |              |
| 8     | Reset Containment Isolation:                                                                                                                                                                    |             |                                                     |                                    |              |
|       | a. Depress both Containment<br>Isolation Reset pushbuttons                                                                                                                                      |             |                                                     |                                    |              |
| 9     | Verify Instrument Air To<br>Containment - ESTABLISHED                                                                                                                                           | S<br>e<br>C | tart one Air Com<br>stablish Instrum<br>ontainment. | mpressor <u>AND</u><br>ment Air to |              |
| 10    | Stop SI/RHR Pumps <u>AND</u> Place In<br>AUTO:                                                                                                                                                  |             |                                                     |                                    | ·            |
|       | a. SI Pumps                                                                                                                                                                                     |             |                                                     |                                    |              |
|       | b. <u>IF</u> RHR Pumps are supplying<br>Containment Sump recirculatio<br>flow to ICS Pumps, <u>THEN GO TO</u><br>Step 11. <u>IF NOT</u> , <u>THEN</u> stop R<br>Pumps <u>AND</u> place in AUTO. | n<br>HR     |                                                     |                                    |              |
|       | flow to ICS Pumps, <u>IHEN GO TO</u><br>Step 11. <u>IF NOT, THEN</u> stop R<br>Pumps <u>AND</u> place in AUTO.                                                                                  | HR          |                                                     |                                    |              |

| WISCO | ONSIN PUBLIC SERVICE CORPORATION                                                                                                  | NO. FR-P.1                                                                                                                                                                                                                                                                                                     |
|-------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KI    | EWAUNEE NUCLEAR POWER PLANT                                                                                                       | <b>TITLE</b> RESPONSE TO IMMINENT PRESSURIZED<br>THERMAL SHOCK CONDITION                                                                                                                                                                                                                                       |
| ЕМ    | ERGENCY OPERATING PROCEDURES                                                                                                      | DATE MAR 21 2004 PAGE 6 of 12                                                                                                                                                                                                                                                                                  |
|       |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                |
| STEP  | OPERATOR ACTIONS                                                                                                                  | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                            |
| 11    | Establish Charging Flow:                                                                                                          |                                                                                                                                                                                                                                                                                                                |
|       | a. Charging Pumps – AT LEAST ONE<br>RUNNING                                                                                       | <ul> <li>a. Perform the following:</li> <li>1) <u>IF</u> CC flow to RXCP(s)<br/>Thermal Barrier is lost.<br/><u>THEN</u> locally close<br/>CVC-204A(B) to isolate seal<br/>injection to affected<br/>RXCP(s) before starting<br/>Charging Pumps.</li> <li>2) Start Charging Pumps as<br/>necessary.</li> </ul> |
|       | b. Establish 20 gpm Charging flow                                                                                                 | N                                                                                                                                                                                                                                                                                                              |
| 12    | Verify SI Flow Not Required:<br>a. RCS subcooling based on Core<br>Exit TCs - GREATER THAN 30°F<br>[65°F FOR ADVERSE CONTAINMENT] | Manually start SI Pumps as<br>necessary. <u>GO TO</u> Step 24.<br>]                                                                                                                                                                                                                                            |
| 13    | Check RCS Hot Leg Temperatures -<br>STABLE                                                                                        | <u>IF</u> increasing, <u>THEN</u> control feed<br>flow and Steam Dump as necessary<br>to establish stable RCS hot leg<br>temperatures.<br><u>IF</u> decreasing, <u>THEN</u> verify actions<br>of Step 2 have been performed<br>before continuing with this<br>procedure.                                       |

| WISC           | ONSIN PUBLIC SERVICE CORPORATION                               | NO.                                                            | FR-P.1                                                 |                                                          |  |  |
|----------------|----------------------------------------------------------------|----------------------------------------------------------------|--------------------------------------------------------|----------------------------------------------------------|--|--|
| к              | EWAUNEE NUCLEAR POWER PLANT                                    | TITLE RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION |                                                        |                                                          |  |  |
| EN             | AERGENCY OPERATING PROCEDURES                                  | DATE                                                           | MAR 21 2004                                            | PAGE 7 of 12                                             |  |  |
|                |                                                                |                                                                |                                                        |                                                          |  |  |
| STEP           | OPERATOR ACTIONS                                               |                                                                |                                                        | CY ACTIONS                                               |  |  |
| •••••          | <u></u><br><u>CAU</u>                                          | <br>TION                                                       |                                                        | • • • • • • • • • • • • • • • • • • • •                  |  |  |
| If of<br>resta | fsite power is lost after SI reset<br>rt safeguards equipment. | , manual                                                       | action may be n                                        | required to                                              |  |  |
| 14             | Isolato SI Accumulators.                                       |                                                                | *************                                          | ******                                                   |  |  |
| 14             | a. Check power to isolation valve<br>- AVAILABLE               | es a                                                           | . Restore power valves.                                | to isolation                                             |  |  |
|                |                                                                |                                                                | 1) Turn on bro<br>at MCC-52B                           | eaker for SI-20A<br>cubicle C4.                          |  |  |
|                |                                                                |                                                                | 2) Turn on bro<br>at MCC-62B                           | eaker for SI-20B<br>cubicle A3.                          |  |  |
|                | b. Reset SI                                                    |                                                                |                                                        |                                                          |  |  |
|                | c. Close SI-20A and B, Accumulate<br>A and B Isolation Valves  | or c                                                           | . Perform the f                                        | ollowing:                                                |  |  |
|                |                                                                |                                                                | 1) Place contr<br>LD-4A, B, a<br>Orifice Iso<br>CLOSE. | rol switches for<br>and C, Letdown<br>olation Valves, to |  |  |
|                |                                                                |                                                                | 2) Depress bo<br>Isolation                             | th Containment<br>Reset pushbuttons.                     |  |  |
|                |                                                                |                                                                | 3) Verify Inst<br>Containment                          | trument Air to<br>t - ESTABLISHED.                       |  |  |
|                |                                                                |                                                                | 4) Vent any u<br>Accumulato                            | nisolated<br>r.                                          |  |  |
|                | · ·                                                            |                                                                |                                                        |                                                          |  |  |
|                |                                                                |                                                                |                                                        |                                                          |  |  |
|                |                                                                |                                                                |                                                        |                                                          |  |  |
|                |                                                                |                                                                |                                                        |                                                          |  |  |

| wisco          | DNSIN PUBLIC SERVICE CORPORATION                                                                  | NO.     | FR-P.1                                                                                                                                                                                     |                                                                                                                                                                          |                                    |
|----------------|---------------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| к              | EWAUNEE NUCLEAR POWER PLANT                                                                       | TITLE   | RESPONSE TO IN<br>THERMAL SHOCK                                                                                                                                                            | MINENT PRESSU<br>CONDITION                                                                                                                                               | RIZED                              |
| EM             | IERGENCY OPERATING PROCEDURES                                                                     | DATE    | MAR 21 2004                                                                                                                                                                                | PAGE 8                                                                                                                                                                   | <b>of</b> 12                       |
|                | ,<br>                                                                                             |         |                                                                                                                                                                                            |                                                                                                                                                                          |                                    |
| STEP           | OPERATOR ACTIONS                                                                                  |         | CONTINGEN                                                                                                                                                                                  | CY ACTIONS                                                                                                                                                               |                                    |
|                |                                                                                                   |         |                                                                                                                                                                                            | •••••                                                                                                                                                                    | ****                               |
| Voidi<br>rapid | ng may occur in the RCS during RCS<br>ly increasing PRZR level.                                   | depress | urization. This                                                                                                                                                                            | s will result                                                                                                                                                            | in a                               |
|                | • • • • • • • • • • • • • • • • • • • •                                                           | ******  | ***********                                                                                                                                                                                |                                                                                                                                                                          | ****                               |
| 15             | Depressurize RCS To Decrease<br>Stress:                                                           |         |                                                                                                                                                                                            |                                                                                                                                                                          |                                    |
|                | a. Use normal PRZR spray                                                                          | а       | . <u>IF</u> normal spra<br><u>THEN</u> use one I<br>necessary, man<br>Pumps to main<br>subcooling gra<br>[65°F FOR ADVI<br><u>IF</u> RCS can <u>NO</u><br>using any PRZI<br>auxiliary spra | ay <u>NOT</u> availab<br>PRZR PORV. <u>IF</u><br>nually start S<br>tain RCS<br>eater than 30°<br>ERSE CONTAINME<br><u>I</u> be depressur<br>R PORV, <u>THEN</u> u<br>ay. | le,<br>I<br>F<br>NT]<br>ized<br>se |
|                | b. Depressurize RCS until ANY of<br>the following conditions<br>satisfied:                        |         |                                                                                                                                                                                            |                                                                                                                                                                          |                                    |
|                | 1) RCS subcooling based on Core<br>Exit TCs - LESS THAN 40°F<br>[75°F FOR ADVERSE<br>CONTAINMENT] |         |                                                                                                                                                                                            |                                                                                                                                                                          |                                    |
|                | <u>OR</u>                                                                                         |         |                                                                                                                                                                                            |                                                                                                                                                                          |                                    |
|                | 2) PRZR level - GREATER THAN &                                                                    | 30%     |                                                                                                                                                                                            |                                                                                                                                                                          |                                    |
|                | <u>OR</u>                                                                                         |         |                                                                                                                                                                                            |                                                                                                                                                                          |                                    |
|                | 3) RCS pressure - LESS THAN<br>200 PSIG [200 PSIG FOR<br>ADVERSE CONTAINMENT]                     |         |                                                                                                                                                                                            |                                                                                                                                                                          |                                    |
|                | c. Stop RCS depressurization                                                                      |         |                                                                                                                                                                                            |                                                                                                                                                                          |                                    |
|                |                                                                                                   |         |                                                                                                                                                                                            |                                                                                                                                                                          |                                    |
|                |                                                                                                   |         |                                                                                                                                                                                            |                                                                                                                                                                          |                                    |

| WISCO                     | ONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                         | NO.                                                               | FR-P.1                                                                            | <u> </u>                                        |                             |  |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------|--|
| к                         | EWAUNEE NUCLEAR POWER PLANT                                                                                                                                                              | TITLE RESPONSE TO IMMINENT PRESSURIZED<br>THERMAL SHOCK CONDITION |                                                                                   |                                                 |                             |  |
| EM                        | ERGENCY OPERATING PROCEDURES                                                                                                                                                             | DATE                                                              | MAR 21 2004                                                                       | PAGE 9                                          | <b>of</b> 12                |  |
| STEP                      | OPERATOR ACTIONS                                                                                                                                                                         |                                                                   | CONTINGEN                                                                         | CY ACTIONS                                      |                             |  |
| •••••                     | <u>CAU</u>                                                                                                                                                                               | <u>FION</u>                                                       | ••••••                                                                            |                                                 | ••••                        |  |
| An ind<br>pressi<br>steps | An increase in RCS pressure may result in excessive Reactor Vessel stress. RCS pressure and temperature should be maintained stable while performing subsequent steps in this procedure. |                                                                   |                                                                                   |                                                 |                             |  |
| 16                        | Check Pressurizer Leve] - GREATE<br>THAN 19% [42% FOR ADVERSE<br>CONTAINMENT]                                                                                                            | R Re<br>ma<br><u>If</u><br><u>GC</u>                              | estore level wit<br>intaining stabl<br>level can <u>NOT</u><br><u>TO</u> Step 22. | th Charging w<br>le RCS pressu<br>be restored,  | hile<br>re.´<br><u>THEN</u> |  |
| 17                        | Check VCT Makeup Control System:                                                                                                                                                         |                                                                   |                                                                                   |                                                 |                             |  |
|                           | a. Makeup Boric Acid Controller<br>SET TO 11.0                                                                                                                                           | - a.                                                              | Set Makeup Bon<br>Controller to                                                   | ric Acid<br>11.0.                               |                             |  |
|                           | b. Makeup set for automatic cont                                                                                                                                                         | rol b.                                                            | . Set Makeup Moo<br>AUTO.                                                         | de Selector t                                   | .0                          |  |
|                           | c. VCT level - BETWEEN 17% AND 2                                                                                                                                                         | 3% с.                                                             | Re-establish N                                                                    | /CT level.                                      |                             |  |
| 18                        | Establish Letdown Per N-CVC-35B,<br>CHARGING AND VOLUME CONTROL                                                                                                                          | Es<br>N·<br>CO                                                    | stablish Excess<br>CVC-35B, CHARG<br>ONTROL                                       | Letdown per<br>ING AND VOLUM                    | 1E                          |  |
| 19                        | Check Charging Pump Suction -<br>ALIGNED TO VCT                                                                                                                                          | [A                                                                | ign suction to                                                                    | VCT.                                            |                             |  |
| 20                        | Check Pressurizer Level - LESS<br>THAN 80%                                                                                                                                               | Co<br>ne                                                          | ontrol Charging<br>ecessary. <u>IF</u> no<br>stablish Excess                      | and Letdown<br>ecessary, <u>THE</u><br>Letdown. | as<br><u>N</u>              |  |

| wisco | ONSIN PUBLIC SERVICE CORPORATION                                                                                                         | NO. FR-P.1                                                                                                                                                                                                                       |
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| кі    | EWAUNEE NUCLEAR POWER PLANT                                                                                                              | TITLE RESPONSE TO IMMINENT PRESSURIZED<br>THERMAL SHOCK CONDITION                                                                                                                                                                |
| EM    | ERGENCY OPERATING PROCEDURES                                                                                                             | DATE MAR 21 2004 PAGE 10 of 12                                                                                                                                                                                                   |
|       | ·<br>·                                                                                                                                   |                                                                                                                                                                                                                                  |
| STEP  | OPERATOR ACTIONS                                                                                                                         | CONTINGENCY ACTIONS                                                                                                                                                                                                              |
| 21    | Using Pressurizer Heaters And<br>Normal Pressurizer Spray As<br>Necessary, Maintain Pressurizer<br>Pressure - STABLE                     | <u>IF</u> normal spray <u>NOT</u> available <u>AND</u><br>Letdown is in service, <u>THEN</u> use<br>auxiliary spray. <u>IF NOT, THEN</u> use<br>one PRZR PORV.                                                                   |
| 22    | Verify Adequate RCS<br>Depressurization:<br>a. RCS subcooling based on Core<br>Exit TCs - LESS THAN 40°F [75<br>FOR ADVERSE CONTAINMENT] | Depressurize RCS using normal<br>spray. <u>IF</u> normal spray <u>NOT</u><br>available <u>AND</u> letdown is in<br>service, <u>THEN</u> use auxiliary spray.<br>5°F <u>GO TO</u> Step 15.b. OBSERVE CAUTION<br>PRIOR TO STEP 15. |
|       | <u>OR</u><br>b. RCS pressure - LESS THAN<br>200 PSIG [200 PSIG FOR ADVERS<br>CONTAINMENT]                                                | <u>IF</u> normal spray and auxiliary<br>spray <u>NOT</u> available, <u>THEN</u><br><u>GO</u> <u>TO</u> 15.a. OBSERVE CAUTION PRIOR<br>SE TO STEP 15.                                                                             |
| 23    | Check If RHR System Can Be Place<br>In Service (For LTOP):                                                                               | ed <u>WHEN</u> conditions can be satisfied,<br><u>THEN</u> perform Step 23.c.                                                                                                                                                    |
|       | a. Hottest RCS wide range<br>temperature - LESS THAN 400°F                                                                               | F                                                                                                                                                                                                                                |
|       | b. RCS pressure - LESS THAN<br>425 PSIG                                                                                                  |                                                                                                                                                                                                                                  |
|       | c. Place RHR System in service p                                                                                                         | per:                                                                                                                                                                                                                             |
|       | 1) N-RHR-34, RESIDUAL HEAT<br>REMOVAL SYSTEM OPERATION                                                                                   |                                                                                                                                                                                                                                  |
|       | <u>OR</u>                                                                                                                                |                                                                                                                                                                                                                                  |
|       | 2) A-RHR-34B, RESIDUAL HEAT<br>REMOVAL SPLIT-TRAIN MODE                                                                                  |                                                                                                                                                                                                                                  |
|       | as appropriate                                                                                                                           |                                                                                                                                                                                                                                  |
|       |                                                                                                                                          |                                                                                                                                                                                                                                  |

| WISCONSIN PUBLIC SERVICE CORPORATION |                                                                                                                                                                  | NO.                                                 | FR-P.1                                                      |            | -            |  |  |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------|------------|--------------|--|--|
| KEWAUNEE NUCLEAR POWER PLANT         |                                                                                                                                                                  | TITLE                                               | RESPONSE TO IMMINENT PRESSURIZED<br>THERMAL SHOCK CONDITION |            |              |  |  |
| EM                                   | EMERGENCY OPERATING PROCEDURES                                                                                                                                   |                                                     | MAR 21 2004                                                 | PAGE 11    | <b>of</b> 12 |  |  |
|                                      |                                                                                                                                                                  |                                                     |                                                             |            |              |  |  |
| STEP                                 | OPERATOR ACTIONS                                                                                                                                                 |                                                     | CONTINGEN                                                   | CY ACTIONS | ]            |  |  |
| 24                                   | Determine If RCS Temperature Soal<br>Is Required:                                                                                                                | k                                                   |                                                             |            |              |  |  |
|                                      | a. Cooldown rate in RCS cold legs<br>- GREATER THAN 100°F IN ANY<br>60 MINUTES PERIOD                                                                            | sa.                                                 | <u>GO TO</u> Step 25.                                       |            |              |  |  |
|                                      | b. Perform all of the following:                                                                                                                                 |                                                     |                                                             |            |              |  |  |
|                                      | 1) Do not cool down RCS until<br>temperature has been stable<br>for one hour                                                                                     |                                                     |                                                             |            |              |  |  |
|                                      | 2) Do not increase RCS pressur<br>during that time                                                                                                               | 2) Do not increase RCS pressure<br>during that time |                                                             |            |              |  |  |
|                                      | 3) Perform actions of other<br>procedures in effect which<br>do not cool down or increas<br>RCS pressure until the RCS<br>temperature soak has been<br>completed | se                                                  |                                                             |            |              |  |  |
|                                      | <ol> <li>RCS cooldown is permitted<br/>after one hour</li> </ol>                                                                                                 |                                                     |                                                             |            |              |  |  |
|                                      | 5) Maintain RCS pressure and<br>temperature within the<br>limits of Figure FR-P.1-1                                                                              |                                                     |                                                             |            |              |  |  |
|                                      | 6) Maintain cooldown rate in<br>RCS cold legs - LESS THAN<br>50°F IN ANY 60 MINUTES PER                                                                          | IOD                                                 |                                                             |            |              |  |  |
| 25                                   | Return To Procedure And Step In<br>Effect                                                                                                                        |                                                     |                                                             |            |              |  |  |
|                                      | -1                                                                                                                                                               | END-                                                |                                                             |            |              |  |  |
|                                      |                                                                                                                                                                  |                                                     |                                                             |            |              |  |  |
|                                      |                                                                                                                                                                  |                                                     |                                                             |            |              |  |  |
|                                      |                                                                                                                                                                  |                                                     |                                                             |            |              |  |  |



| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                 | NO. FR-S:1                                         |                                     | REV Q                       |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------|-----------------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                 | TITLE RESPONSE TO NUCLEAR POWER<br>GENERATION/ATWS |                                     |                             |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                 | DATE M                                             | IAR 21 2004                         | <b>PAGE</b> 1 of 12         |  |  |  |
| REVIEWRD BY                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                 | APPROVED BY                                        |                                     |                             |  |  |  |
| NUCLEAR 🛛 YES<br>SAFETY RELATED 🗌 NO                                                                                                                                                                                                                                                                                                                             | PORC REVIEW<br>REQUIRED                                                                                                                                         | ⊠ YES<br>□ NO                                      | SRO APPROV<br>TEMPORARY<br>REQUIRED | AL OF 🛛 YES<br>CHANGES 🗌 NO |  |  |  |
| 1.0 <u>INTRODUCTION</u><br>1.1 This procedure prov<br>core which is obser                                                                                                                                                                                                                                                                                        | 1.0 <u>INTRODUCTION</u> 1.1 This procedure provides actions to add negative reactivity to a core which is observed to be critical when expected to be shutdown. |                                                    |                                     |                             |  |  |  |
| <ul> <li>2.0 <u>SYMPTOMS OR ENTRY CONDITIONS</u></li> <li>2.1 This procedure is entered from: <ul> <li>a) E-O. REACTOR TRIP OR SAFETY INJECTION, Step 1, when Reactor Trip is not verified and manual trip is not effective.</li> <li>b) F-O.1, SUBCRITICALITY Critical Safety Function Status Trees on either a RED or ORANGE condition.</li> </ul> </li> </ul> |                                                                                                                                                                 |                                                    |                                     |                             |  |  |  |
| 3.0 <u>AUTOMATIC ACTIONS</u><br>3.1 None                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                 |                                                    |                                     |                             |  |  |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION |                                                                                                | NO.     | FR-S.1                                         |                        |              |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT         |                                                                                                | TITLE   | RESPONSE TO NUCLEAR POWER<br>GENERATION/ATWS   |                        |              |  |  |
| EMI                                  | EMERGENCY OPERATING PROCEDURES                                                                 |         | MAR 21 2004                                    | PAGE 4                 | <b>of</b> 12 |  |  |
| STEP                                 | OPERATOR ACTIONS                                                                               |         | CONTINGENO                                     | Y ACTIONS              |              |  |  |
| 5                                    | Establish Charging Flow:                                                                       |         |                                                |                        |              |  |  |
|                                      | a. Start charging pumps as<br>necessary to establish two<br>running                            | a.      | <u>IF</u> no charging<br>started, <u>GO T(</u> | pump can be<br>Step 7. |              |  |  |
|                                      | b. Verify CVC-11/CV-31229,<br>Charging Line Isolation – OPE                                    | N       |                                                |                        |              |  |  |
|                                      | c. Fully open CVC-7/CV-31103,<br>Charging Control Chg Line                                     |         |                                                |                        |              |  |  |
|                                      | d. Increase charging pump speed a<br>necessary to establish maximum<br>available charging flow | as<br>n |                                                |                        |              |  |  |
|                                      |                                                                                                |         |                                                |                        |              |  |  |
|                                      |                                                                                                |         |                                                |                        |              |  |  |
|                                      |                                                                                                |         |                                                |                        |              |  |  |
|                                      |                                                                                                |         |                                                |                        |              |  |  |
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|                                      |                                                                                                |         |                                                |                        |              |  |  |
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|                                      |                                                                                                |         |                                                |                        |              |  |  |





| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                    | NO. FR-S.1                                                                                                                            |  |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                            | TITLE RESPONSE TO NUCLEAR POWER<br>GENERATION/ATWS                                                                                    |  |  |  |  |  |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                          | DATE MAR 21 2004 PAGE 7 of 12                                                                                                         |  |  |  |  |  |
| STEP OPERATOR ACTIONS                                                                                                                                                   | CONTINGENCY ACTIONS                                                                                                                   |  |  |  |  |  |
| <u>CAU</u>                                                                                                                                                              | <u>FION</u>                                                                                                                           |  |  |  |  |  |
| If an SI signal exists or occurs, Steps 3 through 14 of E-O, REACTOR TRIP OR SAFETY INJECTION should be performed as time permits while continuing with this procedure. |                                                                                                                                       |  |  |  |  |  |
| 10 Check If The Following Trips Have<br>Occurred:                                                                                                                       | 2                                                                                                                                     |  |  |  |  |  |
| a. Reactor - TRIPPED                                                                                                                                                    | a. Perform the following:                                                                                                             |  |  |  |  |  |
|                                                                                                                                                                         | <ol> <li>Dispatch operator to locally<br/>perform the following:</li> </ol>                                                           |  |  |  |  |  |
|                                                                                                                                                                         | a) Open Reactor Trip<br>Breakers.                                                                                                     |  |  |  |  |  |
|                                                                                                                                                                         | b) Position Rod Drive MG Set<br>Motor and Generator<br>Circuit Breaker Control<br>Switches to TRIP.                                   |  |  |  |  |  |
|                                                                                                                                                                         | 2) <u>WHEN</u> the Reactor Trip<br>Breakers and MG Set Breakers<br>have been opened, <u>THEN</u><br>re-energize Bus 33 and<br>Bus 43. |  |  |  |  |  |
| b. Turbine - TRIPPED                                                                                                                                                    | b. Dispatch operator to locally<br>trip Turbine.                                                                                      |  |  |  |  |  |
|                                                                                                                                                                         |                                                                                                                                       |  |  |  |  |  |
|                                                                                                                                                                         |                                                                                                                                       |  |  |  |  |  |
|                                                                                                                                                                         |                                                                                                                                       |  |  |  |  |  |
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| WISCONS              | WISCONSIN PUBLIC SERVICE CORPORATION                                                                                 |                             | NO. FR-S.1                                                                                                                                         |                                                                                                |    |  |  |
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| KEW                  | KEWAUNEE NUCLEAR POWER PLANT                                                                                         |                             | TITLE RESPONSE TO NUCLEAR POWER<br>GENERATION/ATWS                                                                                                 |                                                                                                |    |  |  |
| EMER                 | EMERGENCY OPERATING PROCEDURES                                                                                       |                             | MAR 21 2004                                                                                                                                        | PAGE 8 of                                                                                      | 12 |  |  |
|                      |                                                                                                                      |                             |                                                                                                                                                    |                                                                                                | 7  |  |  |
| STEP                 | OPERATOR ACTIONS                                                                                                     |                             | CONTINGEN                                                                                                                                          | CY ACTIONS                                                                                     | ┛  |  |  |
| ••••••               | C 6 11                                                                                                               |                             |                                                                                                                                                    | •••••                                                                                          |    |  |  |
| If CST T<br>pumps wi | If CST level decreases to less than 8%, use of alternate water sources for AFW pumps will be necessary per A-FW-05B. |                             |                                                                                                                                                    |                                                                                                |    |  |  |
| 11 0                 | Check Steam Generator Levels:                                                                                        |                             |                                                                                                                                                    |                                                                                                |    |  |  |
| · č                  | a. Narrow range level in at least                                                                                    | t a. Perform the following: |                                                                                                                                                    |                                                                                                |    |  |  |
|                      | one SG - GREATER THAN 4% [15%<br>FOR ADVERSE CONTAINMENT]                                                            |                             | 1) Verify total feed flow<br>greater than 400 gpm. <u>IF</u><br><u>NOT</u> , <u>THEN</u> manually start<br>pumps and align valves as<br>necessary. |                                                                                                |    |  |  |
|                      |                                                                                                                      |                             | 2) Maintain to<br>greater tha<br>narrow rang<br>than 4% [19<br>CONTAINMENT<br>SG.                                                                  | otal feed flow<br>an 400 gpm until<br>ge level greater<br>5% FOR ADVERSE<br>[] in at least one |    |  |  |
|                      | b. Control feed flow to maintain<br>narrow range level between 4%<br>[15% FOR ADVERSE CONTAINMENT]<br>and 50%        | ]                           |                                                                                                                                                    |                                                                                                |    |  |  |
|                      |                                                                                                                      |                             |                                                                                                                                                    |                                                                                                |    |  |  |
|                      |                                                                                                                      |                             |                                                                                                                                                    |                                                                                                |    |  |  |
|                      |                                                                                                                      |                             |                                                                                                                                                    |                                                                                                |    |  |  |
|                      |                                                                                                                      |                             |                                                                                                                                                    |                                                                                                |    |  |  |
|                      |                                                                                                                      |                             |                                                                                                                                                    |                                                                                                |    |  |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION |                                                                                     | NO.                                                | FR-S.1                                   |              |            |    | |
|---|---|---|---|---|---|---|---|
| KEWAUNEE NUCLEAR POWER PLANT         |                                                                                     | TITLE RESPONSE TO NUCLEAR POWER<br>GENERATION/ATWS |                                          |              |            |    |
| ЕМ                                   | EMERGENCY OPERATING PROCEDURES                                                      |                                                    | MAR 21 2004                              | PAGE 9       | of         | 12 |
| STEP                                 | OPERATOR ACTIONS                                                                    |                                                    | CONTINGENO                               | Y ACTIONS    |            |    |
| 12                                   | Verify All Dilution Paths -<br>ISOLATED:                                            | м                                                  | anually isolate                          | dilution pat | chs.       |    |
|                                      | a. Verify MU-1022, Reactor Makeu<br>Water To Blender - CLOSED                       | D                                                  |                                          |              |            |    |
|                                      | b. Locally verify MU-1025, Makeup<br>Water To Alternate Suction -<br>CLOSED         | D                                                  |                                          |              |            |    |
|                                      | c. Locally verify MU-1024 and<br>CVC-423, Chemical Mixing Tank<br>Valves – CLOSED   |                                                    |                                          |              |            |    |
|                                      | d. Locally verify MU-1031A, Maker<br>Water To Boric Acid Transfer<br>Pumps - CLOSED | цр                                                 |                                          |              |            |    |
|                                      | e. Locally verify MU-1031B, Make<br>Water To Boric Acid Transfer<br>Pumps - CLOSED  | ир                                                 |                                          |              |            |    |
| 13                                   | Check For Reactivity Insertion<br>From Uncontrolled RCS Cooldown:                   | S<br><u>G</u>                                      | top any controll<br><u>O TO</u> Step 18. | ed cooldown  | <u>and</u> |    |
|                                      | <ul> <li>RCS temperature - DECREASING I<br/>AN UNCONTROLLED MANNER</li> </ul>       | N                                                  |                                          |              |            |    |
|                                      | <u>OR</u>                                                                           |                                                    |                                          |              |            |    |
|                                      | <ul> <li>Any SG pressure - DECREASING I<br/>AN UNCONTROLLED MANNER</li> </ul>       | N                                                  |                                          |              |            |    |
| 14                                   | Check Main Steamline Isolation A<br>Bypass Valves - CLOSED                          | nd M                                               | anually close va                         | lves.        |            |    |
|                                      |                                                                                     |                                                    |                                          |              |            |    |
|                                      |                                                                                     |                                                    |                                          |              |            |    |
| 1                                    |                                                                                     |                                                    |                                          |              |            |    |
| WISCO | NSIN PUBLIC SERVICE CORPORATION                       | NO.       | FR-S.1                           |               |     |    |    |
|-------|-------------------------------------------------------|-----------|----------------------------------|---------------|-----|----|----|
| KE    | WAUNEE NUCLEAR POWER PLANT                            | TITLE     | RESPONSE TO NU<br>GENERATION/ATW | CLEAR PO<br>S | WER |    |    |
| EM    | ERGENCY OPERATING PROCEDURES                          | DATE      | MAR 21 2004                      | PAGE          | 10  | of | 12 |
| STEP  | OPERATOR ACTIONS                                      |           | CONTINGENC                       | Y ACTIO       | ONS |    | ]  |
| 15    | Check If TD AFW Pump Should Be<br>Stopped:            |           |                                  |               |     |    |    |
|       | a. Check MD Pumps - BOTH RUNNING                      | а         | . <u>GO</u> <u>TO</u> Step 16.   |               |     |    |    |
|       | b. Stop TD AFW Pump and place in<br>PULLOUT           |           |                                  |               |     |    |    |
| 16    | Check If Steam Generators Are<br>Faulted -            | <u>G(</u> | <u>) TO</u> Step 18.             | ·             |     |    |    |
|       | • ANY SG PRESSURE DECREASING IN A UNCONTROLLED MANNER | AN        |                                  |               |     |    |    |
|       | <u>OR</u>                                             |           |                                  |               |     |    |    |
|       | • ANY SG COMPLETELY DEPRESSURIZE                      | D         |                                  |               |     |    |    |
|       |                                                       |           |                                  |               |     |    |    |
|       |                                                       |           |                                  |               |     |    |    |
|       |                                                       |           |                                  |               |     |    |    |
|       |                                                       |           |                                  |               |     |    |    |
|       |                                                       |           |                                  |               |     |    |    |
|       |                                                       |           |                                  |               |     |    |    |
|       |                                                       |           |                                  |               |     |    |    |
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| 1     |                                                       |           |                                  |               |     |    |    |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                | NO. FR-S.1                                                                    |
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| KEWAUNEE NUCLEAR POWER PLANT                                                        | TITLE RESPONSE TO NUCLEAR POWER<br>GENERATION/ATWS                            |
| EMERGENCY OPERATING PROCEDURES                                                      | DATE MAR 21 2004 PAGE 11 of 12                                                |
|                                                                                     |                                                                               |
| STEP OPERATOR ACTIONS                                                               | CONTINGENCY ACTIONS                                                           |
| <u>CAU</u>                                                                          | TION                                                                          |
| At least one SG must be maintained avai                                             | lable for RCS cooldown.                                                       |
| If both SGs are faulted, at least 60 gpm<br>SG.                                     | n feed flow should be maintained to each                                      |
| If the turbine-driven AFW pump is the or<br>supply to the turbine-driven AFW pump m | nly available source of feed flow, steam<br>ust be maintained from one SG.    |
|                                                                                     | • • • • • • • • • • • • • • • • • • • •                                       |
| 17 Isolate Faulted Steam Generator(                                                 | s): Manually close valves. <u>IF</u> a valve can NOT be closed. THEN dispatch |
| a. Verify BT-2A(B) and BT-3A(B),<br>SG A(B) Blowdown Isolation<br>Valves - CLOSED   | operator to locally close valve or in-line manual isolation valve.            |
| b. Verify SG PORVs– CLOSED                                                          |                                                                               |
| c. Close AFW-2A(B), AFWP A(B) Fl<br>Control Valve                                   | DW                                                                            |
| d. Close MS-100A(B), SG A(B) Ster<br>Supply To T/D AFW Pump                         | am                                                                            |
| e. Verify BT-31A(B) and BT-32A(B<br>SG Sample Isolation Valves -<br>CLOSED          | ),                                                                            |
| f. Close FW-12A(B), SG A(B)<br>Feedwater Isolation Valve                            |                                                                               |
| g. Close AFW-10A(B), AFW Train<br>A(B) Crossover Valve                              |                                                                               |
|                                                                                     |                                                                               |
|                                                                                     |                                                                               |
|                                                                                     |                                                                               |
|                                                                                     |                                                                               |

| WISCO | ONSIN PUBLIC SERVICE CORPORATION                          | NO.                                       | FR-Ś.1                                                                                                                                                                 |                                                                                                                                                           |
|-------|-----------------------------------------------------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| кі    | EWAUNEE NUCLEAR POWER PLANT                               | TITLE                                     | RESPONSE TO NU<br>GENERATION/ATM                                                                                                                                       | JCLEAR POWER                                                                                                                                              |
| EM    | IERGENCY OPERATING PROCEDURES                             | DATE                                      | MAR 21 2004                                                                                                                                                            | <b>PAGE</b> 12 of 12                                                                                                                                      |
|       |                                                           |                                           |                                                                                                                                                                        |                                                                                                                                                           |
| STEP  | OPERATOR ACTIONS                                          |                                           | CONTINGENO                                                                                                                                                             | CY ACTIONS                                                                                                                                                |
| 18    | Check Core Exit TCs -<br>LESS THAN 1200°F                 | <u>I</u><br>ti<br>S<br>G<br><u>I</u><br>t | E core exit temp<br>han or equal to<br>ncreasing, <u>THEN</u><br>EVERE ACCIDENT C<br>UIDELINE INITIAL<br>E core exit temp<br>han or equal to<br>ecreasing, <u>THEN</u> | Deratures greater<br>1200°F and<br><u>GO TO</u> SACRG-1,<br>CONTROL ROOM<br>RESPONSE, Step 1.<br>Deratures greater<br>1200°F and<br><u>GO TO</u> Step 19. |
| 19    | Verify Reactor Subcritical:                               | P                                         | erform the follo                                                                                                                                                       | owing:                                                                                                                                                    |
|       | a. Power range channels – LESS<br>THAN 5%                 | 1                                         | . Continue to bo                                                                                                                                                       | orate.                                                                                                                                                    |
|       | b. Intermediate range channels -<br>NEGATIVE STARTUP RATE | 2                                         | allow RCS to h<br>reactor is sub                                                                                                                                       | <u>DI</u> available, <u>IHEN</u><br>neat up until<br>ocritical.                                                                                           |
|       |                                                           | 3                                         | <ul> <li>Perform action<br/>Function Restonin<br/>in effect which<br/>or otherwise a<br/>reactivity to</li> </ul>                                                      | ns of other<br>pration Procedures<br>ch do not cooldown<br>add positive<br>the core.                                                                      |
|       |                                                           | 4                                         | . <u>GO TO</u> Step 4.                                                                                                                                                 |                                                                                                                                                           |
|       | <u>CAU</u>                                                | <u>TION</u>                               | •••••                                                                                                                                                                  |                                                                                                                                                           |
| Borat | ion should continue to obtain Cold                        | Shutdow                                   | n Boron Concenti                                                                                                                                                       | ration per RD-6.7.                                                                                                                                        |
| ••••• | ••••••                                                    | * * * * * * * * *                         | • • • • • • • • • • • • • • • • • • • •                                                                                                                                |                                                                                                                                                           |
| 20    | Return To Procedure And Step In<br>Effect                 |                                           |                                                                                                                                                                        |                                                                                                                                                           |
|       | ·                                                         | END-                                      |                                                                                                                                                                        |                                                                                                                                                           |
|       |                                                           |                                           |                                                                                                                                                                        |                                                                                                                                                           |
|       |                                                           |                                           |                                                                                                                                                                        |                                                                                                                                                           |
|       |                                                           |                                           |                                                                                                                                                                        |                                                                                                                                                           |

| WISCONSIN PUBLIC SERVICE                    | CORPORATION                      | NO. F                     | R-Z.1                               | REV              | L             |
|---------------------------------------------|----------------------------------|---------------------------|-------------------------------------|------------------|---------------|
| KEWAUNEE NUCLEAR PO                         | WER PLANT                        | TITLE P                   | ESPONSE TO H<br>RESSURE             | IGH CONTA        | INMENT        |
| EMERGENCY OPERATING PL                      | ROCEDURES                        | DATE S                    | EP 30 2003                          | PAGE             | 1 <b>of</b> 6 |
| REVIEWED BY                                 |                                  | APPRO                     | VED BY                              |                  |               |
| NUCLEAR XES<br>SAFETY RELATED NO            | PORC REVIEW<br>REQUIRED          | 🛛 YES                     | SRO APPROV<br>TEMPORARY<br>REQUIRED | AL OF<br>Changes | ⊠ YES<br>□ NO |
| 1.0 INTRODUCTION                            |                                  |                           |                                     |                  |               |
| 1.1 This procedure pro<br>pressure.         | vides actions f                  | to respond                | to a high Co                        | ntainment        |               |
| 2.0 <u>SYMPTOMS OR ENTRY CONDI</u>          | TIONS                            |                           |                                     |                  |               |
| 2.1 This procedure is<br>Function Status Tr | entered from F<br>ee on a RED or | -0.5, CONTA<br>ORANGE con | INMENT Criti                        | cal Safet        | у             |
| 3.0 <u>AUTOMATIC ACTIONS</u>                |                                  |                           |                                     |                  |               |
| 3.1 Actuation of Inter                      | nal Containmen <sup>.</sup>      | t Spray Sys               | stem.                               |                  |               |
|                                             |                                  |                           |                                     |                  |               |
|                                             |                                  |                           |                                     |                  |               |
|                                             |                                  |                           |                                     |                  |               |
|                                             |                                  |                           |                                     |                  |               |
|                                             |                                  |                           |                                     |                  |               |
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|                                             |                                  |                           |                                     |                  |               |
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|                                             |                                  |                           |                                     |                  |               |
|                                             |                                  |                           |                                     |                  |               |

| WISCONS         | IN PUBLIC SERVICE CORPORATION                                                                                             | NO.             | FR-Z.1                              |                       |             |
|-----------------|---------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------------|-----------------------|-------------|
| KEW             | AUNEE NUCLEAR POWER PLANT                                                                                                 | TITLE           | RESPONSE TO HI<br>PRESSURE          | IGH CONTAINMEN        | Т           |
| EMER            | GENCY OPERATING PROCEDURES                                                                                                | DATE            | SEP 30 2003                         | PAGE 2                | <b>of</b> 6 |
|                 |                                                                                                                           |                 |                                     |                       |             |
| STEP            | OPERATOR ACTIONS                                                                                                          |                 | CONTINGEN                           | CY ACTIONS            |             |
| 4.0 <u>DETA</u> | ILED_PROCEDURE                                                                                                            |                 |                                     |                       |             |
| . 1 V<br>A      | 'erify Containment Isolation<br>Active Status Panel lights - LIT                                                          | <u>IF</u><br>cl | flow path <u>NOT</u><br>ose valves. | necessary, <u>THI</u> | <u>EN</u>   |
| 2 W             | Verify Containment Ventilation<br>Solation Dampers/Valves - CLOSE                                                         | Ma<br>D:        | nually close da                     | ampers/valves.        |             |
| •               | Damper<br>RBV-5, CNTMT Purge/Vent Exhaust<br>Damper<br>LOCA-201B, Post LOCA Hydrogen<br>Recombiner B To CNTMT             | t               |                                     |                       |             |
| •               | LOCA-100B, Post LOCA Hydrogen T<br>Recombiner B                                                                           | Го              |                                     |                       |             |
| •               | RBV-1, CNTMT Purge/Vent Supply<br>Valve A<br>RBV-4, CNTMT Purge/Vent Exhaust<br>Valve A<br>SA-7003B, Hydrogen Dilution To | t               |                                     |                       |             |
| •               | LOCA-2B, Post LOCA Hydrogen<br>CNTMT Vent Isol B                                                                          |                 |                                     |                       |             |
| •               | RBV-2, CNTMT Purge/Vent Supply<br>Valve B<br>RBV-3, CNTMT Purge/Vent Exhaust                                              | t               |                                     |                       |             |
|                 |                                                                                                                           |                 |                                     |                       |             |
|                 |                                                                                                                           |                 |                                     |                       |             |
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| WISCON               | SIN PUBLIC SERV                           | ICE CORPORATION                           | NO.                        | FR-                  | 2.1                                          |                                             | ···=         |
|----------------------|-------------------------------------------|-------------------------------------------|----------------------------|----------------------|----------------------------------------------|---------------------------------------------|--------------|
| KEW                  | AUNEE NUCLEAF                             | R POWER PLANT                             | TITLE                      | RES<br>PRE           | PONSE TO HI<br>SSURE                         | GH CONTAINMEN                               | IT           |
| EMER                 | GENCY OPERATIN                            | IG PROCEDURES                             | DATE                       | SEP                  | 30 2003                                      | PAGE 3                                      | <b>of</b> 6  |
|                      |                                           |                                           | r                          |                      |                                              |                                             |              |
| STEP                 | OPERA                                     | TOR ACTIONS                               |                            |                      |                                              | Y ACTIONS                                   |              |
| ••••••               |                                           | <u>CAU1</u>                               | <u>FION</u>                | * * * * *            | *******                                      | * * * * * * * * * * * * * * *               | ****         |
| If ECA-1<br>Spray sl | 1.1. LOSS OF EN<br>hould be operat        | TERGENCY COOLANT RE<br>ted as directed in | ECIRCULAT<br>ECA-1.1       | ΓΙΟΝ,<br>rath        | is in effe<br>er than Ste                    | ct. Containme<br>p 3 below.                 | ent          |
| *******              | • • • • • • • • • • • • • • • • • • •     |                                           |                            |                      | ******                                       | • • • • • • • • • • • • • • • •             | ****         |
| 3                    | Check If Contai<br>Reguired:              | inment Spray Is                           |                            |                      |                                              |                                             |              |
| i                    | a. Containment<br>INCREASED T(<br>23 PSIG | pressure - HAS<br>) GREATER THAN          | а.                         | . Ret<br>eff         | urn to proc<br>ect                           | edure and ste                               | ep in        |
| 1                    | b. Verify Spray<br>per table be           | v System alignment<br>elow:               |                            |                      |                                              |                                             |              |
|                      | COMPONENT                                 |                                           |                            | RHR SYSTEM ALIGNMENT |                                              |                                             |              |
|                      | COMPONENT                                 | NAME                                      |                            |                      | INJECTION                                    | RECIRC                                      |              |
|                      | RHR-400A(B)                               | RHR Pump A(B) Sup<br>Pump A(B)            | pply To 1                  | ICS                  | CLOSED                                       | OPEN                                        | j            |
|                      | ICS-2A(B)                                 | ICS Pump A(B) Suc<br>RWST                 | ction From<br>y Pump 1A(B) |                      | OPEN                                         | CLOSED                                      |              |
|                      | ICS-5A(B)                                 | Containment Spray<br>Discharge            |                            |                      | OPEN                                         | OPEN                                        |              |
|                      | ICS-6A(B)                                 | Containment Spray<br>Discharge            | y Pump 1/                  | A(B)                 | OPEN                                         | OPEN                                        |              |
|                      | ICS-201                                   | ICS Recirculation                         | n to RWST                  |                      | CLOSED                                       | CLOSED                                      |              |
|                      | ICS-202                                   | ICS Recirculation                         | n to RWS7                  | г                    | CLOSED                                       | CLOSED                                      |              |
|                      | CI-1001A(B)                               | Caustic Additive<br>Spray                 | To CNTMI                   | ſ                    | OPEN                                         | OPEN                                        |              |
|                      | c. Verify ICS I                           | Pumps – RUNNING                           | C.                         | . Sta<br>pun<br>fol  | rt ICS Pump<br>p starts, <u>I</u><br>lowing: | s. <u>IF</u> neithe<br><u>HEN</u> perform t | er<br>the    |
|                      |                                           |                                           |                            | 1)                   | Start RHR P                                  | ump A(B).                                   |              |
|                      |                                           |                                           |                            | 2)                   | Close ICS-2<br>A(B) Suctio                   | A(B), ICS Pun<br>on From RWST.              | np           |
|                      |                                           |                                           |                            | 3)                   | Open RHR-40<br>A(B) Supply                   | OA(B). RHR Pu<br>To ICS Pump                | ımp<br>A(B). |
|                      |                                           |                                           |                            |                      |                                              |                                             |              |

| WISCONSIN PUBLIC SERVICE CORPORATIO                                                                                                                                                                 | NO. FR-Z.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                        | TITLE RESPONSE TO HIGH CONTAINMENT<br>PRESSURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| EMERGENCY OPERATING PROCEDURES                                                                                                                                                                      | DATE SEP 30 2003 PAGE 4 of 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |
| STEP OPERATOR ACTIONS                                                                                                                                                                               | CONTINGENCY ACTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
|                                                                                                                                                                                                     | AUTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
| If suction is lost to any SI, RHR, or                                                                                                                                                               | ICS pump, stop the pump.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
| <ul> <li>4 (CAS) Check Operating RHR Pump</li> <li>a. Motor current - LESS THAN<br/>18 AMPS <u>AND</u> STABLE</li> <li>b. Discharge pressure - STABLE</li> <li>c. RHR Pump flow - STABLE</li> </ul> | <ul> <li>(5): IF RHR Pump A(B) is in runout OR cavitating, THEN take action to reduce flow:</li> <li>1. Maintain minimum RCS injection flow:</li> <li>a) RHR Pump A(B) flow, F626 (F928) - &gt;700 GPM</li> <li>DR</li> <li>b) SI Pump A(B) flow, F925 - &gt;400 GPM</li> <li>c. Check valve alignment.</li> <li>3. IF only an RHR Pump is running, THEN throttle RHR-8A(B) as necessary to minimize RHR pump amps while maintaining minimum injection flow.</li> <li>4. IF RHR Pump is supplying a SI Pump or an ICS Pump, THEN perform the following as necessary to minimize RHR pump amps while maintaining minimum injection flow:</li> <li>a) Throttle RHR-8A(B).</li> <li>b) Locally throttle ICS-7A(B).</li> <li>c) Locally throttle SI-7A(B).</li> </ul> |  |

| WISCO | NSIN PUBLIC SERVICE CORPORATION                                                      | NO.     | FR-Z.1                                                 |
|-------|--------------------------------------------------------------------------------------|---------|--------------------------------------------------------|
| KE    | WAUNEE NUCLEAR POWER PLANT                                                           | TITLE   | RESPONSE TO HIGH CONTAINMENT<br>PRESSURE               |
| EMI   | ERGENCY OPERATING PROCEDURES                                                         | DATE    | SEP 30 2003 PAGE 5 of 6                                |
|       | · · · · · · · · · · · · · · · · · · ·                                                |         |                                                        |
| STEP  | OPERATOR ACTIONS                                                                     |         | CONTINGENCY ACTIONS                                    |
| 5     | Verify Service Water Alignment:                                                      |         |                                                        |
|       | a. Verify Service Water Pumps –<br>RUNNING                                           | a       | . Manually start pumps.                                |
|       | b. Verify SW header selected on<br>Turbine Bldg SW Selector switc<br>>82.5 psig      | b<br>ch | . Position Turbine Bldg SW<br>Selector switch to ISOL. |
| 6     | Verify Containment Fan Coil Unit<br>Running In Emergency Mode:                       | S       |                                                        |
|       | a. Fan Coil Units - RUNNING                                                          | а       | . Manually start Fan Coil Units.                       |
|       | b. SW-903A, B, C and D, CNTMT Fa<br>Coil Unit SW Return Isolation<br>Valves - OPEN   | n b     | . Manually open valves.                                |
|       | c. RBV-150A, B, C and D, CNTMT Fa<br>Coil Unit Emergency Discharge<br>Dampers - OPEN | an c    | . Manually open dampers.                               |
| 7     | Verify Main Steamline Isolation<br>And Bypass Valves - CLOSED                        | М       | anually close valves.                                  |
|       |                                                                                      |         |                                                        |
|       |                                                                                      |         |                                                        |
|       |                                                                                      |         |                                                        |
|       |                                                                                      |         |                                                        |
|       |                                                                                      |         |                                                        |
| ]     |                                                                                      |         |                                                        |
|       |                                                                                      |         |                                                        |
| L     |                                                                                      |         |                                                        |

| WISCONSIN PUBLIC SERVICE CORPORATION                               | NO.         | FR-Z.1                     |                |             |
|--------------------------------------------------------------------|-------------|----------------------------|----------------|-------------|
| KEWAUNEE NUCLEAR POWER PLANT                                       | TITLE       | RESPONSE TO HI<br>PRESSURE | GH CONTAINMENT |             |
| EMERGENCY OPERATING PROCEDURES                                     | DATE        | SEP 30 2003                | PAGE 6         | <b>of</b> 6 |
| STEP OPERATOR ACTIONS                                              |             | CONTINGEN                  | CY ACTIONS     |             |
| <u>CAU</u>                                                         | <u>FION</u> |                            |                | •••         |
| At least one SG must be maintained avail                           | lable for   | RCS cooldown.              |                |             |
| If both SGs are faulted, at least 60 gpm<br>SG.                    | n feed fl   | ow should be ma            | intained to ea | ch          |
| •••••••••••••••••••••••••••••••••••••••                            |             |                            |                | •••         |
| 8 Check If Feed Flow Should Be<br>Isolated To Any Steam Generator: |             |                            |                |             |
| a. Check pressures in both SGs-                                    | a.          | <u>GO TO</u> Step 9.       |                |             |
| 1) ANY SG PRESSURE DECREASING<br>IN AN UNCONTROLLED MANNER         |             |                            |                |             |
| <u>OR</u>                                                          |             |                            |                |             |
| 2) ANY SG COMPLETELY<br>DEPRESSURIZED                              |             |                            |                |             |
| b. Isolate feed flow to affected SG:                               |             |                            |                |             |
| • Main FW<br>• AFW                                                 |             |                            |                |             |
| 9 Return To Procedure And Step In<br>Effect                        |             |                            |                |             |
|                                                                    | END-        |                            |                |             |
|                                                                    |             |                            |                |             |
|                                                                    |             |                            |                |             |
|                                                                    |             |                            |                |             |
|                                                                    |             |                            |                |             |
|                                                                    |             |                            |                |             |

| TITLE Plant Startup from Cold Shutdown Condition         OPERATING PROCEDURE         DATE AUG 12 2004       PAGE 1 of 13         REVIEWED BY         APPROVED BY         NUCLEAR       SRO APPROVAL OF<br>TEMPORARY CHANGES       X YES<br>SRO APPROVAL OF<br>TEMPORARY CHANGES         NUCLEAR       X YES<br>SAFETY RELATED       NO         NUCLEAR       X YES<br>REQUIRED       SRO APPROVAL OF<br>TEMPORARY CHANGES       X YES<br>TEMPORARY CHANGES         NO         1.0 INTRODUCTION         1.1 Procedure describes steps to take plant from Cold to Hot Shutdown.         1.2 No         1.0 INTRODUCTION         1.1 Procedure describes steps to take plant from Cold to Hot Shutdown.         1.2 No         1.0 INTRODUCTION         1.1 Procedure describes steps to take plant from Cold to Hot Shutdown.         1.2 NO         1.0 INTRODUCTION         1.1 Procedure describes steps to take plant from Cold to Hot Shutdown.         1.2 No         2.1 Reactivity Relate:         1. WHEN a reduction is made in boron concentration                            | WISCONSIN PUBLIC SERVICE C                                                                                                                                                                                                                                                                                                                                                                                                                                | ORPORATION                                                                                                                                                         | <b>NO.</b> N-0                                                                                                        | -0İ                                                                                                | <b>REV</b> Z                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| OPERATING PROCEDURE       DATE       AUG 12 2004       PAGE       1 of       13         REVIEWED BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | KEWAUNEE NUCLEAR POW                                                                                                                                                                                                                                                                                                                                                                                                                                      | VER PLANT                                                                                                                                                          | TITLE C                                                                                                               | lant Startup<br>condition to                                                                       | from Cold Shutdown<br>Hot Shutdown Condition                                                      |
| REVIEWED BY       APPROVED BY         NUCLEAR<br>SAFETY RELATED       YES<br>NO       PORC REVIEW       YES<br>REQUIRED       SR0 APPROVAL OF<br>TEMPORARY CHANGES       YES<br>NO         1.0 INTRODUCTION       NO       NO       REQUIRED       NO       NO         1.1 Procedure describes steps to take plant from Cold to Hot Shutdown.       NO       NO       NO         1.2 N-0-01-CLA and N-0-01-CLB determine initial conditions for heatup.<br>Use N-0-01-CLB to determine necessity of performing optional steps in<br>Section 4.0.         2.0 PRECAUTIONS AND LIMITATIONS         2.1 Reactivity Related:         1. WHEN a reduction is made in boron concentration of RCS, at least<br>one RXCP or one RHR Pump shall be operating.         2. WHEN fuel is in Reactor, there shall be at least one flow path to<br>core for boric acid injection.         3. IF Reactor Trip Breakers are closed, one of the following shall be<br>satisfied:         a. Both RXCPs are in operation.         DR         b. The RCS is borated to Cold Shutdown boron concentration. | OPERATING PROCEE                                                                                                                                                                                                                                                                                                                                                                                                                                          | JURE                                                                                                                                                               | <b>DATE</b> A                                                                                                         | UG 12 2004                                                                                         | PAGE 1 of 13                                                                                      |
| NUCLEAR<br>SAFETY RELATED       YES<br>NO       PORC REVIEW<br>REQUIRED       YES<br>NO       SRO APPROVAL OF<br>TEMPORARY CHANGES       YES<br>NO         1.0 INTRODUCTION       NO       NO       TEMPORARY CHANGES       NO         1.1 Procedure describes steps to take plant from Cold to Hot Shutdown.       1.2 N-0-01-CLB and N-0-01-CLB determine initial conditions for heatup.<br>Use N-0-01-CLB to determine necessity of performing optional steps in<br>Section 4.0.         2.0 PRECAUTIONS AND LIMITATIONS       2.1 Reactivity Related:         1. WHEN a reduction is made in boron concentration of RCS, at least<br>one RXCP or one RHR Pump shall be operating.         2. WHEN fuel is in Reactor, there shall be at least one flow path to<br>core for boric acid injection.         3. IF Reactor Trip Breakers are closed, one of the following shall be<br>satisfied:         a. Both RXCPs are in operation,         QR         b. The RCS is borated to Cold Shutdown boron concentration.                                                                | REVIEWED BY                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                    | APPRO                                                                                                                 | VRD BY                                                                                             |                                                                                                   |
| <ul> <li>1.0 INTRODUCTION <ol> <li>Procedure describes steps to take plant from Cold to Hot Shutdown.</li> <li>N-0-01-CLA and N-0-01-CLB determine initial conditions for heatup. Use N-0-01-CLB to determine necessity of performing optional steps in Section 4.0.</li> </ol> </li> <li>2.0 PRECAUTIONS AND LIMITATIONS <ol> <li>Reactivity Related: <ol> <li>WHEN a reduction is made in boron concentration of RCS, at least one RXCP or one RHR Pump shall be operating.</li> <li>WHEN fuel is in Reactor, there shall be at least one flow path to core for boric acid injection.</li> <li>IF Reactor Trip Breakers are closed, one of the following shall be satisfied: <ol> <li>Both RXCPs are in operation.</li> </ol> </li> <li>DR</li> <li>The RCS is borated to Cold Shutdown boron concentration.</li> </ol> </li> </ol></li></ul>                                                                                                                                                                                                                                        | NUCLEAR X YES<br>SAFETY RELATED NO                                                                                                                                                                                                                                                                                                                                                                                                                        | PORC REVIEW<br>REQUIRED                                                                                                                                            | ⊠ YES<br>□ NO                                                                                                         | SRO APPROV<br>TEMPORARY<br>REQUIRED                                                                | AL OF XES<br>CHANGES NO                                                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <ul> <li>1.0 <u>INTRODUCTION</u> <ol> <li>Procedure describes</li> <li>N-O-O1-CLA and N-O-OUse N-O-O1-CLB to deSection 4.0.</li> </ol> </li> <li>2.0 <u>PRECAUTIONS AND LIMITATIO</u> <ol> <li>Reactivity Related: <ol> <li><u>WHEN</u> a reduction one RXCP or one</li> <li><u>WHEN</u> fuel is in core for boric a</li> <li><u>IF</u> Reactor Trip satisfied: <ol> <li>Both RXCPs a</li> </ol> </li> <li>b. The RCS is b</li> </ol></li></ol></li></ul> | steps to take<br>1-CLB determinitermine necess<br><u>NS</u><br>is made in bo<br>RHR Pump shall<br>Reactor, there<br>is in operatio<br><u>OR</u><br>porated to Cold | plant from<br>e initial c<br>ity of perf<br>ron concent<br>be operati<br>shall be a<br>losed, one<br>n,<br>Shutdown b | Cold to Hot<br>onditions fo<br>orming optio<br>ration of RC<br>ng.<br>It least one<br>of the follo | Shutdown.<br>r heatup.<br>nal steps in<br>S, at least<br>flow path to<br>wing shall be<br>ration. |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | NO. N-0-01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>TITLE</b> Plant Startup from Cold Shutdown<br>Condition to Hot Shutdown Conditio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | DATE AUG 12 2004 PAGE 2 of 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  |  |
| OPERATING PROCEDURE  2.2 RCS Pressure Related:  1. WHEN Reactor Vessel Head is insvalve shall be operable or remo  2. WHEN one or more of RCS cold le Reactor Vessel Head is installe satisfied:  a. RHR-1A/MV-32116 and RHR-2A/Pump MVs, OPEN.  b. RHR-1B/MV-32132 and RHR-2B/Pump MVs, OPEN.  b. RHR-33-1, RHR TO Reactor Concernation of the operable with a setting of the operable suction path may be operable suction path may be operable suction path valve associated motor breakers to the operable suction path valve astoci | DATE       AUG 12 2004       PAGE       2       of 13         stalled, at least one       Przr safety         oved.       eg temperatures is ≤200°F, AND         ed, one of the following shall be         /MV-32117, RCS Loop A Supply To RHR         /MV-32133, RCS Loop B Supply To RHR         oolant Hot Leg Safety Valve,         ≤500 psig.         e isolated from RCS for ≤5 days, IF         es are verified OPEN with their         locked in OFF.         ths are NOT restored in ≤5 days,         BLISH a vent path of ≥6.4 square         l hours, and implement vent path         per Tech Spec 3.1. |  |  |  |  |
| controls per Tech Spec 3.1.<br>3. <u>WHEN</u> RCS is above 425 psig, RHI<br>cooldown mode.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | .b.4.B.<br>R Pumps shall <u>NOT</u> be operated in                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |

| WISC                                                                                                                      | DNSI | N PUBLIC SERVICE CORPORATION                                                                       | NO. N                              | 1-0-01                                       |                              |                   |
|---------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------|------------------------------------|----------------------------------------------|------------------------------|-------------------|
| ĸ                                                                                                                         | EWA  | UNEE NUCLEAR POWER PLANT                                                                           | TITLE                              | Plant Startup<br>Condition to H              | from Cold Sh<br>lot Shutdown | utdown<br>Conditi |
|                                                                                                                           | OP   | ERATING PROCEDURE                                                                                  | DATE                               | AUG 12 2004                                  | PAGE 3                       | <b>of</b> 13      |
|                                                                                                                           |      |                                                                                                    |                                    |                                              |                              |                   |
| 2.3                                                                                                                       | RCS  | Temperature Related:                                                                               |                                    |                                              |                              |                   |
|                                                                                                                           | 1.   | Reactor shall <u>NOT</u> be taken abov<br>ambient temperature is >40°F.                            | ve Cold S                          | Shutdown unless                              | containment                  |                   |
|                                                                                                                           | 2.   | WHEN RCS average temperature is one RXCP shall be Danger Cardeo                                    | s <140°F,<br>1 in Pull             | Control Switch                               | 1 for                        |                   |
| 3. <u>WHEN</u> RCS is $\leq 200^{\circ}$ F and there is irradiated fuel in the Reactor, the following shall be satisfied. |      |                                                                                                    |                                    |                                              |                              |                   |
|                                                                                                                           |      | a. Two RHR trains are operable                                                                     | 2,                                 |                                              |                              |                   |
|                                                                                                                           |      | <u>OR</u>                                                                                          |                                    |                                              |                              |                   |
| ·                                                                                                                         |      | b. <u>WHEN</u> in Refueling Mode with<br>above Rx Vessel Flange and<br>train may be inoperable for | n Rx Cavi<br>Upper Ir<br>r mainter | ty flooded to ≥<br>iternals removed<br>ance. | 23 feet<br>1. one RHR        |                   |
|                                                                                                                           | 4.   | <u>WHEN</u> average reactor coolant to of following shall be operable                              | emperatur<br>:                     | re is >200°F and                             | l ≤350°F, two                |                   |
|                                                                                                                           |      | • S/G 1A<br>• S/G 1B<br>• RHR Train A<br>• RHR Train B                                             |                                    |                                              |                              |                   |
|                                                                                                                           | 5.   | RCS temperature, pressure, and figure RD-11.1 of Reactor Data                                      | heatup r<br>Manual.                | rate shall be li                             | imited per                   |                   |
|                                                                                                                           | 6.   | Pressurizer heatup rate shall <u>I</u>                                                             | <u>{OT</u> excee                   | ed 100°F/hour.                               |                              |                   |
|                                                                                                                           | 7.   | <u>IF</u> temperature difference betwee >320°F, pressurizer spray shall                            | een press<br><u>NOT</u> be         | surizer and spra<br>used.                    | ay fluid is                  |                   |
|                                                                                                                           | 8.   | <u>IF</u> temperature of Steam General<br>Steam Generator shall <u>NOT</u> be p                    | tor is <7<br>ressurize             | 70°F, secondary<br>ed above 200 psi          | side of<br>g.                |                   |
|                                                                                                                           | 9.   | RCS subcooling limitations:                                                                        |                                    |                                              |                              |                   |
|                                                                                                                           |      | a. <u>WHEN</u> RCS Temperature is >39<br>maintain RCS subcooling >30                               | 50°F with<br>)°F and <             | n a bubble in Pr<br>200°F.                   | ressurizer                   |                   |
|                                                                                                                           |      | b. <u>WHEN</u> RCS Temperature is <39<br>maintain RCS subcooling >30                               | 50°F with<br>)°F and <             | n a bubble in Pr<br>(300°F.                  | ressurizer                   |                   |
|                                                                                                                           |      | CONTINU                                                                                            | ED                                 |                                              |                              |                   |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>NO.</b> N-0-01                                                                                                                                                          |          |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | TITLE Plant Startup from Cold Shutdown<br>Condition to Hot Shutdown Condition                                                                                              |          |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | DATE AUG 12 2004 PAGE 4 of 13                                                                                                                                              |          |  |  |  |  |
| OPERATING PROCEDURE       DATE       AUG 12 2004       PAGE 4       of 13         2.3       CONTINUED         10.       WHEN RCS temperature is >250°F, concentration of 0xygen,<br>Chloride, and Fluoride shall NOT exceed the limits of T.S. 3.1.e.         11.       WHEN RCS temperature is >350°F, steam generator Dose Equivalent<br>I-131 shall NOT exceed 0.1 microcuries/gram. [TS 3.4.d]         12.       WHEN average RCS temperature is >500°F, specific activity of<br>Reactor Coolant shall NOT exceed the following:         a.       1.0 microcuries/gram Dose Equivalent I-131         b.       91/E microcuries/cc gross radioactivity due to nuclides with<br>half-lives >30 minutes excluding tritium         13.       During plant heatup, refer to GNP 1.31.1, Seismic Housekeeping<br>Guidelines. |                                                                                                                                                                            |          |  |  |  |  |
| restored as soon as practical.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | callbration, <u>AND</u> Should                                                                                                                                             | be       |  |  |  |  |
| 1. In Hot Shutdown, Narrow Range<br>used to monitor RCS temperatur                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | temperature indication s                                                                                                                                                   | hould be |  |  |  |  |
| <ol> <li>In Cold Shutdown or Refueling<br/>inlet, or Core Exit Thermocoup<br/>temperature.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <ol> <li>In Cold Shutdown or Refueling Mode, the highest of Wide Range, RHR<br/>inlet, or Core Exit Thermocouples shall be used to monitor RCS<br/>temperature.</li> </ol> |          |  |  |  |  |
| 3.0 <u>INITIAL CONDITIONS</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                            |          |  |  |  |  |
| 3.1 Plant systems listed in N-O-O1-CLA Step 1.3.1, operating.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 3.1 Plant systems listed in N-O-O1-CLA, Plant System - Initial Status, Step 1.3.1, operating.                                                                              |          |  |  |  |  |
| 3.2 Plant systems listed in N-O-O1-CLA Step 1.4.1, operating or approachi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | , Plant System - Initial<br>ng operability.                                                                                                                                | Status,  |  |  |  |  |
| 3.3 N-O-O1-CLB has been completed. (Re                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | fer to N-O-O1-CLF).                                                                                                                                                        |          |  |  |  |  |
| 3.4 RCS is at Cold Shutdown boron conc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | entration or greater.                                                                                                                                                      |          |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |          |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                          | NO. N-0-01                                                                    |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                  | TITLE Plant Startup from Cold Shutdown<br>Condition to Hot Shutdown Condition |
| OPERATING PROCEDURE                                                                                                           | DATE AUG 12 2004 PAGE 5 of 13                                                 |
|                                                                                                                               | INITIALS                                                                      |
| 4.0 <u>PROCEDURE</u>                                                                                                          |                                                                               |
| <u>NOTE</u> : Steps marked with asterisk [*] an initial conditions for heatup as                                              | re optional depending on<br>indicated in N-O-O1-CLB.                          |
| 4.1 <u>IF</u> RHR System is <u>NOT</u> operating, PL<br>Pump in operation per N-RHR-34 and<br>temperature <200°F.             | ACE at least one RHR PERFORMED<br>maintain RCS                                |
| 4.2 VERIFY CC-400A/MV-32119, Component<br>Hx A, and CC-400B/MV-32120, Component<br>Hx B, OPEN. <u>IF NOT</u> , PERFORM follow | Cooling to RHR<br>ent Cooling to RHR<br>wing:                                 |
| 1. START standby Component Cooling                                                                                            | g Pump per N-CC-31. STARTED/NA                                                |
| 2. OPEN CC-400A and CC-400B.                                                                                                  | OPEN/NA                                                                       |
| 4.3 INITIATE charging, letdown, and sea<br>N-CVC-35B and maintain approximate<br>flow through RHR-CVC cross-connect           | al water flow per INITIATED<br>ly 40 gpm letdown<br>•                         |
| 4.4 [*] FILL, PRESSURIZE to 50 psig, an static vent per N-RC-36D and SP 36                                                    | nd PERFORM RCS FILLED <u>AND</u><br>-139. VENTED                              |
| 4.5 [*] ESTABLISH normal Pressurizer Reconditions per N-RC-36B.                                                               | elief Tank ESTABLISHED                                                        |
| 4.6 [*] ALIGN Reactor Building Ventila<br>operation per N-RBV-18A.                                                            | tion System for hot ALIGNED                                                   |
| 4.7 [*] PERFORM RCS dynamic vent per N                                                                                        | -RC-36D. VENTED                                                               |
| 4.8 [*] INCREASE RCS pressure to 370-3<br>at least one Reactor Coolant Pump                                                   | 80 psig and START RXCP STARTED<br>per N-RC-36A.                               |
| 4.9 [*] ESTABLISH S/G narrow range leve                                                                                       | els 33-50%:                                                                   |
| 1. DRAIN Steam Generators per N-M                                                                                             | S-06A or N-MS-06D, DRAINED/NA                                                 |
| <u>OR</u>                                                                                                                     |                                                                               |
| 2. FILL Steam Generators per N-MS                                                                                             | -06B. FILLED/NA                                                               |
| 4.10 <u>IF</u> required, PERFORM SP 34-203.                                                                                   | PERFORMED/NA                                                                  |
|                                                                                                                               |                                                                               |

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| Γ | WISCONSIN PUBLIC SERVICE CORPORATION        |                                                                                                                                                                  | NO. N-0-01                                                                    |                     |  |  |
|---|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------|--|--|
|   | KEWAUNEE NUCLEAR POWER PLANT                |                                                                                                                                                                  | TITLE Plant Startup from Cold Shutdown<br>Condition to Hot Shutdown Condition |                     |  |  |
|   | OPERATING PROCEDURE DATE AUG 12 2004 PAGE 6 |                                                                                                                                                                  |                                                                               | <b>PAGE</b> 6 of 13 |  |  |
|   | INITIALS                                    |                                                                                                                                                                  |                                                                               |                     |  |  |
|   | 4.11                                        | SAMPLE and PERFORM complete analys System) and Pressurizer.                                                                                                      | is on RCS (or RHR                                                             |                     |  |  |
|   |                                             | <ol> <li>[*] <u>IF</u> RCS dissolved oxygen is following:</li> </ol>                                                                                             | >100 ppb, PERFORM                                                             |                     |  |  |
|   |                                             | a. VERIFY VCT vapor space oxy concentration <2%.                                                                                                                 | gen                                                                           | VERIFIED/NA         |  |  |
|   |                                             | b. ADD hydrazine to the RCS per N-CVC-35C and ADDED/NA<br>CHEM 40.006, Hydrazine Addition - Reactor<br>Coolant System.                                           |                                                                               |                     |  |  |
|   |                                             | 2. [*] <u>WHEN</u> RCS dissolved oxygen concentration is ESTABLISHED<br>within specification, ESTABLISH a hydrogen blanket<br>in VCT per N-CVC-35C.              |                                                                               |                     |  |  |
|   |                                             | 3. [*] <u>WHEN</u> hydrazine additions are completed, PLACE IN SERVICE<br>letdown demineralizers in service per Chemistry<br>direction.                          |                                                                               |                     |  |  |
|   | 4.12                                        | 4.12 Prior to plant heatup, SELECT a Waste Gas Decay Tank SELECTED/<br>with less than 2% oxygen concentration <u>AND</u> PLACE on ON FILL<br>fill per N-GWP-32B. |                                                                               |                     |  |  |
|   | 4.13                                        | [*] HEAT UP RCS to 190-195°F.                                                                                                                                    |                                                                               | 190° - 195° F       |  |  |
|   | 4.14                                        | <u>IF</u> required. TEST operability of M<br>Valves per SP 55-167-6.                                                                                             | ain Steam Isolation                                                           | TESTED/NA           |  |  |
|   | 4.15                                        | [*] START UP Rod Control System pe                                                                                                                               | r N-CRD-49.                                                                   | STARTED/NA          |  |  |
|   | 4.16                                        | [*] WITHDRAW Shutdown Banks per N-                                                                                                                               | CRD-49B.                                                                      | WITHDRAWN/NA        |  |  |
|   | 4.17                                        | <u>IF</u> recovering from refueling, ESTA concentration as directed by React                                                                                     | ESTABLISHED/<br>NA                                                            |                     |  |  |
|   | 4.18                                        | COMPLETE following alignments: (Refer to N-0-01-CLF).                                                                                                            |                                                                               |                     |  |  |
|   |                                             | • N-TD-13-CL                                                                                                                                                     |                                                                               | ALIGNED             |  |  |
|   |                                             | <ul> <li>N-MS-06-CL, through 5.3</li> </ul>                                                                                                                      |                                                                               | ALIGNED             |  |  |
|   |                                             | • N-BT-07-CL, Sections 4.1, 4.2, 5                                                                                                                               | .9, 5.24                                                                      | ALIGNED             |  |  |
|   |                                             | • N-ICS-23-CL, Appendix A                                                                                                                                        |                                                                               | ALIGNED             |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                        | NO. N-0-01                                                                    |  |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                | TITLE Plant Startup from Cold Shutdown<br>Condition to Hot Shutdown Condition |  |  |  |  |  |
| OPERATING PROCEDURE                                                                         | DATE AUG 12 2004 PAGE 7 of 13                                                 |  |  |  |  |  |
|                                                                                             | INITIALS                                                                      |  |  |  |  |  |
| NOTE: Steps 4.19.1 through 4.19.10 may be performed in any order.                           |                                                                               |  |  |  |  |  |
| 4.19 Prior to reaching 200°F, PERFORM following:                                            |                                                                               |  |  |  |  |  |
| 1. PERFORM Containment inspections:                                                         |                                                                               |  |  |  |  |  |
| a. INSPECT Containment:                                                                     |                                                                               |  |  |  |  |  |
| <ul> <li>Normal equipment operation</li> </ul>                                              | n NORMAL                                                                      |  |  |  |  |  |
| <ul> <li>Normal conditions</li> </ul>                                                       | NORMAL                                                                        |  |  |  |  |  |
| <ul> <li>Fire hazards</li> </ul>                                                            | NO HAZARDS                                                                    |  |  |  |  |  |
| <ul> <li>Incomplete maintenance</li> </ul>                                                  | COMPLETE                                                                      |  |  |  |  |  |
| <ul> <li>Seismic Housekeeping</li> </ul>                                                    | COMPLETE                                                                      |  |  |  |  |  |
| <ul> <li>Foreign Material Exclusion</li> <li>B operability)</li> </ul>                      | n (Containment Sump OPERABLE                                                  |  |  |  |  |  |
| <ul> <li>Account for remaining per<br/>Containment</li> </ul>                               | sonnel in ACCOUNTED<br>FOR                                                    |  |  |  |  |  |
| b. NOTIFY Assistant Manager Op<br>Designee that GNP 12.17.1,<br>Containment Inspection, can | erations <u>OR</u> NOTIFIED<br>Pre-Criticality<br>be performed.               |  |  |  |  |  |
| c. REQUEST Shift Manager log c<br>Operations inspection.                                    | completion of REQUESTED                                                       |  |  |  |  |  |
| 2. ESTABLISH Containment Integrity<br>(Refer to N-0-01-CLF).                                | per N-0-01-CLD. ESTABLISHED                                                   |  |  |  |  |  |
| <ol> <li>VERIFY RCS Vent System tested a<br/>SP-36-139 and N-RC-36D-CLC. (Re</li> </ol>     | nd isolated per TESTED <u>AND</u><br>fer to N-O-O1-CLF). ISOLATED             |  |  |  |  |  |
| 4. VERIFY Cold Shutdown ISI tests<br>SP-55-167-6.                                           | completed per COMPLETED                                                       |  |  |  |  |  |
| 5. VERIFY Instrument Buses energiz<br>inverters:                                            | ed from associated                                                            |  |  |  |  |  |
| • BRA-113 and BRA-113 extension                                                             | ENERGIZED                                                                     |  |  |  |  |  |
| • BRA-114                                                                                   | ENERGIZED                                                                     |  |  |  |  |  |
| <u>CONTINUE</u>                                                                             | <u>D</u>                                                                      |  |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION<br>KEWAUNEE NUCLEAR POWER PLANT                                                                      |                                     | NO. N-0-01                                                                 |           |            |              |
|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------------------------------------------------|-----------|------------|--------------|
|                                                                                                                                           |                                     | TITLE Plant Startup from Cold Shutdown<br>Condition to Hot Shutdown Condit |           |            |              |
| OPERATING PROCEDURE                                                                                                                       | DATE                                | AUG 12 2004                                                                | PAGE      | 8          | <b>of</b> 13 |
|                                                                                                                                           |                                     |                                                                            |           | <u>INI</u> | TIALS        |
| 4.19<br><u>CONTINUED</u>                                                                                                                  |                                     |                                                                            |           |            |              |
| <ul> <li>BRB-113 and BRB-113 extension</li> </ul>                                                                                         | ı                                   |                                                                            | ENERGIZE  | ED         |              |
| • BRB-114                                                                                                                                 |                                     |                                                                            | ENERGIZI  | ED         |              |
| <ol> <li>VERIFY Instrument Inverters ali<br/>source <u>AND</u> DC source operable:</li> </ol>                                             | igned to                            | their DC                                                                   |           |            |              |
| • BRA-111 and BRA-112                                                                                                                     |                                     |                                                                            | OPERABI   | .E         |              |
| • BRB-111 and BRB-112                                                                                                                     |                                     |                                                                            | OPERABI   | .E         |              |
| 7. VERIFY required annunciators operable.                                                                                                 |                                     |                                                                            | OPERABI   | .E         |              |
| 8. ESTABLISH conditions for tagout per GNP 3.3.1.                                                                                         | ts in Cor                           | ntainment                                                                  | ESTABLISH | ED         |              |
| <ol> <li>VERIFY primary chemistry requir<br/>CHEM-40.001, Primary Chemistry<br/>Specifications, for RCS tempera<br/>satisfied.</li> </ol> | rements p<br>Sample<br>ature >25    | ber<br>50°F are                                                            | SATISFI   | ED         |              |
| 10. VERIFY secondary chemistry requ<br>CHEM-41.001, Secondary Chemistu<br>Specifications, for RCS tempera<br>satisfied.                   | uirements<br>ry Sample<br>ature >25 | s per<br>9<br>50°F are                                                     | SATISFI   | ED         |              |
|                                                                                                                                           |                                     |                                                                            |           |            |              |
|                                                                                                                                           |                                     |                                                                            |           |            |              |
|                                                                                                                                           |                                     |                                                                            |           |            |              |
|                                                                                                                                           |                                     |                                                                            |           |            |              |
|                                                                                                                                           |                                     |                                                                            |           |            |              |
|                                                                                                                                           |                                     |                                                                            |           |            |              |
|                                                                                                                                           |                                     |                                                                            |           |            |              |
|                                                                                                                                           |                                     |                                                                            |           |            |              |

| WISCONSIN PL                                   | BLIC SERVICE CORPORATION                                                                                  | NO. N-0-01                                                                   |                                 |                  |              |       |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|---------------------------------|------------------|--------------|-------|
| KEWAUNE                                        | E NUCLEAR POWER PLANT                                                                                     | TITLE Plant Startup from Cold Shutdown<br>Condition to Hot Shutdown Conditio |                                 |                  |              |       |
| OPER                                           | OPERATING PROCEDURE DATE AUG 12 2004 PAGE 9 c                                                             |                                                                              |                                 |                  |              |       |
|                                                |                                                                                                           |                                                                              |                                 | _                | <u>INI</u> . | TIALS |
|                                                | CAUTI                                                                                                     | <u></u><br><u>DN</u>                                                         | <u> </u>                        | , <u></u>        |              |       |
| <ul> <li>RHR Suc<br/>isolate</li> </ul>        | tion Reliefs are set at appro<br>d until both RCS Cold Leg Te                                             | oximately 475 ps                                                             | sig and s<br>200°F.             | shall <u>NOT</u> | be           |       |
| • Maintai                                      | n a minimum of 30°F RCS Subc                                                                              | ooling during he                                                             | eatup.                          |                  |              |       |
| 1                                              |                                                                                                           |                                                                              |                                 |                  |              |       |
| 4.20 <u>WHEN</u> C<br>follow                   | ontainment Integrity is estal<br>ing:                                                                     | blished, PERFORM                                                             | 1                               |                  |              |       |
| <u>NOTE</u> :                                  | Heat up of RCS and Pressuriz<br>concurrently to minimize far<br>and Surge Line.                           | zer should be do<br>tigue stress to                                          | one<br>Pressuri                 | zer              |              |       |
| 1. HE<br>N-                                    | AT UP Pressurizer and ESTABL<br>RC-36C.                                                                   | ISH steam bubble                                                             | e per                           |                  |              |       |
| a.                                             | <u>WHEN</u> Intermediate Shutdown<br>INITIATE performance of SP<br>Instrument Channel Checks.             | is entered,<br>87-125, Shift                                                 |                                 | PERFORME         | D            | ·,    |
| 2. (C<br>(s<br>St                              | AS) Continue RCS Heatup.<br>ee Precautions 2.0, Step 2.3<br>ep 2.3.9)                                     | .5 and 2.0,                                                                  |                                 | CONTINUE         | D            | _     |
| a.                                             | <u>WHEN</u> S/G pressure reaches<br>vent path per N-MS-06.                                                | 20 psig, ISOLATI                                                             | Ξ                               | ISOLATE          | D            |       |
| b.                                             | b. <u>WHEN</u> S/G pressure reaches 50 psig, VERIFY WARMED<br>traps warm per applicable steps of N-TD-13. |                                                                              |                                 |                  |              |       |
| <u>NOTE</u> : Durin<br>least<br>energ<br>Surge | g RCS Heatup, with a bubble<br>two backup groups of Pressu<br>ized to minimize fatigue stru<br>Line.      | in the pressuriz<br>rizer Heaters sl<br>ess to Pressuriz                     | zer, at<br>nould ren<br>zer and | nain             |              |       |
| 4.21 VERIFY<br>Heater                          | 4.21 VERIFY at least two backup groups of Pressurizer AT LEAST TWO<br>Heaters energized. GROUPS           |                                                                              |                                 |                  |              |       |
| 4.22 (CAS)                                     | <u>IF</u> required, PERFORM SP 36-0                                                                       | 18.                                                                          | PEF                             | RFORMED/N        | A            | _     |
|                                                |                                                                                                           | oach S/C nor                                                                 | г                               | TADLICUE         | 'n           |       |

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| wisco | ONSIN PUBLIC SERVICE CORPORATION                                                                                                                                        | NO. N-0-01                                                                              |                      |  |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------|--|
| к     | EWAUNEE NUCLEAR POWER PLANT                                                                                                                                             | <b>TITLE</b> Plant Startup from Cold Shutdor<br>Condition to Hot Shutdown Cond          |                      |  |
|       | OPERATING PROCEDURE                                                                                                                                                     | DATE AUG 12 2004                                                                        | <b>PAGE</b> 10 of 13 |  |
|       |                                                                                                                                                                         |                                                                                         | <u>INITIALS</u>      |  |
| 4.24  | IF required, PERFORM SP 34-285.                                                                                                                                         | PE                                                                                      | RFORMED/NA           |  |
| 4.25  | HEAT UP RCS to 340-350°F and PERFO<br>(See Precautions 2.0, Step 2.3.5 at                                                                                               | RM following:<br>nd 2.0, Step 2.3.9).                                                   |                      |  |
|       | <ol> <li>Prior to RCS Hot Leg Wide Range<br/>exceeding 350°F, VERIFY steam<br/>Equivalent I-131 shall &lt;0.1 mi<br/>Precautions 2.0, Step 2.3.11)</li> </ol>           | e Temperature <0<br>generator Dose<br>crocuries/gram. (See                              | .1 μCURIES<br>/GRAM  |  |
|       | <ol> <li>Prior to RCS Hot Leg Wide Range<br/>exceeding 350°F, VERIFY require<br/>are satisfied.</li> </ol>                                                              | e Temperature<br>ements of N-O-O1-CLC                                                   | SATISFIED            |  |
| 4.26  | 4.26 SHUT DOWN and ALIGN RHR for at power operation per SHUTDOWN <u>AND</u><br>N-RHR-34 prior to RCS Hot Leg Temperatures exceeding ALIGNED<br>400°F.                   |                                                                                         |                      |  |
| 4.27  | PERFORM one of the following:                                                                                                                                           |                                                                                         |                      |  |
|       | 1. <u>IF</u> required, PERFORM SP 34-204                                                                                                                                | A, PE                                                                                   | RFORMED/NA           |  |
|       | <u>OR</u>                                                                                                                                                               |                                                                                         |                      |  |
|       | 2. <u>IF</u> SP 34-204A is <u>NOT</u> required,<br>SP 34-204A to fill SI Accumula                                                                                       | PERFORM partial PE<br>tor injection lines.                                              | RFORMED/NA           |  |
| 4.28  | <u>WHEN</u> RHR is shut down and aligned<br>INITIATE lithium hydroxide additio<br>achieve RCS chemistry specificatio<br>Primary Chemistry Sample Specifica<br>critical. | for power operation,<br>ns as necessary to<br>ns per CHEM-40.001,<br>tions, for Reactor | ADDED                |  |
|       |                                                                                                                                                                         |                                                                                         |                      |  |
|       |                                                                                                                                                                         |                                                                                         |                      |  |
|       |                                                                                                                                                                         |                                                                                         |                      |  |
|       |                                                                                                                                                                         |                                                                                         |                      |  |
|       |                                                                                                                                                                         |                                                                                         |                      |  |
|       |                                                                                                                                                                         |                                                                                         |                      |  |
|       |                                                                                                                                                                         | · ·                                                                                     |                      |  |

| W  | /ISCO                                                                                                   | NSIN                                                                                                                          | PUBLIC SERVICE CORPORATION                                                                          | NO. N-0-01                                                  |                  |  |  |  |
|----|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------|------------------|--|--|--|
|    | <b>KEWAUNEE NUCLEAR POWER PLANT</b> TITLE Plant Startup from Cold Shutdo Condition to Hot Shutdown Cond |                                                                                                                               |                                                                                                     |                                                             |                  |  |  |  |
|    | OPERATING PROCEDURE DATE AUG 12 2004 PAGE 11 or                                                         |                                                                                                                               |                                                                                                     |                                                             |                  |  |  |  |
|    | INITIALS                                                                                                |                                                                                                                               |                                                                                                     |                                                             |                  |  |  |  |
|    |                                                                                                         |                                                                                                                               | CAUTIC                                                                                              | <u>N</u>                                                    |                  |  |  |  |
|    | <u>WHE</u><br>Pre<br>fat                                                                                | <u>N</u> RC<br>ssur<br>igue                                                                                                   | S temperature is >350°F <u>AND</u> a sizer, RCS subcooling should be stress to Pressurizer and Surg | steam bubble is formed<br>maintained 30-200°F t<br>ge Line. | in<br>o minimize |  |  |  |
| 4. | .29                                                                                                     | HEAT<br>foll<br>Step                                                                                                          | UP and PRESSURIZE RCS per N-R(<br>owing: (see Precautions 2.0, 9<br>2.3.9, and 2.0, Step 2.3.13)    | C-36C and PERFORM<br>Step 2.3.5, 2.0,                       |                  |  |  |  |
|    |                                                                                                         | 1.                                                                                                                            | During heatup, COMPLETE N-MS-00<br>N-0-01-CLF).                                                     | 5-CL. (Refer to                                             | COMPLETED        |  |  |  |
|    |                                                                                                         | 2.                                                                                                                            | . At 400 psig S/G pressure, START UP AFW System per STARTED<br>N-FW-05B.                            |                                                             |                  |  |  |  |
|    |                                                                                                         | 3.                                                                                                                            | <u>IF</u> required, at 950 psig RCS p<br>SP-33-144.                                                 | ressure, PERFORM P                                          | ERFORMED/NA      |  |  |  |
|    |                                                                                                         | 4.                                                                                                                            | At 1000 psig RCS pressure, ALIG<br>System per N-SI-33-CL, Appendia                                  | GN Safety Injection<br>k A.                                 | ALIGNED          |  |  |  |
|    |                                                                                                         | 5. J                                                                                                                          | <u>WHEN</u> PRZR pressure reaches 1800                                                              | D-1900 psig:                                                |                  |  |  |  |
|    |                                                                                                         | i                                                                                                                             | a. HOLD Pressurizer pressure :<br>pressure in both S/Gs >600                                        | 1800-1900 until<br>psig.                                    | >600 PSIG        |  |  |  |
|    |                                                                                                         | !                                                                                                                             | <ul> <li>PLACE Pressurizer pressure<br/>N-RC-36C.</li> </ul>                                        | control in auto per                                         | AUTO             |  |  |  |
| Ι  |                                                                                                         | <b>6.</b>                                                                                                                     | Prior to exceeding 500°F RCS to<br>the following:                                                   | emperature, PERFORM                                         |                  |  |  |  |
|    |                                                                                                         | a. VERIFY RCS total specific activity meets VERIFIED<br>requirements of Tech Spec 3.1.c. (see<br>Precaution 2.0, Step 2.3.11) |                                                                                                     |                                                             |                  |  |  |  |
| 1  |                                                                                                         | 1                                                                                                                             | b. VERIFY N-0-01-CLG completed                                                                      | d.                                                          | VERIFIED         |  |  |  |
|    |                                                                                                         | 7.                                                                                                                            | 7. At 2000 psig RCS pressure, VERIFY automatic UNBLOCKED<br>unblocking of Safety Injection.         |                                                             |                  |  |  |  |
|    |                                                                                                         |                                                                                                                               |                                                                                                     |                                                             |                  |  |  |  |

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| wisco                                                                                            | DNSIN PUBLIC SERVICE CORPORATION                                                                                              | <b>NO.</b> N                                                                           | -0-01                            |                                 |                   |
|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------|---------------------------------|-------------------|
| K                                                                                                | EWAUNEE NUCLEAR POWER PLANT                                                                                                   | EE NUCLEAR POWER PLANT Plant Startup from Cold Shutdown Condition to Hot Shutdown Cond |                                  |                                 | hutdowr<br>Condit |
| OPERATING PROCEDURE DATE AUG 12 2004 PAGE                                                        |                                                                                                                               |                                                                                        |                                  |                                 |                   |
|                                                                                                  |                                                                                                                               |                                                                                        |                                  | <u>IN</u>                       | ITIALS            |
| 4.30                                                                                             | (CAS) ESTABLISH Secondary Sampling Chemistry directions.                                                                      | per N-SS                                                                               | -29A and                         |                                 |                   |
|                                                                                                  | <ol> <li>Prior to using S/G PORVs, VERING<br/>OR ESTABLISH alternate sampling</li> </ol>                                      | FY R-19 i<br>g per ODC                                                                 | n service V<br>M. E              | ERIFIED <u>OR</u><br>STABLISHED |                   |
| 4.31                                                                                             | [*] BACK SEAT valves per N-O-O1-CLE<br>N-O-O1-CLF).                                                                           | E. (Refer                                                                              | to                               | BACKSEATED                      |                   |
| 4.32                                                                                             | <u>IF</u> required, REQUEST ISI Group PERF<br>Boiler and Pressure Vessel Code Cla                                             | FORM SP-3<br>ass I Pre                                                                 | 6-267, ASME<br>ssure Test.       | REQUESTED                       |                   |
| 4.33                                                                                             | <u>WHEN</u> RCS temperature is >540°F, NOT configuration monitoring is per GNN                                                | TIFY STA<br>-08.21.0                                                                   | that<br>1.                       | NOTIFIED                        |                   |
| 4.34                                                                                             | [*] <u>WHEN</u> RCS temperature is >540°F:                                                                                    | :                                                                                      |                                  |                                 |                   |
| <ol> <li>DILUTE RCS to Hot Shutdown Xenon free boron<br/>concentration per N-CVC-35A.</li> </ol> |                                                                                                                               |                                                                                        |                                  | DILUTED/NA                      |                   |
|                                                                                                  | <u>OR</u>                                                                                                                     |                                                                                        |                                  |                                 |                   |
|                                                                                                  | <ol> <li><u>IF</u> recovering from refueling, P<br/>concentration as required by Re<br/>until initial criticality.</li> </ol> | MAINTAIN<br>Pactor En                                                                  | RCS boron M<br>gineering         | AINTAINED/<br>NA                |                   |
|                                                                                                  | CAUTIO                                                                                                                        | <u>DN</u>                                                                              |                                  | <u>.</u> .                      |                   |
| Ad<br>CV<br>th                                                                                   | justing RXCP seal injection flow wit<br>C-204B are initially positioned per<br>e charging pump relief valves.                 | thout ens<br>N-CVC-35                                                                  | uring CVC-204A<br>B-CL may resul | and<br>t in lifting             |                   |
| 4.35                                                                                             | VERIFY seal injection valves correc                                                                                           | ctly thro                                                                              | ttled:                           |                                 |                   |
|                                                                                                  | <ol> <li>Dispatch operators to CVC-204A<br/>Supply Line Throttle, and charge</li> </ol>                                       | (B), A(B)<br>ging pump                                                                 | RXCP Seal<br>s.                  | DISPATCHED                      |                   |
|                                                                                                  | 2. ESTABLISH communication with op                                                                                            | perators.                                                                              | E                                | STABLISHED                      |                   |
|                                                                                                  | 3. VERIFY Pressurizer level is app                                                                                            | oroximate                                                                              | ly 40%.                          | ≈40% <u></u>                    |                   |
|                                                                                                  | 4. VERIFY Letdown ISOLATED.                                                                                                   |                                                                                        |                                  | ISOLATED_                       |                   |
|                                                                                                  | CONTINUI                                                                                                                      | <u>ED</u>                                                                              |                                  |                                 |                   |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                           | NO. N-0-01                                                                                        |                      |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                   | TITLE Plant Startup from Cold Shutdown<br>Condition to Hot Shutdown Condition                     |                      |  |  |  |
| OPERATING PROCEDURE                                                                                                            | DATE AUG 12 2004                                                                                  | <b>PAGE</b> 13 of 13 |  |  |  |
|                                                                                                                                |                                                                                                   | INITIALS             |  |  |  |
| 4.35<br><u>CONTINUED</u>                                                                                                       |                                                                                                   |                      |  |  |  |
| 5. STOP one Charging Pump.                                                                                                     |                                                                                                   | STOPPED              |  |  |  |
| 6. DECREASE running Charging Pump<br>MINIMUM SPEED.                                                                            | controller to                                                                                     | MINIMUM<br>SPEED     |  |  |  |
| <ol> <li>CLOSE CVC-7/CV-31103, Charging<br/>Valve.</li> </ol>                                                                  | Line Flow Control                                                                                 | CLOSED               |  |  |  |
| <ol> <li>VERIFY #1 seal injection flow<br/>indicate 6-8 gpm per RXCP.</li> </ol>                                               | 8. VERIFY #1 seal injection flow FI-115 and FI-116 6-8 gpm per<br>indicate 6-8 gpm per RXCP. RXCP |                      |  |  |  |
| 9. <u>IF</u> Hot Shutdown conditions are<br>maintained for greater than a<br>automatic Pressurizer level com<br>per N-CVC-35B. | going to be<br>few hours, ESTABLISH<br>ntrol for shutdown                                         | ESTABLISHED/<br>NA   |  |  |  |
| 10. RESTART charging pumps, RESTOR<br>ADJUST CVCS flows per N-CVC-35                                                           | E letdown, and<br>B.                                                                              | PERFORMED            |  |  |  |
| 4.36 MAINTAIN RCS temperature at 545-55<br>level 33-50%.                                                                       | D°F, and S/G NR                                                                                   | MAINTAINED           |  |  |  |
| 4.37 ESTABLISH Steam Generator blowdown                                                                                        | per N-BT-07A.                                                                                     | ESTABLISHED          |  |  |  |
|                                                                                                                                |                                                                                                   |                      |  |  |  |

| WISCONSIN PUBLIC SERVICE                                                                                                                                                                           | NO. N-0-02                                                                                                                                                                                                                                                                                |                                          | REV AN                                       |                                                     |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------|-----------------------------------------------------|--|
| KEWAUNEE NUCLEAR POV                                                                                                                                                                               | TITLE 3                                                                                                                                                                                                                                                                                   | lant Startup<br>5% Power                 | From Hot Shutdown to                         |                                                     |  |
| OPERATING PROCE                                                                                                                                                                                    | DURE                                                                                                                                                                                                                                                                                      | date S                                   | EP 23 2004                                   | PAGE 1 of 13                                        |  |
| REVIEWED BY Mark (                                                                                                                                                                                 | G Kultgen                                                                                                                                                                                                                                                                                 | APPRO                                    | VED BY                                       | Phillip A Short                                     |  |
| NUCLEAR XES<br>SAFETY RELATED NO                                                                                                                                                                   | PORC REVIEW<br>REQUIRED                                                                                                                                                                                                                                                                   | ⊠ YES<br>□ NO                            | SRO APPROV<br>TEMPORARY<br>REQUIRED          | AL OF 🖾 YES<br>CHANGES 🗌 NO                         |  |
| 1.0 <u>INTRODUCTION</u><br>1.1 Purpose of procedure                                                                                                                                                | e is to start-u                                                                                                                                                                                                                                                                           | p reactor a                              | nd power gen                                 | erating                                             |  |
| systems from Hot Shu<br>1.2 Steps marked with ((<br>shall be initialed H<br>local operator that<br>that completed the s                                                                            | <ul> <li>1.2 Steps marked with (CR/L) have two initial signoff lines. These steps shall be initialed by the control room operator when informed by the local operator that the step is completed <u>AND</u> by the local operator that the step upon returning from the field.</li> </ul> |                                          |                                              |                                                     |  |
| 1.3 "CAS" indicates a Co<br>long duration and do<br>the step requires a                                                                                                                            | ontinuous Actio<br>Des <u>NOT</u> have to<br>certain plant                                                                                                                                                                                                                                | n Statement<br>be complet<br>condition p | . It signif<br>ed before co<br>prior to bein | ies a step of<br>ntinuing <u>OR</u><br>g performed. |  |
| 2.0 PRECAUTIONS AND LIMITATIC                                                                                                                                                                      | <u>INS</u>                                                                                                                                                                                                                                                                                |                                          |                                              |                                                     |  |
| 2.1 When reactor trip by<br>Shutdown boron conce                                                                                                                                                   | reakers are clo<br>entration, then                                                                                                                                                                                                                                                        | sed <u>AND</u> RCS<br>both RXCPs         | is <u>NOT</u> bora<br>shall be in            | ted to Cold<br>operation.                           |  |
| 2.2 When reactor power to conditions may exist Feedwater train inor                                                                                                                                | s less than 15<br>without decla<br>perable:                                                                                                                                                                                                                                               | <b>%,</b> then any ring corres           | of the foll<br>ponding Auxi                  | owing<br>liary                                      |  |
| 1. Auxiliary Feedwa<br>in Pullout.                                                                                                                                                                 | iter Pump contr                                                                                                                                                                                                                                                                           | ol switches                              | in Control                                   | Room may be .                                       |  |
| 2. AFW-2A and AFW-2<br>closed.                                                                                                                                                                     | 2B, AFW Pump A/                                                                                                                                                                                                                                                                           | B Flow CV's                              | , may be thr                                 | ottled or                                           |  |
| 3. AFW-10A and AFW-<br>closed.                                                                                                                                                                     | <ol> <li>AFW-10A and AFW-10B, AFW Train A/B Crossover Valves, may be<br/>closed.</li> </ol>                                                                                                                                                                                               |                                          |                                              |                                                     |  |
| 2.3 Except during Low Po<br>from Criticality to<br>administrative limit                                                                                                                            | 2.3 Except during Low Power Physics testing, when increasing reactor power from Criticality to the Point of Adding Heat, do <u>NOT</u> exceed the administrative limit of a 0.5 DPM sustained startup rate.                                                                               |                                          |                                              |                                                     |  |
| 2.4 When <u>NOT</u> required by a Shutdown mode or other procedure in effect,<br>then extended low power operation with Main Steam Isolation Valves<br>(MSIV) closed should be avoided. [CA002847] |                                                                                                                                                                                                                                                                                           |                                          |                                              |                                                     |  |

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## WISCONSIN PUBLIC SERVICE CORPORATION

**OPERATING PROCEDURE** 

KEWAUNEE NUCLEAR POWER PLANT

| ION | NO. N | -0-02                      |          |                |
|-----|-------|----------------------------|----------|----------------|
|     | TITLE | Plant Startup<br>35% Power | From Hot | Shutdown to    |
|     | DATE  | SEP 23 2004                | PAGE     | 2 <b>of</b> 13 |

## 3.0 INITIAL CONDITIONS

- 3.1 N-O-O2-CLA in progress. (Refer to N-O-O1-CLF). [PCR011594]
- 3.2 Both RXCPs are operating.
- 3.3 Tave 540-549°F.
- 3.4 RCS pressure 2220-2250 psig.
- 3.5 Pressurizer level 21-40%.
- 3.6 Chemical and Volume Control System operating.
- 3.7 Steam Generator NR level 33-50%.

| WISCONSIN PUBLIC SERVICE CORPORATION NO. N-0-02                                              |                                     |  |  |  |
|----------------------------------------------------------------------------------------------|-------------------------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT Plant Startup From Hot Shutdown to 35% Power                    |                                     |  |  |  |
| OPERATING PROCEDURE                                                                          | DATE SEP 23 2004 PAGE 3 of 13       |  |  |  |
|                                                                                              | INITIALS                            |  |  |  |
| 4.0 <u>PROCEDURE</u>                                                                         |                                     |  |  |  |
| <u>NOTE</u> : Steps 4.8 through 4.12 and Steps<br>performed before Steps 4.1 throug          | 4.14 through 4.18 may be<br>gh 4.7. |  |  |  |
| 4.1 (CAS) REVIEW SER Point Disable/Enal<br>Points as required.                               | ble Log and ENABLE COMPLETED        |  |  |  |
| 4.2 SET ARTO Feedwater Flow Correction<br>from RD-11.7, Feedwater Flow Correc<br>[PCR010065] | Factors to value<br>ction Factors:  |  |  |  |
| • ARTO Correction Factor for 466                                                             | SET                                 |  |  |  |
| • ARTO Correction Factor for 467                                                             | SET                                 |  |  |  |
| • ARTO Correction Factor for 476                                                             | SET                                 |  |  |  |
| <ul> <li>ARTO Correction Factor for 477</li> </ul>                                           | SET                                 |  |  |  |
| 4.3 START UP Control Rod Drive System per N-CRD-49. STARTED                                  |                                     |  |  |  |
| 4.4 ESTABLISH conditions and CYCLE value                                                     | ves as follows:                     |  |  |  |
| CAUTIO                                                                                       | <u>DN</u>                           |  |  |  |
| Starting a Safety Injection Pump with the pump.                                              | SI-208 or SI-209 closed may damage  |  |  |  |
| 1. CLOSE SI-209/MV-32130, SI Reci                                                            | rculation To RWST. CLOSED           |  |  |  |
| 2. CYCLE SI-351A/MV-32113, Cntmt S<br>Pump A.                                                | Sump B Supply to RHR CYCLED         |  |  |  |
| 3. CYCLE SI-350A/MV-32102, Cntmt S<br>Pump A.                                                | Sump B Supply to RHR CYCLED         |  |  |  |
| 4. CYCLE SI-351B/MV-32114, Cntmt S<br>Pump B.                                                | Sump B Supply to RHR CYCLED         |  |  |  |
| 5. CYCLE SI-350B/MV-32103, Cntmt S<br>Pump B.                                                | Sump B Supply to RHR CYCLED         |  |  |  |
| CONTINUED                                                                                    |                                     |  |  |  |
|                                                                                              |                                     |  |  |  |

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| KEWAUNEE NUCLEAR POWER PLANT         |                                                            | TITLE Plant Startup From Hot Shutdown to 35% Power |                     |  |
| O                                    | PERATING PROCEDURE                                         | <b>DATE</b> SEP 23 2004                            | <b>PAGE</b> 4 of 13 |  |
|                                      |                                                            |                                                    | INITIALS            |  |
| 4.4                                  |                                                            |                                                    |                     |  |
| CONTINUED                            |                                                            |                                                    |                     |  |
| 6.                                   | OPEN SI-209/MV-32130, SI Recire                            | culation To RWST.                                  | OPEN                |  |
| 7.                                   | PLACE Safety Injection Pump A                              | to PULLOUT.                                        | PULLOUT             |  |
|                                      | a. RECORD time Safety Injection in PULLOUT.                | on Pump A                                          | TIME                |  |
| 8.                                   | CLOSE SI-5A/MV-32107, SI Pump /                            | A Suction Isolation.                               | CLOSED              |  |
|                                      | a. RECORD time SI-5A closed.                               | ·                                                  | TIME                |  |
| 9.                                   | OPEN RHR-299A/MV-32134, RHR Hx<br>Pump A.                  | Outlet to SI                                       | - OPEN              |  |
| l                                    | a. RECORD time RHR-299A opened                             | i                                                  | TIME                |  |
| 10.                                  | CLOSE RHR-299A.                                            |                                                    | CLOSED              |  |
| [                                    | a. RECORD time RHR-299A closed                             | i. <u> </u>                                        | TIME                |  |
|                                      | b. Independent Verification:<br>RHR-299A CLOSED            |                                                    | CLOSED              |  |
| 11.                                  | OPEN SI-5A/MV-32107, SI Pump A                             | Suction Isolation.                                 | OPEN                |  |
| 1                                    | a. RECORD time SI-5A opened.                               | _                                                  | TIME                |  |
|                                      | b. Independent Verification:<br>SI-5A OPEN                 |                                                    | OPEN                |  |
| 12.                                  | PLACE Safety Injection Pump A                              | to AUTO.                                           | AUTO                |  |
|                                      | a. RECORD time Safety Injection Pump A in AUTO.            |                                                    | TIME                |  |
|                                      | b. Independent Verification:<br>Safety Injection Pump A in | AUTO                                               | AUTO                |  |
| 13.                                  | PLACE Safety Injection Pump B                              | to PULLOUT.                                        | PULLOUT             |  |
| 1                                    | a. RECORD time Safety Injection                            | on Pump B                                          | TIME                |  |
| I                                    | in PULLOUT.<br><u>CONTINU</u>                              | ED                                                 |                     |  |

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| KEWAUNEE NUCLEAR POWER PLANT         |                                                                                  | TITLE Plant Startup From Hot Shutdown to 35% Power |                     |  |
| O                                    | PERATING PROCEDURE                                                               | <b>DATE</b> SEP 23 2004                            | <b>PAGE</b> 5 of 13 |  |
|                                      |                                                                                  |                                                    | INITIALS            |  |
| 4.4                                  |                                                                                  |                                                    |                     |  |
| CONTINUED                            |                                                                                  |                                                    |                     |  |
| 14.                                  | CLOSE SI-5B/MV-32108, SI Pump E<br>Isolation.                                    | 3 Suction                                          | CLOSED              |  |
| I                                    | a. RECORD time SI-5B closed.                                                     | _                                                  | TIME                |  |
| 15.                                  | OPEN RHR-299B/MV-32135, RHR Hx<br>Pump B.                                        | Outlet to SI                                       | OPEN                |  |
| 1                                    | a. RECORD time RHR-299B opened                                                   | i                                                  | TIME                |  |
| 16.                                  | 16. CLOSE RHR-299B.                                                              |                                                    | CLOSED              |  |
| I                                    | a. RECORD time RHR-299B closed.                                                  |                                                    | TIME                |  |
|                                      | <pre>b. Independent Verification:</pre>                                          |                                                    | CLOSED              |  |
| 17.                                  | OPEN SI-5B/MV-32108, SI Pump B                                                   | Suction Isolation.                                 | OPEN                |  |
| 1                                    | a. RECORD time SI-5B opened.                                                     | -                                                  | TIME                |  |
|                                      | b. Independent Verification:<br>SI-5B OPEN                                       |                                                    | OPEN                |  |
| 18.                                  | PLACE Safety Injection Pump B                                                    | to AUTO.                                           | AUTO                |  |
|                                      | a. RECORD time Safety Injection in AUTO.                                         | on Pump B                                          | TIME                |  |
|                                      | b. Independent Verification:<br>Safety Injection Pump B in                       | AUTO                                               | AUT0                |  |
| 19.                                  | COMPLETE Data Sheet 1 <u>AND</u> ROUT<br>Performance Indicator Technicia         | E a copy to<br>an.                                 | COMPLETED           |  |
| 4.5 NOT<br>of<br>Con                 | IFY Radiation Protection Contro<br>Containment access and will log<br>Itainment. | l Room is in control<br>people in/out of           | NOTIFIED            |  |
|                                      |                                                                                  |                                                    |                     |  |

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|   | <b>KEWAUNEE NUCLEAR POWER PLANT</b> TITLE Plant Startup From Hot Shutdown to 35% Power |                                                                                                       |                                                         |  |  |
|   |                                                                                        | OPERATING PROCEDURE                                                                                   | DATE SEP 23 2004 PAGE 6 of 13                           |  |  |
|   |                                                                                        |                                                                                                       | INITIALS                                                |  |  |
|   | 4.6                                                                                    | <u>IF</u> Reactor Startup is to be perform <u>THEN</u> PERFORM the following:                         | med per N-CRD-49B, APPLIES/NA                           |  |  |
|   |                                                                                        | 1. DETERMINE ECP per ONE of the f                                                                     | ollowing:                                               |  |  |
|   |                                                                                        | • N-CRD-49D                                                                                           | ECP/NA                                                  |  |  |
|   |                                                                                        | <ul> <li>RE-28, Manual Estimated Crit<br/>Calculation</li> </ul>                                      | ical Position ECP/NA                                    |  |  |
|   |                                                                                        | 2. WITHDRAW Shutdown Banks per N-                                                                     | CRD-49B. WITHDRAWN                                      |  |  |
|   |                                                                                        | <ol> <li>ESTABLISH RCS boron concentrat<br/>per N-CVC-35A.</li> </ol>                                 | ion at ECP value ESTABLISHED                            |  |  |
|   |                                                                                        | 4. PERFORM N-O-02-CLB. (Refer to                                                                      | N-O-O1-CLF). PERFORMED                                  |  |  |
|   |                                                                                        | 5. PERFORM Reactor startup by wit<br>Banks per N-CRD-49B.                                             | hdrawing Control PERFORMED                              |  |  |
|   | 4.7                                                                                    | <u>IF</u> Reactor Startup is to be perform<br>Initial Criticality by Dilution, <u>T</u><br>following: | med per RXT-01.00, APPLIES/NA<br><u>HEN</u> PERFORM the |  |  |
|   |                                                                                        | 1. PERFORM N-0-02-CLB. (Refer to                                                                      | N-O-O1-CLF). PERFORMED                                  |  |  |
|   |                                                                                        | 2. PERFORM Reactor startup per RX                                                                     | T-01.00. PERFORMED                                      |  |  |
|   | 4.8                                                                                    | VERIFY AMSAC System operable:                                                                         |                                                         |  |  |
| 1 |                                                                                        | 1. In Relay Rack 187, VERIFY the                                                                      | following:                                              |  |  |
|   |                                                                                        | <ul> <li>Toggle switch TS/L462 hood d</li> </ul>                                                      | own HOOD DOWN                                           |  |  |
| Ĺ |                                                                                        | <ul> <li>Toggle switch TS/L463B hood</li> </ul>                                                       | down HOOD DOWN                                          |  |  |
|   |                                                                                        | <ul> <li>Toggle switch TS/L472 hood d</li> </ul>                                                      | own HOOD DOWN                                           |  |  |
|   |                                                                                        | <ul> <li>Toggle switch TS/L473B hood</li> </ul>                                                       | down HOOD DOWN                                          |  |  |
|   |                                                                                        | <ul> <li>AMSAC Block Switch in normal</li> </ul>                                                      | NORMAL                                                  |  |  |
| 1 |                                                                                        | 2. VERIFY the following OFF:                                                                          |                                                         |  |  |
|   |                                                                                        | • AMSAC CHANNEL ABNORMAL (TLA-                                                                        | 16) OFF                                                 |  |  |
|   | CONTINUED                                                                              |                                                                                                       |                                                         |  |  |
|   |                                                                                        |                                                                                                       |                                                         |  |  |

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|----------------|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|---------------------|--|--|
| к              | EWAUNEE NUCLEAR POWER PLANT                                                                                           | TITLE Plant Startup From Hot Shutdown 1<br>35% Power |                     |  |  |
|                | OPERATING PROCEDURE                                                                                                   | <b>DATE</b> SEP 23 2004                              | <b>PAGE</b> 7 of 13 |  |  |
|                |                                                                                                                       |                                                      | INITIALS            |  |  |
| 4.8<br>CONTINU | FD                                                                                                                    |                                                      |                     |  |  |
| 00011110       | • AMSAC SYSTEM ACTUATED (47065-                                                                                       | -D)                                                  | 0FF                 |  |  |
|                | • AMSAC SYSTEM FAULT (47065-E)                                                                                        |                                                      | 0FF                 |  |  |
|                | • AMSAC SYSTEM IN TEST (47065-I                                                                                       | -)                                                   | 0FF                 |  |  |
| 4.9            | VERIFY Circulating Water System in<br>N-CW-04.                                                                        | operation per                                        | VERIFIED            |  |  |
| 4.10           | VERIFY Condensate System in operat                                                                                    | ion per N-CD-03.                                     | VERIFIED            |  |  |
| 4.11           | PERFORM the following steps per N-FW-05A:                                                                             |                                                      |                     |  |  |
|                | 1. RESET Main Feedwater Isolation                                                                                     | RESET                                                |                     |  |  |
|                | <ol> <li><u>IF</u> both FW Pumps were isolated<br/>Pumps were stopped, <u>THEN</u> VENT I<br/>and Headers.</li> </ol> | <u>OR</u> both Condensate<br>Feedwater Heaters       | VENTED/NA           |  |  |
|                | 3. STATION an observer and CYCLE I FW-10A, and FW-10B.                                                                | FW-7A, FW-7B,                                        | CYCLED              |  |  |
| 4.12           | (CAS) ESTABLISH initial conditions operation per N-TB-54.                                                             | for Turbine                                          | ESTABLISHED         |  |  |
|                |                                                                                                                       |                                                      |                     |  |  |
|                |                                                                                                                       |                                                      |                     |  |  |
|                |                                                                                                                       |                                                      |                     |  |  |
|                |                                                                                                                       |                                                      |                     |  |  |
|                |                                                                                                                       |                                                      |                     |  |  |
|                |                                                                                                                       |                                                      |                     |  |  |
|                |                                                                                                                       |                                                      |                     |  |  |
|                |                                                                                                                       |                                                      |                     |  |  |
|                |                                                                                                                       |                                                      |                     |  |  |
| l              |                                                                                                                       |                                                      |                     |  |  |

|   | WISCO                                                                                                                                                                                       | ONSIN PUBLIC SERVICE CORPORATION                                                                                     | NO. N-0-02                                                                    |                         |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------|
|   | к                                                                                                                                                                                           | EWAUNEE NUCLEAR POWER PLANT                                                                                          | TITLE Plant Startu<br>35% Power                                               | p From Hot Shutdown to  |
|   |                                                                                                                                                                                             | OPERATING PROCEDURE                                                                                                  | DATE SEP 23 2004                                                              | <b>PAGE</b> 8 of 13     |
|   |                                                                                                                                                                                             |                                                                                                                      |                                                                               | INITIALS                |
|   |                                                                                                                                                                                             | CAUTIO                                                                                                               | N                                                                             |                         |
|   | •                                                                                                                                                                                           | Except during Low Power Physics test<br>from Criticality to the Point of Add<br>administrative limit of a 0.5 DPM su | ing, when increasing<br>ing Heat, do <u>NOT</u> exce<br>stained startup rate. | reactor power<br>ed the |
|   | •                                                                                                                                                                                           | Rod withdrawals are limited to five<br>Reactivity Management.                                                        | step increments per G                                                         | NP-03.07.10,            |
|   | <u>NOTE</u> : If Steam Generator PORVs are controlling RCS temperature,<br>then reactor power should be maintained below the Point of<br>Adding Heat to avoid unnecessary makeup water use. |                                                                                                                      |                                                                               |                         |
| ł | <u>NOTE</u> :                                                                                                                                                                               | Increasing power above 2% is a mod<br>Mode.                                                                          | e change to Operating                                                         |                         |
|   | 4.13 INCREASE reactor power to Point of Adding Heat and PERFORMED<br>MAINTAIN Tave 540-549°F (computer point T0499A).                                                                       |                                                                                                                      |                                                                               |                         |
|   | 4.14 VERIFY Turbine on turning gear. VERIFIED                                                                                                                                               |                                                                                                                      |                                                                               | VERIFIED                |
|   | 4.15 (CAS) PERFORM Main Steam Line Warmup-RCS at Hot PERFORMED<br>Shutdown or Hot Standby, per N-MS-06.                                                                                     |                                                                                                                      |                                                                               | PERFORMED               |
| 1 | 4.16                                                                                                                                                                                        | <u>WHEN</u> Main Steam Line pressure is 22<br>START UP Air Removal System per N-A                                    | 0-240 psig, <u>THEN</u><br>R-09.                                              | STARTED                 |
|   | 4.17                                                                                                                                                                                        | <u>IF</u> any of the following are satisfi<br>RT-MS-06:                                                              | ed, <u>THEN</u> PERFORM                                                       | APPLIES/NA              |
|   |                                                                                                                                                                                             | 1. Plant is in startup from refuel                                                                                   | ing.                                                                          | APPLIES/NA              |
|   |                                                                                                                                                                                             | <u>OR</u>                                                                                                            |                                                                               |                         |
| : |                                                                                                                                                                                             | <ol> <li>Maintenance was performed on Ma<br/>Valve(s) during shutdown.</li> </ol>                                    | in Steam Isolation                                                            | APPLIES/NA              |
|   |                                                                                                                                                                                             | <u>OR</u>                                                                                                            |                                                                               |                         |
|   |                                                                                                                                                                                             | 3. Main Steam Isolation Valves wer<br>boundary for maintenance during                                                | e used as a tagout<br>shutdown.                                               | APPLIES/NA              |
|   |                                                                                                                                                                                             |                                                                                                                      |                                                                               |                         |

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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                          | TITLE Plant Startup From Hot Shutdown to 35% Power                                                                                                                                                                                |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                   | DATE SEP 23 2004 PAGE 9 of 13                                                                                                                                                                                                     |  |  |  |  |
| <ul> <li>4.18 VERIFY Carbohydrazide Injection to discharge in service per N-CI-28.</li> <li>4.19 START Feedwater Pump A(B) and TRAN control to FW-10A &amp; FW-10B per N-F</li> </ul> | 4.18       VERIFY Carbohydrazide Injection to Condensate Pump       VERIFIED         discharge in service per N-CI-28.       [PCR007868]         4.19       START Feedwater Pump A(B) and TRANSFER feedwater flow       COMPLETED |  |  |  |  |
| CAUTI                                                                                                                                                                                 | N                                                                                                                                                                                                                                 |  |  |  |  |
| If reactor power exceeds 10% before to will trip.                                                                                                                                     | urbine is latched, then reactor                                                                                                                                                                                                   |  |  |  |  |
| <u>NOTE</u> : Increasing power above 2% is a mo<br>Mode.                                                                                                                              | de change to Operating                                                                                                                                                                                                            |  |  |  |  |
| 4.20 INCREASE and MAINTAIN Reactor Powe<br>547-552°F using: [PCR007802]                                                                                                               | r 5-9% and RCS Tave PERFORMED                                                                                                                                                                                                     |  |  |  |  |
| <ul> <li>Rod Control</li> <li>Steam Dump Control per N-MS-06</li> </ul>                                                                                                               |                                                                                                                                                                                                                                   |  |  |  |  |
| 4.21 (CAS) PERFORM secondary cleanup as Chemistry:                                                                                                                                    | directed by                                                                                                                                                                                                                       |  |  |  |  |
| <ol> <li>FLUSH condenser per N-CD-03 as<br/>establish calculated condenser<br/>less than 2.0 μmho/cm.</li> </ol>                                                                      | necessary to FLUSHED/NA<br>cation conductivity                                                                                                                                                                                    |  |  |  |  |
| <ol> <li><u>WHEN</u> condenser flush is comple<br/>following:</li> </ol>                                                                                                              | te, PERFORM the APPLIES/NA                                                                                                                                                                                                        |  |  |  |  |
| a. CONTACT Chemistry for desi                                                                                                                                                         | red Blowdown Rate. CONTACTED                                                                                                                                                                                                      |  |  |  |  |
| b. INCREASE Steam Generator b<br>using Mode II if available                                                                                                                           | lowdown per N-BT-07A COMPLETED                                                                                                                                                                                                    |  |  |  |  |
| 4.22 (CAS) MAXIMIZE Makeup Demineralize<br>CST levels.                                                                                                                                | r output and RESTORE RESTORED                                                                                                                                                                                                     |  |  |  |  |
| 4.23 PERFORM trip test of Turbine Stop,<br>Intercept Valves, and OPC per N-TB                                                                                                         | Reheat Stop. PERFORMED<br>-54.                                                                                                                                                                                                    |  |  |  |  |
| 4.24 (CAS) <u>WHEN</u> plant conditions are st<br>and LOAD Turbine per N-TB-54.                                                                                                       | able, <u>THEN</u> START UP COMPLETED                                                                                                                                                                                              |  |  |  |  |
| 1                                                                                                                                                                                     |                                                                                                                                                                                                                                   |  |  |  |  |

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| KEWAUNEE NUCLEAR POWER PLANT TITLE Plant Startup From Hot Shutdown 1<br>35% Power                         |                                                                              |  |  |
| OPERATING PROCEDURE                                                                                       | DATE SEP 23 2004 PAGE 10 of 13                                               |  |  |
|                                                                                                           | INITIALS                                                                     |  |  |
| 4.25 <u>WHEN</u> S/G PORVs and Steam Dump Valv<br>SHIFT Steam Dump to Tave mode per                       | es are closed, <u>THEN</u> COMPLETED<br>N-MS-06.                             |  |  |
| 4.26 <u>WHEN</u> G-1 is closed <u>AND</u> HD Tank lev<br>30%, <u>THEN</u> START Heater Drain Pumps        | el is greater than STARTED<br>A & B per N-HD-11.                             |  |  |
| 4.27 (CAS) INCREASE Turbine and Reactor                                                                   | Power as follows:                                                            |  |  |
| <ol> <li>PERFORM reactivity estimate ba<br/>load increase.</li> </ol>                                     | sed on planned PERFORMED                                                     |  |  |
| 2. INCREASE load per N-TB-54.                                                                             | INCREASED                                                                    |  |  |
| 3. PERFORM reactivity adjustments                                                                         | using: PERFORMED                                                             |  |  |
| <ul><li>Rod Control</li><li>Boron Concentration Control</li></ul>                                         | per N-CVC-35A                                                                |  |  |
| 4.28 (CAS) ADJUST Heater Drain Pump spe<br>maintain equal loading on pumps.                               | ed, as required, to ADJUSTED                                                 |  |  |
| CAUTI                                                                                                     | <u>ON</u>                                                                    |  |  |
| If reactor power exceeds IR High Flux<br>reactor power exceeds PR High Flux Lo<br>then reactor will trip. | Trip setpoint before blocking, <u>OR</u><br>w Trip setpoint before blocking, |  |  |
| 4.29 <u>WHEN</u> status light, PR Perm P-10 (4<br>ON, <u>THEN</u> PERFORM the following:                  | 4905-0201), remains                                                          |  |  |
| • RECORD overlap data.                                                                                    | RECORDED                                                                     |  |  |
| • PRESS IR Block Train A and Train                                                                        | B pushbuttons. PRESSED                                                       |  |  |
| <ul> <li>VERIFY status light, IR Blocked</li> </ul>                                                       | (44905-0202), ON. VERIFIED                                                   |  |  |
| • PRESS PR Block Train A and Train                                                                        | B pushbuttons. PRESSED                                                       |  |  |
| <ul> <li>VERIFY status light, PR Low Setp<br/>(44905-0302), ON.</li> </ul>                                | t Blocked VERIFIED                                                           |  |  |
|                                                                                                           |                                                                              |  |  |

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| <b>KEWAUNEE NUCLEAR POWER PLANT</b><br><b>TITLE</b><br>Plant Startup From Hot Shutdown to<br>35% Power                    |                                      |  |  |  |
| OPERATING PROCEDURE                                                                                                       | DATE SEP 23 2004 PAGE 11 of 13       |  |  |  |
|                                                                                                                           | INITIALS                             |  |  |  |
| 4.30 <u>WHEN</u> Turbine Power is 44–70 MWe, ()<br>the following:                                                         | 7-11%), <u>Then</u> Perform          |  |  |  |
| <ol> <li>TRANSFER Feedwater Control to I<br/>Control Valves per N-FW-05A.</li> </ol>                                      | Main Feedwater COMPLETED             |  |  |  |
| 2. <u>IF</u> a Cold Start was performed, following:                                                                       | THEN OPEN the APPLIES/NA             |  |  |  |
| • MS-202B1, 1B Reheater Cont S                                                                                            | ta Bypass OPEN                       |  |  |  |
| <ul> <li>MS-202B2, 2B Reheater Cont S</li> </ul>                                                                          | ta Bypass OPEN                       |  |  |  |
| • MS-202A2, 2A Reheater Cont S                                                                                            | ta Bypass OPEN                       |  |  |  |
| <ul> <li>MS-202A1, 1A Reheater Cont S</li> </ul>                                                                          | ta Bypass OPEN                       |  |  |  |
| 4.31 <u>WHEN</u> Moisture Separator Inlet Steam Pressure is<br>6-8 psig, <u>THEN</u> VERIFY the following CLOSED:         |                                      |  |  |  |
| <ul> <li>MS-312A-1/SV-33389, Gland Seal S<br/>Relief Vlvs</li> </ul>                                                      | team to MSR A1 & A2 CLOSED           |  |  |  |
| • MS-312B-1/SV-33390, Gland Seal S<br>Relief Vlvs                                                                         | team to MSR B1 & B2 CLOSED           |  |  |  |
| 4.32 <u>WHEN</u> Turbine Power is 83-95 MWe (14)<br>the following:                                                        | 4-16%), <u>Then</u> Perform          |  |  |  |
| <ol> <li>CLOSE FW Heater 13A/B, 14A/B,<br/>Valves per N-HD-11.</li> </ol>                                                 | and 15A/B Vent CLOSED                |  |  |  |
| 2. ALIGN 4160V Bkrs to normal ope<br>N-EHV-39.                                                                            | rating lineup per ALIGNED            |  |  |  |
| 4.33 <u>WHEN</u> status light, Auto Rod Wdl Bl<br>(44905-0602), is OFF, <u>THEN</u> Control<br>may be positioned to AUTO. | ock P-2 AUTO/NA<br>Rod Bank Selector |  |  |  |
|                                                                                                                           |                                      |  |  |  |
|                                                                                                                           |                                      |  |  |  |
|                                                                                                                           |                                      |  |  |  |
|                                                                                                                           |                                      |  |  |  |
|                                                                                                                           |                                      |  |  |  |
|                                                                                                                           |                                      |  |  |  |

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|--|---------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------------------|----------------------|--|
|  | KEWAUNEE NUCLEAR POWER PLANT Plant Startup From Hot Shutdown to 35% Power |                                                                                                                  |                                             |                      |  |
|  | OPERATING PROCEDURE DATE SEP 23 2004 PAGE 12 of 1                         |                                                                                                                  |                                             | <b>PAGE</b> 12 of 13 |  |
|  |                                                                           |                                                                                                                  |                                             | <u>INITIALS</u>      |  |
|  | 4.34                                                                      | <u>WHEN</u> Turbine power is 107–131 MWe (<br>PERFORM the following:                                             | (18-22%), <u>THEN</u>                       |                      |  |
|  |                                                                           | 1. CLOSE Turbine drain and trap by N-TD-13.                                                                      | ypass valves per                            | CLOSED               |  |
|  |                                                                           | 2. POSITION FW Htr 11A/B & 12A/B :<br>CLOSE/AUTO per N-HD-11.                                                    | startup drains to                           | CLOSE/AUTO           |  |
|  |                                                                           | 3. POSITION one Charging Pump to                                                                                 | AUTO per N-CVC-35B.                         | AUT0                 |  |
|  |                                                                           | 4. (CR/L) Locally CLOSE the follo                                                                                | owing:                                      |                      |  |
|  |                                                                           | • C-307A, Exhaust Spray 1A Con                                                                                   | trol Station Bypass                         | CLOSED               |  |
|  | • C-307B, Exhaust Spray 1B CV Bypass CLOSED                               |                                                                                                                  |                                             | CLOSED               |  |
|  |                                                                           | CAUTI                                                                                                            | DN                                          |                      |  |
|  | Do                                                                        | <u>NOT</u> exceed 30% reactor power witho                                                                        | ut Chemistry approval                       | •                    |  |
|  | 4.35                                                                      | REQUEST Chemistry approval to incr<br>greater than 30%. [PCR007910]                                              | ease reactor power                          | REQUESTED            |  |
|  | 4.36                                                                      | <u>IF</u> performance of SP 54-064 is req<br>the following:                                                      | uired, <u>THEN</u> PERFORM                  | APPLIES/NA           |  |
|  |                                                                           | 1. INCREASE Turbine power greater                                                                                | than 25%.                                   | INCREASED            |  |
|  |                                                                           | 2. <u>WHEN</u> Turbine power greater that<br>of 8 hours, <u>THEN</u> REDUCE power a<br>from service per N-TB-54. | n 25% for a minimum<br>and REMOVE Generator | REMOVED              |  |
|  | 3. PERFORM SP 54-064.                                                     |                                                                                                                  | PERFORMED                                   |                      |  |
|  |                                                                           | 4. <u>GO</u> <u>TO</u> Step 4.24 to restart Tur                                                                  | bine.                                       | RESTARTED            |  |
|  | 4.37                                                                      | <u>WHEN</u> Turbine Power is 208 MWe (35% increase per N-TB-54.                                                  | ), <u>THEN</u> STOP load                    | STOPPED              |  |
|  | 4.38                                                                      | <u>IF</u> plant operation greater than 35<br><u>THEN</u> GO TO N-0-03.                                           | % power is planned,                         | TRANSITIONED<br>/NA  |  |

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**NO.** N-0-02

KEWAUNEE NUCLEAR POWER PLANT

TITLE Plant Startup From Hot Shutdown to 35% Power

**OPERATING PROCEDURE** 

| DATE | SEP 23 2004 | PAGE | 13 | <b>of</b> 13 |
|------|-------------|------|----|--------------|
|      |             |      | _  |              |

## <u>DATA SHEET NO. 1</u> (1 of 1)

DATE \_\_\_\_\_

| Procedure Step | Parameter                 | Value |
|----------------|---------------------------|-------|
| 4.4.7.a        | Time SI Pump A in Pullout |       |
| 4.4.8.a        | Time SI-5A closed         |       |
| 4.4.9.a        | Time RHR-299A opened      |       |
| 4.4.10.a       | Time RHR-299A closed      |       |
| 4.4.11.a       | Time SI-5A opened         |       |
| 4.4.12.a       | Time SI Pump A in Auto    |       |
| 4.4.13.a       | Time SI Pump B in Pullout |       |
| 4.4.14.a       | Time SI-5B closed         |       |
| 4.4.15.a       | Time RHR-299B opened      |       |
| 4.4.16.a       | Time RHR-299B closed      |       |
| 4.4.17.a       | Time SI-5B opened         |       |
| 4.4.18.a       | Time SI Pump B in Auto    |       |

Performed by:\_\_\_\_\_ Date:\_\_\_\_\_

Route a copy to: Performance Indicator Technician

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                            |                                                                                                                                                                                                                                |                                                                                         | NO. N-0-05                                                           |             | <b>REV</b> ΑΥ |  |  |
|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------|-------------|---------------|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                    |                                                                                                                                                                                                                                |                                                                                         | TITLE Plant Cooldown from Hot Shutdown to<br>Cold Shutdown Condition |             |               |  |  |
| OPERATING PROCEDURE                                                                                                             |                                                                                                                                                                                                                                |                                                                                         | DATE 0                                                               | OCT 06 2004 | PAGE 1 of 24  |  |  |
| REVIEWED BY Dale E Dykstra                                                                                                      |                                                                                                                                                                                                                                | APPROVED BY Phillip A Short                                                             |                                                                      |             |               |  |  |
| NUCLEAR XES PORC REVIEW<br>SAFETY RELATED NO                                                                                    |                                                                                                                                                                                                                                | <ul> <li>☑ YES SRO APPROVAL OF ☑ YES<br/>TEMPORARY CHANGES<br/>REQUIRED ☑ NO</li> </ul> |                                                                      |             |               |  |  |
| <ol> <li>1.0 <u>INTRODUCTION</u></li> <li>1.1 Procedure describes steps to take the plant from Hot to Cold Shutdown.</li> </ol> |                                                                                                                                                                                                                                |                                                                                         |                                                                      |             |               |  |  |
| 1.2                                                                                                                             | 2 When procedure is entered during implementation of IPEOPs, it will be<br>used as a guide to placing the plant in Cold Shutdown. The IPEOPs<br>are the guiding document in this case.                                         |                                                                                         |                                                                      |             |               |  |  |
| 1.3                                                                                                                             | Procedure is divided into 4 main sections:                                                                                                                                                                                     |                                                                                         |                                                                      |             |               |  |  |
|                                                                                                                                 | Prior to Cooldown from Hot Shutdown                                                                                                                                                                                            |                                                                                         |                                                                      |             |               |  |  |
|                                                                                                                                 | Cooldown using Main Steam                                                                                                                                                                                                      |                                                                                         |                                                                      |             |               |  |  |
|                                                                                                                                 | Cooldown/Depressurizing using RHR                                                                                                                                                                                              |                                                                                         |                                                                      |             |               |  |  |
|                                                                                                                                 | Cold Shutdown                                                                                                                                                                                                                  |                                                                                         |                                                                      |             |               |  |  |
| 1.4                                                                                                                             | Steps within each section should be performed in sequence, unless specifically stated a particular sequence is <u>NOT</u> required.                                                                                            |                                                                                         |                                                                      |             |               |  |  |
| 1.5                                                                                                                             | Steps marked with a (&) sign may be performed at any time within its particular section, but shall be started (and completed if possible) before leaving that section.                                                         |                                                                                         |                                                                      |             |               |  |  |
| 1.6                                                                                                                             | Each section shall be completed before starting the next section, unless stated certain actions are <u>NOT</u> dependent upon completion of previous section.                                                                  |                                                                                         |                                                                      |             |               |  |  |
| 1.7                                                                                                                             | "CAS" indicates a Continuous Action Statement. It signifies a step of long duration and does <u>NOT</u> have to be completed before continuing <u>OR</u> the step requires a certain plant condition prior to being performed. |                                                                                         |                                                                      |             |               |  |  |
|                                                                                                                                 |                                                                                                                                                                                                                                |                                                                                         |                                                                      |             |               |  |  |
| WISCONSIN PUBLIC SERVICE CORPOR | ATION |
|---------------------------------|-------|

NO. N-0-05

KEWAUNEE NUCLEAR POWER PLANT

TITLE Plant Cooldown from Hot Shutdown to Cold Shutdown Condition

**OPERATING PROCEDURE** 

## DATE OCT 06 2004 PAGE 2 of 24

2.0 PRECAUTIONS AND LIMITATIONS

- 2.1 When a reduction is made in boron concentration of RCS, at least one RXCP or one RHR Pump shall be operating.
- 2.2 When fuel is in the Reactor, there shall be at least one flow path to the core for boric acid injection.
- 2.3 When Reactor Vessel Head is installed, at least one Przr safety valve shall be operable or removed.
- 2.4 RCS temperature, pressure, and heatup rate shall be limited per figure RD-11.1 of Reactor Data Manual.
- 2.5 When any RCS Cold Leg temperature is less than 140°F, Control Switch for one RXCP shall be tagged in Pullout.
- 2.6 Pressurizer cooldown rate shall NOT exceed 200°F/hr.
- 2.7 If temperature difference between pressurizer and spray fluid is greater than 320°F, pressurizer spray shall <u>NOT</u> be used.
- 2.8 During cooldown, when greater than 350°F and a bubble in pressurizer, maintain subcooling 30-200°F. When less than 350°F and a bubble in pressurizer, maintain subcooling 30-300°F.
- 2.9 During cooldown, maintain temperature difference between loops less than 25°F.
- 2.10 If temperature of Steam Generator is less than 70°F, secondary side of Steam Generator shall <u>NOT</u> be pressurized above 200 psig.
- 2.11 When RCS is above 425 psig, RHR Pumps shall <u>NOT</u> be operated.
- 2.12 When Reactor is critical or average RCS temperature is greater than 500°F, total specific activity of the Reactor Coolant due to nuclides with half lives greater than 30 minutes, excluding tritium, shall NOT exceed A=91/E  $\mu$ Ci/cc and Dose Equivalent I-131 shall NOT exceed 1.0  $\mu$ Ci/gram.
- 2.13 Concentration of oxygen, chloride, and fluoride in RCS shall <u>NOT</u> exceed limits of Tech Spec 3.1.e.

| KEWAUNEE NUCLEAR POWER PLANT       TITLE       Plant Cooldown from Hot Shutdown Cold Shutdown Condition         OPERATING PROCEDURE       DATE       0CT 06 2004       PAGE 3       of 24         2.14       If RCS is to be opened for refueling or repair, hydrogen concentration in Reactor Coolant shall be reduced to less than 5 cc/kg.       2.15         2.15       Maintain maximum CVCS purification flow as allowed by plant conditions.       2.16       If RCS forced circulation is inadvertently lost, <u>60 T0</u> E-0.         2.16       If RCS forced circulation is inadvertently lost, <u>60 T0</u> E-0.       2.17         When average Reactor Coolant temperature is greater than 350°F. the following conditions shall be satisfied:       1.         1.       Two Steam Generators operable.       a.         2.       Auxiliary Feedwater System.       a.         a.       Auxiliary Feedwater pump low discharge pressure trip channels operable.         2.       Auxiliary Feedwater pump low discharge pressure trip channels operable.         3.       A minimum of 41,500 gallons of water (92% combined or 84% for single tank operation) available in Condensate Storage Tanks.         4.       Service Water System operable.       5.         5.       Iodin-131 activity on secondary side of Steam Generators does <u>NOT</u> exceed 0.1 µCU/gram.         6.       One group of Przr Heaters has an emergency power source available.         2.18 <th>WISC</th> <th>ONSIN PUBLIC SERVICE CORPORATION</th> <th>NO. N-0-05</th> | WISC | ONSIN PUBLIC SERVICE CORPORATION                                                      | NO. N-0-05                                                                                                                  |  |  |
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| OPERATING PROCEDURE         DATE         OCT 06 2004         PAGE 3         of 24           2.14         If RCS is to be opened for refueling or repair, hydrogen concentration<br>in Reactor Coolant shall be reduced to less than 5 cc/kg.           2.15         Maintain maximum CVCS purification flow as allowed by plant<br>conditions.           2.16         If RCS forced circulation is inadvertently lost, <u>60 T0 E-0</u> .           2.17         When average Reactor Coolant temperature is greater than 350°F, the<br>following conditions shall be satisfied:           1.         Two Steam Generators operable.           a.         Two Main Steam Safety Valves per Steam Generator operable.           2.         Auxiliary Feedwater trains A and B operable.           b.         Turbine-Driven Auxiliary Feedwater train operable.           c.         Auxiliary Feedwater pump low discharge pressure trip channels<br>operable.           3.         A minimum of 41.500 gallons of water (92% combined or 84% for<br>single tank operation) available in Condensate Storage Tanks.           4.         Service Water System operable.           5.         Iodine-131 activity on secondary side of Steam Generators does <u>NOT</u><br>exceed 0.1 µCi/gram.           6.         One group of Przr Heaters has an emergency power source available.           2.18         When average Reactor Coolant temperature is less than 350°F and<br>greater than 200°F, two of the following shall be operable:           a. S/G 1B           | K    | EWAUNEE NUCLEAR POWER PLANT                                                           | <b>TITLE</b> Plant Cooldown from Hot Shutdown to Cold Shutdown Condition                                                    |  |  |
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| <ul> <li>4. Service Water System operable.</li> <li>5. Iodine-131 activity on secondary side of Steam Generators does <u>NOT</u> exceed 0.1 μCi/gram.</li> <li>6. One group of Przr Heaters has an emergency power source available.</li> <li>2.18 When average Reactor Coolant temperature is less than 350°F and greater than 200°F, two of the following shall be operable: <ul> <li>S/G 1A</li> <li>S/G 1B</li> <li>RHR Train A</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      | <ol> <li>A minimum of 41,500 gallons of<br/>single tank operation) availab</li> </ol> | A minimum of 41,500 gallons of water (92% combined or 84% for single tank operation) available in Condensate Storage Tanks. |  |  |
| <ol> <li>Iodine-131 activity on secondary side of Steam Generators does <u>NOT</u> exceed 0.1 μCi/gram.</li> <li>One group of Przr Heaters has an emergency power source available.</li> <li>When average Reactor Coolant temperature is less than 350°F and greater than 200°F, two of the following shall be operable:         <ul> <li>S/G 1A</li> <li>S/G 1B</li> <li>RHR Train A</li> </ul> </li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      | 4. Service Water System operable.                                                     |                                                                                                                             |  |  |
| <ul> <li>6. One group of Przr Heaters has an emergency power source available.</li> <li>2.18 When average Reactor Coolant temperature is less than 350°F and greater than 200°F, two of the following shall be operable:</li> <li>S/G 1A <ul> <li>S/G 1B</li> <li>RHR Train A</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      | 5. Iodine-131 activity on seconda<br>exceed 0.1 μCi/gram.                             | ry side of Steam Generators does <u>NOT</u>                                                                                 |  |  |
| <ul> <li>2.18 When average Reactor Coolant temperature is less than 350°F and greater than 200°F, two of the following shall be operable:</li> <li>S/G 1A</li> <li>S/G 1B</li> <li>RHR Train A</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      | 6. One group of Przr Heaters has                                                      | an emergency power source available.                                                                                        |  |  |
| • S/G 1A<br>• S/G 1B<br>• RHR Train A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2.18 | When average Reactor Coolant tempe<br>greater than 200°F, two of the fol              | rature is less than 350°F and<br>lowing shall be operable:                                                                  |  |  |
| • RHR Train B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |                                                                                       |                                                                                                                             |  |  |

| WISCO | ONSIN PUBLIC SERVICE CORPORATION NO. N-U-U5                                                                                                                                                                                                                                                                                                                          |  |  |  |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| K     | TITLE Plant Cooldown from Hot Shutdown Condition                                                                                                                                                                                                                                                                                                                     |  |  |  |
|       | OPERATING PROCEDURE DATE OCT 06 2004 PAGE 4 of 24                                                                                                                                                                                                                                                                                                                    |  |  |  |
| 2.19  | TWO RHR trains shall be operable when the average RCS temperature is<br>less than or equal to 200°F and irradiated fuel is in the Reactor,<br>except when in the Refueling mode with the minimum water level above<br>the top of the vessel flange greater than or equal to 23 feet and the<br>upper internals removed, one train may be inoperable for maintenance. |  |  |  |
| 2.20  | When Reactor Trip Breakers are closed, one of following conditions shall be satisfied:                                                                                                                                                                                                                                                                               |  |  |  |
|       | 1. Both RXCPs operating,                                                                                                                                                                                                                                                                                                                                             |  |  |  |
|       | <u>OR</u>                                                                                                                                                                                                                                                                                                                                                            |  |  |  |
|       | 2. RCS borated to Cold Shutdown boron concentration.                                                                                                                                                                                                                                                                                                                 |  |  |  |
| 2.21  | Maintain one Reactor Coolant Pump in operation as long as practical to prevent formation of non-uniform temperature distribution in RCS.                                                                                                                                                                                                                             |  |  |  |
| 2.22  | When a violation of a Limiting Condition for Operation requires plant shutdown and applicable Tech Spec action statement does <u>NOT</u> specify a shutdown sequence, the Standard Shutdown Sequence shall be followed.                                                                                                                                              |  |  |  |
| 2.23  | When one or more of the RCS cold leg tempertures is less than or equal to 200°F <u>AND</u> the Reactor Vessel Head is installed, the following shall be satisfied:                                                                                                                                                                                                   |  |  |  |
|       | <ol> <li>Two RHR suction paths <u>AND</u> an RHR suction relief valve shall be<br/>operable:</li> </ol>                                                                                                                                                                                                                                                              |  |  |  |
|       | a. RHR-1A/MV-32116 and RHR-2A/MV-32117, RCS Loop A Supply To RHR<br>Pump MVs, OPEN.                                                                                                                                                                                                                                                                                  |  |  |  |
|       | b. RHR-1B/MV-32132 and RHR-2B/MV-32133, RCS Loop B Supply To RHR<br>Pump MVs, OPEN                                                                                                                                                                                                                                                                                   |  |  |  |
|       | c. RHR-33-1, RHR To Reactor Coolant Hot Leg Safety Valve,<br>Operable, with a setting of less than or equal to 500 psig.                                                                                                                                                                                                                                             |  |  |  |
|       | <ol> <li>If the following conditions are satisfied, one RHR suction path<br/>may be isolated from the RCS for less than or equal to 5 days:</li> </ol>                                                                                                                                                                                                               |  |  |  |
|       | a. The operable suction path valves are verified open with their<br>associated motor breakers locked in the off position.                                                                                                                                                                                                                                            |  |  |  |
|       |                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |

| WISCO                        | NSIN P                                                                                                                        | UBLIC SERVICE CORPORATION                                                                    | NO.                        | N-0-05                              |                            |              |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------|-------------------------------------|----------------------------|--------------|
| KEWAUNEE NUCLEAR POWER PLANT |                                                                                                                               | TITLE Plant Cooldown from Hot Shutdown to<br>Cold Shutdown Condition                         |                            |                                     | utdown to                  |              |
|                              | OPERATING PROCEDURE                                                                                                           |                                                                                              |                            | OCT 06 2004                         | PAGE 5                     | <b>of</b> 24 |
| 2.23.2<br><u>CONTINUE</u>    | <u>D</u>                                                                                                                      |                                                                                              |                            |                                     |                            |              |
|                              | b                                                                                                                             | . If both RHR suction paths a equal to 5 days, perform t                                     | are <u>NOT</u><br>ne follo | restored in les:<br>wing:           | s than or                  |              |
|                              |                                                                                                                               | <ol> <li>Depressurize RCS and es<br/>or equal to 6.4 square<br/>additional hours.</li> </ol> | stablish<br>inches         | a vent path of<br>in less than or   | greater than<br>equal to 8 |              |
|                              |                                                                                                                               | <ol> <li>Implement vent path ven<br/>Spec 3.1.</li> </ol>                                    | rificati                   | on controls per                     | Tech                       |              |
|                              | 3. I <sup>.</sup><br>p                                                                                                        | f both RHR suction paths are <sup>.</sup><br>erform the following:                           | isolated                   | or RHR-33-1 is                      | inoperable,                |              |
|                              | a. Depressurize RCS and establish a vent path of greater than or equal to 6.4 square inches in less than or equal to 8 hours. |                                                                                              |                            |                                     |                            |              |
|                              | þ                                                                                                                             | . Implement vent path verific Spec 3.1.b.4.B.                                                | cation c                   | ontrols per Tecl                    | h                          |              |
| 2.24                         | RCS to                                                                                                                        | emperature indication and Mod                                                                | e change                   | : [PCR008620]                       |                            |              |
|                              | 1. Wi<br>u:                                                                                                                   | hen in Hot Shutdown, Narrow Ra<br>sed to monitor RCS temperature                             | ange tem<br>e.             | perature indica                     | tion shall be              |              |
|                              | 2. Wi<br>Ri<br>M                                                                                                              | hen in Cold Shutdown or Refue<br>ange, RHR inlet, or Core Exit<br>onitor RCS temperature.    | ling Mod<br>Thermoc        | e, the highest (<br>ouples shall be | of Wide<br>used to         |              |
| 3.0 <u>INITI</u>             | AL_CO                                                                                                                         | NDITIONS                                                                                     |                            |                                     |                            |              |
| 3.1                          | RCS to<br>great                                                                                                               | emperature is 547°F, pressure<br>er than or equal to 21%.                                    | 2235 ps                    | ig, Pressurizer                     | level                      |              |
| 3.2                          | At le                                                                                                                         | ast one Reactor Coolant Pump                                                                 | running.                   |                                     |                            |              |
| 3.3                          | Chemi                                                                                                                         | cal and Volume Control System                                                                | operati                    | ng.                                 |                            |              |
| 3.4                          | Steam                                                                                                                         | Generator levels 30-50%.                                                                     |                            |                                     |                            |              |
| 3.5                          | Turbi                                                                                                                         | ne on turning gear.                                                                          |                            |                                     |                            |              |
|                              |                                                                                                                               |                                                                                              |                            |                                     |                            |              |

| WISCONSIN F      | PUBLIC SERVICE CORPORATION                                                                                                                                                                  | NO. N-0-05                                                   |                                         |  |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------|--|
| KEWAUN           | EE NUCLEAR POWER PLANT                                                                                                                                                                      | TITLE Plant Cooldo<br>Cold Shutdow                           | own from Hot Shutdown t<br>wn Condition |  |
| OPE              | RATING PROCEDURE                                                                                                                                                                            | <b>DATE</b> 0CT 06 2004                                      | PAGE 6 of 24                            |  |
|                  |                                                                                                                                                                                             |                                                              | INITIALS                                |  |
| 4.0 PROCEDURE    |                                                                                                                                                                                             |                                                              | · · ·                                   |  |
| 4.1 <u>Perfo</u> | rm_the_following_prior_to_Cool                                                                                                                                                              | ldown:                                                       |                                         |  |
| 1. I             | NITIATE boration of RCS per N $\cdot$                                                                                                                                                       | -CVC-35A as follows:                                         |                                         |  |
| а                | <ul> <li>BORATE to COLD SHUTDOWN bor<br/>per RD 6.7, 1% Cold Shutdow<br/>Concentration.</li> </ul>                                                                                          | ron concentration<br>yn Boron                                | INITIATED                               |  |
| <u>NOTE</u> :    | <u>NOTE</u> : During RCS cooldown, at least two backup groups of<br>Pressurizer Heaters should remain energized to<br>minimize fatigue stress to Pressurizer and Pressurizer<br>Surge Line. |                                                              |                                         |  |
| 2. E<br>D        | STABLISH RCS pressure control epressurization per N-RC-36C.                                                                                                                                 | for RCS                                                      | ESTABLISHED                             |  |
| <u>NOTE</u> :    | Every 1°F/Hr increase in RCS<br>approximately 1 gpm increase<br>maintain constant Pressurize                                                                                                | 5 cooldown rate requin<br>e in Charging flow to<br>er level. | res                                     |  |
| 3. E<br>c        | STABLISH Automatic Pressurize<br>ooldown per N-CVC-35B.                                                                                                                                     | r level control for                                          | ESTABLISHED                             |  |
| 4. (             | &) PERFORM N-0-01-CLE.                                                                                                                                                                      |                                                              | PERFORMED                               |  |
| 5. (<br>1        | CAS) MAINTAIN Steam Generator<br>ong as possible during plant (                                                                                                                             | Blowdown flow as<br>cooldown.                                | MAINTAINED                              |  |
| <u>NOTE</u> :    | 8 to 10 purges, or 24 to 36<br>lower hydrogen to less than                                                                                                                                  | hours will be require<br>5 cc/kg.                            | ed to                                   |  |
| 6. (             | CAS) (&) Initiate RCS degasif                                                                                                                                                               | ication:                                                     |                                         |  |
| a                | . INITIATE RCS degasification                                                                                                                                                               | n per N-CVC-35C.                                             | INITIATED                               |  |
| b                | <ul> <li>REQUEST Chemistry vent Presto the VCT per CHEM-40.003</li> <li>Steam to VCT.</li> </ul>                                                                                            | ssurizer steam space<br>, Vent Pressurizer                   | REQUESTED                               |  |
| 7. (<br>E<br>P   | &) REVIEW SER Enable/Disable  <br>NABLE/DISABLE points applicab <sup>®</sup><br>lant mode.                                                                                                  | Log and<br>le for changing                                   | REVIEWED<br>ENABLED/<br>DISABLED        |  |
|                  | CONTINUI                                                                                                                                                                                    | ED                                                           |                                         |  |
|                  |                                                                                                                                                                                             |                                                              |                                         |  |

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| WISCONSIN PUBLIC SERVICE CORPOR                                                       | RATION NO.                                                                                                                                                                         | N-0-05                            |                             |              |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------|--------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                          |                                                                                                                                                                                    | Plant Cooldown<br>Cold Shutdown   | n from Hot Shu<br>Condition | ıtdown to    |
| OPERATING PROCEDURE                                                                   | DATE                                                                                                                                                                               | OCT 06 2004                       | PAGE 7                      | <b>of</b> 24 |
|                                                                                       |                                                                                                                                                                                    |                                   | <u></u>                     | TIALS        |
| 4.1<br><u>CONTINUED</u>                                                               |                                                                                                                                                                                    |                                   |                             |              |
| 8. (&) PERFORM applicable<br>RBV-1, RBV-2, RBV-3, a                                   | e steps of SP-55-<br>and RBV-4.                                                                                                                                                    | 167-6 on                          | PERFORMED                   | -            |
| a. START Containment<br>N-RBV-18B.                                                    | Vent with 36" RE                                                                                                                                                                   | V valves per                      | STARTED                     |              |
| <pre>9. (&amp;) DETERMINE if performed:</pre>                                         | ormance of SP-05A                                                                                                                                                                  | -202 is                           |                             |              |
| a. <u>IF</u> on-line mainten<br>FW-7B, FW-10A, or<br>applicable steps o<br>Shutdown,  | a. <u>IF</u> on-line maintenance was performed on FW-7A, PERFORMED/NA<br>FW-7B, FW-10A, or FW-10B, <u>THEN</u> PERFORM<br>applicable steps of SP-05A-202 while in Hot<br>Shutdown, |                                   |                             |              |
| <u>OR</u>                                                                             |                                                                                                                                                                                    |                                   |                             |              |
| b. Planning & Schedul<br>should be performe                                           | ing has identifi<br>ed during plant s                                                                                                                                              | ed SP SCI<br>hutdown.             | HEDULED/NA                  | _            |
| 10. (CAS) (&) <u>IF</u> valve tes<br>PERFORM applicable ste<br>plant is in Hot or Int | sts are required,<br>eps of SP-55-167-<br>cermediate Shutdo                                                                                                                        | <u>THEN</u> PEI<br>8 while<br>wn. | RFORMED/NA                  | -            |
| 11. (&) <u>IF</u> performance of<br><u>THEN</u> PERFORM SP-05B-25                     | SP-05B-253 is re<br>53.                                                                                                                                                            | quired, PE                        | RFORMED/NA                  |              |
|                                                                                       |                                                                                                                                                                                    |                                   |                             |              |
|                                                                                       |                                                                                                                                                                                    |                                   |                             |              |
|                                                                                       |                                                                                                                                                                                    |                                   |                             |              |
|                                                                                       |                                                                                                                                                                                    |                                   |                             |              |
| · ·                                                                                   |                                                                                                                                                                                    |                                   |                             |              |
|                                                                                       |                                                                                                                                                                                    |                                   |                             |              |
|                                                                                       |                                                                                                                                                                                    |                                   |                             |              |
|                                                                                       |                                                                                                                                                                                    |                                   |                             |              |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                | NO. N                                                                                                                                                                                    | -0-05                         |                              |              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------|--------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                        | TITLE                                                                                                                                                                                    | Plant Coold<br>Cold Shutdow   | own from Hot<br>wn Condition | Shutdown t   |
| OPERATING PROCEDURE                                                                                                                                 | DATE                                                                                                                                                                                     | OCT 06 2004                   | PAGE 8                       | <b>of</b> 24 |
| 4.2 <u>Cooldown Using Main Steam to less</u>                                                                                                        | <u>than 400°</u>                                                                                                                                                                         | <u>F:</u>                     | <u>I</u>                     | NITIALS      |
| CAUTI                                                                                                                                               | ON                                                                                                                                                                                       |                               |                              |              |
| Cooldown of RCS can <u>NOT</u> begin (RCS Ten<br>concentration has been verified to be<br>Shutdown.                                                 | mp less t<br>greater                                                                                                                                                                     | han 540°F) u<br>than required | ntil RCS boro<br>1 for Cold  | n            |
| <ol> <li>VERIFY COLD SHUTDOWN boron con<br/>RD 6.7, 1% Cold Shutdown Boron<br/>achieved by sampling from Reac<br/>and PRZR liquid space.</li> </ol> | 1. VERIFY COLD SHUTDOWN boron concentration per VERIFIED<br>RD 6.7, 1% Cold Shutdown Boron Concentration,<br>achieved by sampling from Reactor Coolant Hot Leg<br>and PRZR liquid space. |                               |                              |              |
| <ol> <li>VERIFY at least one of the fol<br/>satisfied: [CA013425]</li> </ol>                                                                        | lowing co                                                                                                                                                                                | nditions                      |                              |              |
| a. Pressurizer boron concentr<br>50 ppm of RCS Hot Leg.                                                                                             | ation is                                                                                                                                                                                 | within                        | VERIFIED/NA_                 |              |
| <u>OR</u>                                                                                                                                           |                                                                                                                                                                                          |                               |                              |              |
| b. Boron concentration in bot<br>and RCS Hot Leg are greate<br>Cold Shutdown Boron Concen                                                           | h the Pre<br>r than or<br>tration.                                                                                                                                                       | ssurizer<br>equal to          | VERIFIED/NA_                 | ,            |
| CAUTI                                                                                                                                               | <u>on</u>                                                                                                                                                                                |                               |                              |              |
| Cooldown rates specified in Figure RD<br>assumes a linear ramp change of less<br>step changes to avoid Reactor Vessel                               | 11.1 of<br>than or e<br>stress.                                                                                                                                                          | the Reactor  <br>qual to 100° | Data Manual<br>F/hr. Minimiz | e            |
| 3. (CAS) MAINTAIN RCS temperature<br>cooldown rate in accordance wi<br>Heatup and Cooldown Curves, du<br>cooldown/depressurization.                 | , pressur<br>th Figure<br>ring                                                                                                                                                           | e, and<br>RD 11.1,            | MAINTAINED_                  |              |
| CONTINU                                                                                                                                             | ED                                                                                                                                                                                       |                               |                              |              |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                   | <b>NO.</b> N-0-05                                                                                     |
|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                           | TITLE Plant Cooldown from Hot Shutdown to<br>Cold Shutdown Condition                                  |
| OPERATING PROCEDURE                                                                                                    | DATE 0CT 06 2004 PAGE 9 of 24                                                                         |
| 4.2<br><u>CONTINUED</u>                                                                                                | INITIALS                                                                                              |
| CAUTI                                                                                                                  | <u>ON</u>                                                                                             |
| When RCS temperature is greater than<br>pressurizer, RCS subcooling should be<br>fatigue stress to Pressurizer and Pre | 350°F, <u>AND</u> a steam bubble is in the<br>maintained 30-200°F to minimize<br>ssurizer surge line. |
| 4. (CAS) MAINTAIN RCS Subcooling<br>Cooldown.                                                                          | 30-200°F during 30-200°F                                                                              |
| <u>NOTE</u> : At least one RXCP should be long as possible.                                                            | maintained in operation as                                                                            |
| 5. STOP one Reactor Coolant Pump                                                                                       | per N-RC-36A. STOPPED                                                                                 |
| <u>NOTE</u> : RCS pressure and temperatur<br>cooldown and depressurizati<br>RCS Press/Temp Trend Graph                 | e relationships during<br>on can be monitored using<br>on either SAS Unit.                            |
| 6. INITIATE cooldown to 450-500°F                                                                                      | per N-MS-06. INITIATED                                                                                |
| 7. <u>IF</u> performance of SP-06-077, P<br>Valve Test, is required, <u>THEN</u><br>following:                         | ain Steam Safety<br>PERFORM the                                                                       |
| a. (&) <u>WHEN</u> Steam Generator F<br>stable 800–1000 psig, <u>OR</u> a<br>Supervisor, <u>THEN</u> PERFORM S         | ressure is PERFORMED/NA<br>s determined by Test<br>P-06-077.                                          |
| 8. (&) <u>WHEN</u> RCS temperature is le<br>BYPASS Low-Low Tavg Interlock<br>per N-MS-06.                              | ss than 540°F, <u>THEN</u> BYPASSED<br>of Steam Dump system                                           |
| 9. <u>WHEN</u> RCS temperature is less t<br>NOTIFY STA configuration monit<br>GNP-08.04.01, Shutdown Safety            | han 540°F, <u>THEN</u> NOTIFIED<br>oring is per<br>Assessment.                                        |
| 10. INITIATE depressurization to 9<br>N-RC-36C.                                                                        | 25-975 psig per INITIATED                                                                             |
| CONTINU                                                                                                                | ED                                                                                                    |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                       | <b>NO.</b> N-0-05                                                    |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                               | TITLE Plant Cooldown from Hot Shutdown to<br>Cold Shutdown Condition |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                        | DATE OCT 06 2004 PAGE 10 of 24                                       |  |  |  |  |
| · ·                                                                                                                                                                                                                        | INITIALS                                                             |  |  |  |  |
| 4.2<br><u>CONTINUED</u>                                                                                                                                                                                                    |                                                                      |  |  |  |  |
| <u>NOTE</u> : During RCS cooldown, Letdown flow should be reduced to<br>less than or equal to 40 gpm to allow sufficient<br>charging pump capacity to compensate for RCS density<br>change and maintain pressurizer level. |                                                                      |  |  |  |  |
| <ol> <li>ESTABLISH less than or equal to<br/>flow per N-CVC-35B.</li> </ol>                                                                                                                                                | 0 40 gpm letdown ESTABLISHED                                         |  |  |  |  |
| a. (CAS) MAINTAIN required letdown flow during MAINTAINED<br>RCS cooldown/depressurization, and degassing<br>of RCS per N-CVC-35B.                                                                                         |                                                                      |  |  |  |  |
| CAUTION                                                                                                                                                                                                                    |                                                                      |  |  |  |  |
| If Steam Generator pressure reaches 500 psig before SI is blocked, an automatic SI actuation will occur.                                                                                                                   |                                                                      |  |  |  |  |
| 12. (CAS) MAINTAIN Steam Generator pressure MAINTAINED<br>approximately 600 psig until SI is blocked.                                                                                                                      |                                                                      |  |  |  |  |
| <u>NOTE</u> : If RCS pressure increases ab<br>Injection System will automa                                                                                                                                                 | ove 2000 psig, Safety<br>tically unblock.                            |  |  |  |  |
| 13. <u>WHEN</u> RCS pressure is less than<br>BLOCK Automatic Safety Injecti                                                                                                                                                | 2000 psig, <u>THEN</u> BLOCKED<br>on per N-RC-36C.                   |  |  |  |  |
| 14. Prior to RCS pressure at 1800<br>Spray Control Master controlle<br>N-RC-36C.                                                                                                                                           | osig, POSITION Przr MANUAL<br>r to MANUAL per                        |  |  |  |  |
| 15. <u>WHEN</u> RCS pressure is less than PERFORM the following:                                                                                                                                                           | 1000 psig. <u>THEN</u>                                               |  |  |  |  |
| a. (CAS) N-SI-33-CL, SI Check<br>1000 psig.                                                                                                                                                                                | list for less than PERFORMED                                         |  |  |  |  |
| b. (CAS) DEPRESSURIZE SI Accur<br>N-SI-33.                                                                                                                                                                                 | nulators per COMPLETED                                               |  |  |  |  |
| CONTINU                                                                                                                                                                                                                    | ED                                                                   |  |  |  |  |
|                                                                                                                                                                                                                            |                                                                      |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                | NO. N-0-05                                                               |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                        | <b>TITLE</b> Plant Cooldown from Hot Shutdown to Cold Shutdown Condition |
| OPERATING PROCEDURE                                                                                                 | DATE OCT 06 2004 PAGE 11 of 24                                           |
|                                                                                                                     | INITIALS                                                                 |
| 4.2<br><u>CONTINUED</u>                                                                                             |                                                                          |
| 16. <u>IF</u> performance of SP-33-144 <u>OR</u><br>required, <u>THEN</u> PERFORM the fol                           | SP-34-298 is APPLIES/NA<br>lowing:                                       |
| a. VERIFY all the following c<br>prior to performing survei                                                         | onditions satisfied<br>llance:                                           |
| <ul> <li>RCS pressure 925-975 psi</li> </ul>                                                                        | g 925-975 psig                                                           |
| <ul> <li>RCS temperature 450-500°</li> </ul>                                                                        | F 450-500° F                                                             |
| <ul> <li>A bubble exists in the p</li> </ul>                                                                        | ressurizer BUBBLE<br>EXISTS                                              |
| <u>NOTE</u> : SP-33-144 and SP-34-298 sequence or at the same                                                       | can be performed in any<br>time.                                         |
| b. <u>IF</u> performance of SP-33-14<br><u>THEN</u> PERFORM SP-33-144.                                              | 4 is required, PERFORMED/NA                                              |
| c. <u>IF</u> performance of SP-34-29<br><u>THEN</u> PERFORM SP-34-298.                                              | 8 is required, PERFORMED/NA                                              |
| 17. (CAS) <u>WHEN</u> S/G Pressure is les<br><u>THEN</u> INITIATE secondary plant<br>Condensate System per N-MS-06. | s than 450 psig, INITIATED<br>cooldown using                             |
| <ol> <li>(CAS) CONTINUE RCS Cooldown to<br/>indicated on BOTH RCS Hot Legs</li> </ol>                               | 375-400°F COMPLETED                                                      |
| <u>Continu</u>                                                                                                      | <u>ED</u>                                                                |
|                                                                                                                     |                                                                          |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                       | NO. !                                                                                                                               | 1-0-05                      |             |                 |  |
|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------|-----------------|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                               | TITLE Plant Cooldown from Hot Shutdown to<br>Cold Shutdown Condition                                                                |                             |             |                 |  |
| OPERATING PROCEDURE                                                                                        | DATE                                                                                                                                | OCT 06 200                  | 4 PAGE      | 12 <b>of</b> 24 |  |
|                                                                                                            |                                                                                                                                     |                             |             | INITIALS        |  |
| 4.2<br>CONTINUED                                                                                           |                                                                                                                                     |                             |             |                 |  |
| <u>NOTE</u> : SP-34-204A and SP-33-297 can sequence or at the same time                                    | be perfo                                                                                                                            | ormed in any                |             |                 |  |
| <u>NOTE</u> : SP-34-204A shall be complete<br>Section 4.2.                                                 | d prior 1                                                                                                                           | to leaving                  |             |                 |  |
| <u>NOTE</u> : SP-33-297 does <u>NOT</u> have to b<br>leaving Section 4.2 <u>OR</u> prior<br>cooldown mode. | e complet<br>to alig                                                                                                                | ted prior to<br>ning RHR in |             |                 |  |
| 19. <u>WHEN</u> RCS pressure is 300-1000<br>temperature less than 400°F, <u>T</u><br>following:            | 19. <u>WHEN</u> RCS pressure is 300–1000 psig, <u>AND</u> RCS<br>temperature less than 400°F, <u>THEN</u> PERFORM the<br>following: |                             |             |                 |  |
| a. <u>IF</u> performance of SP-34-20<br><u>THEN</u> PERFORM SP-34-204A.                                    | 4A is red                                                                                                                           | quired,                     | PERFORMED/N | NA              |  |
| b. <u>IF</u> performance of SP-33-29<br><u>THEN</u> PERFORM SP-33-297.                                     | 7 is requ                                                                                                                           | uired,                      | PERFORMED/N | A               |  |
| 20. CONTINUE RCS Depressurization 425 psig.                                                                | to less t                                                                                                                           | than                        | COMPLETE    | ED              |  |
|                                                                                                            |                                                                                                                                     |                             |             |                 |  |
|                                                                                                            |                                                                                                                                     |                             |             |                 |  |
|                                                                                                            |                                                                                                                                     |                             |             |                 |  |
|                                                                                                            |                                                                                                                                     |                             |             |                 |  |
|                                                                                                            |                                                                                                                                     |                             |             |                 |  |
|                                                                                                            |                                                                                                                                     |                             |             |                 |  |
|                                                                                                            |                                                                                                                                     |                             |             |                 |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                | <b>NO.</b> N-0-05                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                        | TITLE Plant Cooldown from Hot Shutdown<br>Cold Shutdown Condition                      |
| OPERATING PROCEDURE                                                                                                                 | DATE OCT 06 2004 PAGE 13 of 24                                                         |
|                                                                                                                                     | INITIALS                                                                               |
| 4.3 <u>Cooldown using RHR:</u>                                                                                                      |                                                                                        |
| <ol> <li>Prior to RCS temperature less<br/>Decay Heat Removal Capability<br/>OPERABLE.</li> </ol>                                   | than 350°F, VERIFY VERIFIED<br>(T.S. 3.1.a.2.A)                                        |
| <ol> <li><u>IF</u> cooldown has been stopped,<br/>cooldown using Steam Generator<br/>system.</li> </ol>                             | THEN CONTINUE RCS CONTINUED/NA<br>s while aligning RHR                                 |
| 3. <u>IF</u> testing on valves RHR-1A, RHR-2B, and RHR-11 is required testing per applicable steps or SP-87-274 in conjunction with | HR-2A, RHR-1B, PERFORMED/NA<br>, <u>THEN</u> PERFORM<br>f SP-55-167-6 and<br>N-RHR-34. |
| <u>NOTE</u> : Maintaining normal letdown<br>LD-4C, and LD-6 open) provi<br>overpressurization protecti                              | (LD-2, LD-3, LD-4A, LD-4B,<br>des additional RCS<br>on.                                |
| <u>NOTE</u> : N-RHR-34 will normally requ<br>SP-34-145D, Residual Heat R<br>Coolant System Interlock Te                             | est I&C to perform<br>emoval Valve RHR-11 Reactor<br>st.                               |
| 4. START UP RHR System per N-RHR-:                                                                                                  | 34. STARTED                                                                            |
| CAUTI                                                                                                                               | DN                                                                                     |
| When RHR-11 is closed for RCS temperationsidered inoperable for purposes of Capability (T.S. 3.1.a.2.A)                             | ture control or testing. RHR is<br>satisfying Decay Heat Removal                       |
| 5. <u>WHEN</u> RCS temperature is 200-37<br>has been requested to perform                                                           | 5°F, <u>THEN VERIFY I&amp;C VERIFIED</u><br>SP-34-145D.                                |
|                                                                                                                                     |                                                                                        |
| <u>CONTINU</u>                                                                                                                      | ED                                                                                     |
|                                                                                                                                     |                                                                                        |
|                                                                                                                                     |                                                                                        |
|                                                                                                                                     |                                                                                        |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                            | <b>NO.</b> N-0-05                                                                                                                                                                                                                                   |                                     |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                    | TITLE Plant Cooldown<br>Cold Shutdown                                                                                                                                                                                                               | n from Hot Shutdown to<br>Condition |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                             | <b>DATE</b> 0CT 06 2004                                                                                                                                                                                                                             | <b>PAGE</b> 14 of 24                |  |  |  |
|                                                                                                                                                                                 |                                                                                                                                                                                                                                                     | INITIALS                            |  |  |  |
| 4.3<br><u>CONTINUED</u>                                                                                                                                                         |                                                                                                                                                                                                                                                     |                                     |  |  |  |
| CAUTI                                                                                                                                                                           | <u>ON</u>                                                                                                                                                                                                                                           |                                     |  |  |  |
| When RCS temperature less than 350°F<br>pressurizer, ALL backup heater groups<br>maximize pressurizer spray flow to mi<br>pressurizer and pressurizer surge lin                 | When RCS temperature less than 350°F <u>AND</u> a steam bubble exists in the pressurizer, ALL backup heater groups should remain energized to maximize pressurizer spray flow to minimize fatigue stress to pressurizer and pressurizer surge line. |                                     |  |  |  |
| 6. (CAS) <u>WHEN</u> RCS temperature is<br><u>THEN</u> POSITION Pressurizer Heat<br>E control switches to ON.                                                                   | 6. (CAS) <u>WHEN</u> RCS temperature is less than 350°F, ON<br><u>THEN</u> POSITION Pressurizer Heater Groups A, B, D, &<br>E control switches to ON.                                                                                               |                                     |  |  |  |
| 7. (CAS) <u>WHEN</u> temperature control of RCS is achieved PERFORMED<br>using RHR System, <u>THEN</u> STOP AFW Pumps <u>AND</u> ALIGN<br>AFW System for shutdown per N-FW-05B. |                                                                                                                                                                                                                                                     |                                     |  |  |  |
| CAUTI                                                                                                                                                                           | ON                                                                                                                                                                                                                                                  |                                     |  |  |  |
| When RCS temperature is less than 350<br>Pressurizer, RCS subcooling should be<br>fatigue stress to Pressurizer and Pre                                                         | °F, <u>AND</u> a steam bubble<br>maintained 30-300°F to<br>ssurizer surge line.                                                                                                                                                                     | is in the<br>minimize               |  |  |  |
| 8. CONTINUE RCS cooldown to 330-350°F using RHR and CONTINUED<br>Steam Generators.                                                                                              |                                                                                                                                                                                                                                                     |                                     |  |  |  |
| NOTE: Sequence for performing SP-34-285, SP-33-325, and SP-34-091 allows plant cooldown to continue.                                                                            |                                                                                                                                                                                                                                                     |                                     |  |  |  |
| 9. DEPRESSURIZE RCS to 350-375 ps                                                                                                                                               | ig. 350                                                                                                                                                                                                                                             | 0-375 PSIG                          |  |  |  |
| <u>CONTINU</u>                                                                                                                                                                  | <u>E0</u>                                                                                                                                                                                                                                           |                                     |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                 | NO. N-0-05                                                           |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                         | TITLE Plant Cooldown from Hot Shutdown to<br>Cold Shutdown Condition |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                  | DATE OCT 06 2004 PAGE 15 of 24                                       |  |  |
|                                                                                                                                                                                                                                                                                                                                                                      | INITIALS                                                             |  |  |
| 4.3                                                                                                                                                                                                                                                                                                                                                                  |                                                                      |  |  |
| CONTINUED                                                                                                                                                                                                                                                                                                                                                            |                                                                      |  |  |
| <u>NOTE</u> : Performance of SP-34-285 may<br>heatup. [PCR003249]                                                                                                                                                                                                                                                                                                    | be deferred until plant                                              |  |  |
| <u>NOTE</u> : Historically, during performance of SP-34-285 RCS<br>temperature decreased rapidly out of the required<br>band. It is desirable to begin the test with RCS<br>temperature as high in the band as possible, to avoid<br>starting the second RXCP, after the RXCP vault has been<br>cleaned. SP-34-285 requires a range 250-350°F to be a<br>valid test. |                                                                      |  |  |
| 10. <u>WHEN</u> RCS pressure is 350-375 p<br>Suction Header Temperature is<br><u>THEN</u> PERFORM SP-34-285, if req                                                                                                                                                                                                                                                  | sig <u>AND</u> RHR Pump PERFORMED/NA<br>less than 350°F,<br>uired.   |  |  |
| a. <u>IF</u> RCS temperature decrease<br>250°F during performance of<br>PERFORM the following:                                                                                                                                                                                                                                                                       | es to less than APPLIES/NA<br>f SP-34-285, <u>THEN</u>               |  |  |
| 1. VERIFY both Steam Gene                                                                                                                                                                                                                                                                                                                                            | rators OPERABLE. VERIFIED                                            |  |  |
| 2. CLOSE RHR-11 to mainta<br>greater than 250°F, pe                                                                                                                                                                                                                                                                                                                  | in RCS temperature CLOSED<br>r N-RHR-34.                             |  |  |
| 3. <u>IF</u> closing RHR-11 is up<br>increasing RCS tempera<br>second RXCP per N-RC-3                                                                                                                                                                                                                                                                                | nsuccessful in STARTED/NA<br>ture, <u>THEN</u> START<br>6A.          |  |  |
| <pre>11. <u>IF</u> SP-33-325 will be performed<br/>following:</pre>                                                                                                                                                                                                                                                                                                  | , <u>THEN</u> PERFORM the APPLIES/NA                                 |  |  |
| a. PRESSURIZE RCS to 390-410                                                                                                                                                                                                                                                                                                                                         | psig. 390-410 PSIG                                                   |  |  |
| b. <u>WHEN</u> RCS pressure 390-410<br>SP-33-325.                                                                                                                                                                                                                                                                                                                    | psig, <u>THEN</u> PERFORM PERFORMED                                  |  |  |
| CONTINU                                                                                                                                                                                                                                                                                                                                                              | <u>ED</u>                                                            |  |  |
|                                                                                                                                                                                                                                                                                                                                                                      |                                                                      |  |  |

| WISCONSI   | N PUBLIC SERVICE CORPORATION                                                                                              | <b>NO.</b> N-0-05                               |                                   |  |
|------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------|--|
| KEWA       | UNEE NUCLEAR POWER PLANT                                                                                                  | TITLE Plant Cooldow<br>Cold Shutdown            | wn from Hot Shutdo<br>n Condition |  |
| O          | PERATING PROCEDURE                                                                                                        | <b>DATE</b> OCT 06 2004                         | PAGE 16 of                        |  |
|            |                                                                                                                           |                                                 | INITIAL                           |  |
|            |                                                                                                                           |                                                 |                                   |  |
| <u>12.</u> | <u>IF</u> SP-34-091 will be performed following:                                                                          | , <u>THEN</u> PERFORM the                       | APPLIES/NA                        |  |
|            | a. PRESSURIZE RCS to 400-425                                                                                              | psig. 40                                        | 00-425 PSIG                       |  |
|            | b. <u>WHEN</u> RCS pressure is 400-43<br>PERFORM the following:                                                           | 25 psig, <u>THEN</u>                            |                                   |  |
|            | 1. PERFORM SP-34-091.                                                                                                     |                                                 | PERFORMED                         |  |
|            | 2. CONTACT Plant IST Grou<br>SP-34-053, Residual He<br>Pressure Test, is requ                                             | p to determine if<br>at Removal System<br>ired. | CONTACTED                         |  |
| 13.        | <u>IF</u> SP-33-325 <u>OR</u> SP-34-091 were performed, <u>THEN</u> 350-375 PSIG<br>DEPRESSURIZE RCS to 350-375 psig. /NA |                                                 |                                   |  |
| 14.        | CONTINUE RCS cooldown to less than 220°F but CONTINUED<br>greater than 200°F.                                             |                                                 |                                   |  |
| 15.        | <u>WHEN</u> RCS temperature is less t<br>PERFORM the following:                                                           | han 300°F, <u>THEN</u>                          |                                   |  |
|            | • CLOSE MS-100A/MV-32038, S/G<br>T/D AFW Pump.                                                                            | A Steam Supply to                               | CLOSED                            |  |
|            | • CLOSE MS-100B/MV-32039, S/G<br>T/D AFW Pump.                                                                            | B Steam Supply to                               | CLOSED                            |  |
|            | <ul> <li>POSITION MS-102/MV-32040, T/<br/>Steam Isol, to PULLOUT.</li> </ul>                                              | D AFW Pump Main                                 | PULLOUT                           |  |
|            | <ul> <li>(CAS) SHUT DOWN secondary plant</li> <li>applicable procedures.</li> </ul>                                       | ant as required per                             | SHUT DOWN                         |  |
| 16.        | <u>WHEN</u> Steam Generator pressure<br>20 psig, <u>THEN</u> ALIGN Steam Gene<br>N-MS-06.                                 | is less than<br>rator PORVs per                 | ALIGNED                           |  |
|            | <u>CONTINU</u>                                                                                                            | <u>ED</u>                                       |                                   |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                    | NO. N-0-05                                                                                                                               |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                            | TITLE Plant Cooldown from Hot Shutdown to<br>Cold Shutdown Condition                                                                     |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                     | DATE OCT 06 2004 PAGE 17 of 24                                                                                                           |  |  |
|                                                                                                                                                                                                                                         | INITIALS                                                                                                                                 |  |  |
| 4.3<br><u>CONTINUED</u>                                                                                                                                                                                                                 |                                                                                                                                          |  |  |
| 17. VERIFY following LTOP requiremprior to any RCS Cold Leg temp<br>200°F:                                                                                                                                                              | ents are satisfied<br>erature less than                                                                                                  |  |  |
| a. RHR-1A and RHR-2A, OPEN                                                                                                                                                                                                              | OPEN                                                                                                                                     |  |  |
| b. RHR-1B and RHR-2B, OPEN                                                                                                                                                                                                              | OPEN                                                                                                                                     |  |  |
| 18. VERIFY SP-55-167-8 completed.                                                                                                                                                                                                       | VERIFIED                                                                                                                                 |  |  |
| 19. CONTINUE RCS Cooldown to less                                                                                                                                                                                                       | than 200°F. <200°F                                                                                                                       |  |  |
| 20. (CAS) <u>WHEN</u> RCS temperature is less than 200°F <u>AND</u> APPLIES/NA<br>frazil ice conditions exist, <u>THEN</u> OPERATE CW<br>Pumps as required by N-CW-04.[PCR014647]                                                       |                                                                                                                                          |  |  |
| 4.4 ALIGN systems for Cold Shutdown:                                                                                                                                                                                                    |                                                                                                                                          |  |  |
| <ol> <li><u>WHEN</u> RCS temperature less than<br/>N-ICS-23-CL for less than 200°</li> </ol>                                                                                                                                            | <ol> <li><u>WHEN</u> RCS temperature less than 200°F, <u>THEN</u> PERFORM PERFORMED</li> <li>N-ICS-23-CL for less than 200°F.</li> </ol> |  |  |
| <u>NOTE</u> : When all wide range hot and cold leg temperatures are<br>less than 200°F. Containment Integrity may be broken.<br>Pressurizer temperature is <u>NOT</u> required to be less<br>than 200°F to break Containment Integrity. |                                                                                                                                          |  |  |
| 2. VERIFY requirements met to break Containment<br>Integrity:                                                                                                                                                                           |                                                                                                                                          |  |  |
| a. Reactor is in Cold Shutdow<br>with Reactor Vessel Head i                                                                                                                                                                             | a. Reactor is in Cold Shutdown per T.S. 1.0.j. VERIFIED<br>with Reactor Vessel Head installed.                                           |  |  |
| <ol> <li>INFORM Maintenance Containment<br/>broken.</li> </ol>                                                                                                                                                                          | 3. INFORM Maintenance Containment Integrity may be INFORMED<br>broken.                                                                   |  |  |
|                                                                                                                                                                                                                                         |                                                                                                                                          |  |  |
| <u>CONTINUED</u>                                                                                                                                                                                                                        |                                                                                                                                          |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION NO. N-0-05                                                                                |                                                                                                                                                                      |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT TITLE Plant Cooldown from Hot Sk<br>Cold Shutdown Condition                                       |                                                                                                                                                                      |  |  |  |  |
| OPERATING PROCEDURE                                                                                                            | DATE OCT 06 2004 PAGE 18 of 24                                                                                                                                       |  |  |  |  |
|                                                                                                                                | INITIALS                                                                                                                                                             |  |  |  |  |
| 4.4<br>CONTINUED                                                                                                               |                                                                                                                                                                      |  |  |  |  |
| 4. PERFORM the following:                                                                                                      |                                                                                                                                                                      |  |  |  |  |
| a. (CAS) MAINTAIN RCS temperat<br>200°F.                                                                                       | ture less than <200°F                                                                                                                                                |  |  |  |  |
| b. RCS pressure guidelines:                                                                                                    |                                                                                                                                                                      |  |  |  |  |
| 1. <u>WHEN</u> RHR System is oper<br>exceed 425 psig.                                                                          | rating, <u>THEN</u> DO <u>NOT</u> <425 psig                                                                                                                          |  |  |  |  |
| 2. <u>WHEN</u> a bubble exists in MAINTAIN RCS subcooling                                                                      | n Pressurizer, <u>THEN</u> 30-300°F<br>g 30-300°F.                                                                                                                   |  |  |  |  |
| <ol> <li>MAINTAIN minimum #1 sea<br/>200 psi by controlling<br/>one RXCP operating.</li> </ol>                                 | 3. MAINTAIN minimum #1 seal D/P greater than >200 psi<br>200 psi by controlling RCS pressure with<br>one RXCP operating.                                             |  |  |  |  |
| 4. Requirements of Fig. R                                                                                                      | D-11.1, SATISFIED. SATISFIED                                                                                                                                         |  |  |  |  |
| <u>NOTE</u> : If SP-33-110 is scheduled for<br>of the outage, disabling Aut<br>performed after SP-33-110 is                    | <u>NOTE</u> : If SP-33-110 is scheduled for beginning<br>of the outage, disabling Automatic SI & ICS should be<br>performed after SP-33-110 is complete. [PCR011678] |  |  |  |  |
| 5. (CAS) REQUEST I&C disable Autor                                                                                             | natic SI & ICS. REQUESTED/NA                                                                                                                                         |  |  |  |  |
| <ol> <li>(CAS) (&amp;) <u>WHEN</u> RCS temperature<br/>to 200°F, <u>THEN</u> ESTABLISH shutdo<br/>Steam Generators:</li> </ol> | less than or equal<br>own conditions for                                                                                                                             |  |  |  |  |
| a. (CAS) (&) <u>IF</u> Steam Generato<br>required, <u>THEN</u> DRAIN Steam<br>N-MS-OGA or N-MS-OGD.                            | or draining is DRAINED/NA<br>Generators per                                                                                                                          |  |  |  |  |
| <u>NOTE</u> : CHEM-41.003, Control of<br>Periods of Cold Shutdown<br>further guidance for pla<br>Wet Layup.                    | S/G Chemistry During<br>n, should be used as<br>acing Steam Generators in                                                                                            |  |  |  |  |
| b. (CAS) <u>IF</u> Steam Generator fr<br><u>THEN</u> FILL Steam Generators                                                     | ill is required, FILLED/NA<br>per N-MS-06B.                                                                                                                          |  |  |  |  |
| CONTINUED                                                                                                                      |                                                                                                                                                                      |  |  |  |  |
|                                                                                                                                |                                                                                                                                                                      |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                              | <b>NO.</b> N-0-05                              |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|--|--|
| KEWAUNEE NUCLEAR POWER PLANT Plant Cooldown from Hot Shutdown<br>Cold Shutdown Condition                                                                                                                                          |                                                |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                               | DATE OCT 06 2004 PAGE 19 of 24                 |  |  |
|                                                                                                                                                                                                                                   | INITIALS                                       |  |  |
| 4.4<br>CONTINUED                                                                                                                                                                                                                  |                                                |  |  |
| 7. CONTINUE RCS cooldown to 190-20<br>pressure guidelines listed in S                                                                                                                                                             | DO°F, observing RCS 190-200°F<br>Step 4.4.4.b. |  |  |
| <ol> <li><u>WHEN</u> RCS temperature is 190-200°F, <u>THEN</u> PERFORM<br/>the following:</li> </ol>                                                                                                                              |                                                |  |  |
| a. STOP RCS Cooldown.                                                                                                                                                                                                             | STOPPED                                        |  |  |
| NOTE: Steps 4.4.8.b and 4.4.8.c may be performed concurrently.                                                                                                                                                                    |                                                |  |  |
| b. FILL Pressurizer per N-RC-3                                                                                                                                                                                                    | 36C. FILLED                                    |  |  |
| c. VERIFY RHR heat removal cap<br>performing the following:                                                                                                                                                                       | pability by<br>[PCR017066]                     |  |  |
| <ol> <li>VERIFY RCS temperature can be maintained YES/NO<br/>between 190-200°F with less than or equal<br/>to 1800 gpm RHR flow.</li> </ol>                                                                                       |                                                |  |  |
| 2. <u>IF</u> RCS temperature can <u>NOT</u> be maintained INCREASED/NA<br>with less than or equal to 1800 gpm RHR<br>flow, <u>THEN</u> INCREASE RHR flow as necessary<br>to maintain RCS temperature stable between<br>190-200°F. |                                                |  |  |
| 3. <u>WHEN</u> RCS temperature is<br>190-200°F, <u>THEN</u> RECORD                                                                                                                                                                | s stable between<br>the following:             |  |  |
| • RCS temperature                                                                                                                                                                                                                 | °F                                             |  |  |
| • RHR flowGPM                                                                                                                                                                                                                     |                                                |  |  |
| • Circulating Water inlet temperature°F                                                                                                                                                                                           |                                                |  |  |
| • (CR/L) Component Cooling Pump inlet°F<br>temperature                                                                                                                                                                            |                                                |  |  |
| Component Cooling Heat<br>temperature                                                                                                                                                                                             | at Exchanger outlet°F                          |  |  |
| Number of hours since                                                                                                                                                                                                             | e reactor shutdownHRS                          |  |  |
| CONTINU                                                                                                                                                                                                                           | <u>ED</u>                                      |  |  |
|                                                                                                                                                                                                                                   |                                                |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                            | <b>NO.</b> N-0-05                                                                                                                                       |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                    | TITLE Plant Cooldown from Hot Shutdown to<br>Cold Shutdown Condition                                                                                    |  |  |  |
| OPERATING PROCEDURE                                                                                                                             | DATE OCT 06 2004 PAGE 20 of 24                                                                                                                          |  |  |  |
|                                                                                                                                                 | INITIALS                                                                                                                                                |  |  |  |
| 4.4<br>CONTINUED                                                                                                                                |                                                                                                                                                         |  |  |  |
| 9. <u>WHEN</u> Pressurizer is solid, <u>THE</u><br>following:                                                                                   | N PERFORM the                                                                                                                                           |  |  |  |
| a. VERIFY Pressurizer tempera<br>250°F. [PCR011313]                                                                                             | ture less than <250°F                                                                                                                                   |  |  |  |
| b. CONTINUE RCS cooldown to less than or equal to ≤160°F<br>160°F per N-RHR-34.                                                                 |                                                                                                                                                         |  |  |  |
| c. CONTINUE Pressurizer cooldown to less than or ≤180°F<br>equal to 180°F per N-RC-36C.                                                         |                                                                                                                                                         |  |  |  |
| d. CONTINUE RCS depressurizat<br>or equal to 200 psig, per<br>support RXCP operation.                                                           | d. CONTINUE RCS depressurization to greater than ≥200 psig<br>or equal to 200 psig, per N–CVC–35B, to<br>support RXCP operation.                        |  |  |  |
| 10. <u>WHEN</u> RCS temperature less than PERFORM the following:                                                                                | 180°F, <u>THEN</u>                                                                                                                                      |  |  |  |
| a. <u>IF</u> performance of SP-34-20<br><u>THEN</u> PERFORM SP-34-203.                                                                          | 3 is required, PERFORMED/NA                                                                                                                             |  |  |  |
| <u>NOTE</u> : Shortening of 24 hour RXCP r<br>Peroxide addition should be<br>Supervision.                                                       | un following Hydrogen<br>made only by Chemistry                                                                                                         |  |  |  |
| 11. <u>WHEN</u> RCS temperature is less the Pressurizer temperature is less<br>ADD Hydrogen Peroxide per CHEM<br>Peroxide Addition to the React | han 160°F <u>AND</u> ADDED<br>s than 180°F, <u>THEN</u><br>-40.007, Hydrogen<br>or Coolant.                                                             |  |  |  |
| a. (CAS) MAINTAIN at least on<br>for approximately 24 hours<br>Peroxide addition <u>OR</u> as de<br>Chemistry Supervision.                      | e RXCP operating MAINTAINED<br>following Hydrogen<br>termined by                                                                                        |  |  |  |
| b. (CAS) MAINTAIN letdown flo<br>Bed Demineralizers for gre<br>to 48 hours following pero                                                       | b. (CAS) MAINTAIN letdown flow through CVC Mixed MAINTAINED<br>Bed Demineralizers for greater than or equal<br>to 48 hours following peroxide addition. |  |  |  |
| CONTINU                                                                                                                                         | ED                                                                                                                                                      |  |  |  |
|                                                                                                                                                 |                                                                                                                                                         |  |  |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                            | NO. N-0-05                                                                                                             |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT TITLE Plant Cooldown from Hot Shute Cold Shutdown Condition                        |                                                                                                                        |  |  |  |
| OPERATING PROCEDURE                                                                                             | DATE OCT 06 2004 PAGE 21 of 24                                                                                         |  |  |  |
|                                                                                                                 | INITIALS                                                                                                               |  |  |  |
| 4.4<br>CONTINUED                                                                                                |                                                                                                                        |  |  |  |
| <pre>12. (&amp;) <u>IF</u> RCS draining is require<br/>the following:</pre>                                     | d, <u>THEN</u> PERFORM APPLIES/NA                                                                                      |  |  |  |
| a. <u>IF</u> PRT hydrogen concentrat<br>2% by volume, <u>THEN</u> PURGE P                                       | a. <u>IF</u> PRT hydrogen concentration is greater than PURGED/NA<br>2% by volume, <u>THEN</u> PURGE PRT per N-RC-36B. |  |  |  |
| b. Expose PRT Sparger Line:                                                                                     |                                                                                                                        |  |  |  |
| 1. (CR/L) Locally, CLOSE<br>to CVC Holdup Tanks.                                                                | CVC-802 RCDT Disch CLOSED                                                                                              |  |  |  |
| 2. (CR/L) Locally, OPEN R<br>Waste Holdup Tank.                                                                 | C-511 RCDT Disch to OPEN                                                                                               |  |  |  |
| 3. OPEN RC-507/CV-31134,<br>Disch Header Isol.                                                                  | 3. OPEN RC-507/CV-31134, Rx Clnt Drain Pump OPEN<br>Disch Header Isol.                                                 |  |  |  |
| 4. OPEN RC-508/CV-31135,<br>Disch Header Isol.                                                                  | Rx Clnt Drain Pump OPEN                                                                                                |  |  |  |
| CAUTI                                                                                                           | <u>DN</u>                                                                                                              |  |  |  |
| Do <u>NOT</u> allow PRT pressure to exceed 75 pisg.                                                             |                                                                                                                        |  |  |  |
| NOTE: NG-301 is set to 85-90 psig to help maintain<br>PRT pressure between 1.0 and 3.0 psig with<br>PR-40 open. |                                                                                                                        |  |  |  |
| 5. (CR/L) Locally ADJUST<br>85-90 psig.                                                                         | NG-301 to 85-90 PSIG                                                                                                   |  |  |  |
| 6. OPEN NG-302/CV-31298,<br>Nitrogen Supply Isol.                                                               | Przr Relief Tank OPEN                                                                                                  |  |  |  |
| 7. OPEN PR-40/CV-31257, P<br>Drain Isolation.                                                                   | rzr Relief Tank OPEN                                                                                                   |  |  |  |
| 8. (CAS) CYCLE PR-40 to m<br>pressure 1.0-3.0 psig<br><u>CONTINU</u>                                            | aintain PRT CYCLED<br>(P0440A).<br>ED                                                                                  |  |  |  |
|                                                                                                                 |                                                                                                                        |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                    | NO. N-0-05                                                                                                      |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--|--|
| KEWAUNEE NUCLEAR POWER PLANT TITLE Plant Cooldown from Hot Shutdow<br>Cold Shutdown Condition                                                                                                                                                           |                                                                                                                 |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                     | DATE OCT 06 2004 PAGE 22 of 24                                                                                  |  |  |
|                                                                                                                                                                                                                                                         | INITIALS                                                                                                        |  |  |
| 4.4.12.b<br>CONTINUED                                                                                                                                                                                                                                   |                                                                                                                 |  |  |
| 9. <u>WHEN</u> PRT level reaches<br>PR-40.                                                                                                                                                                                                              | 12%, <u>THEN</u> CLOSE CLOSED                                                                                   |  |  |
| 10. (CR/L) Locally ADJUST<br>1.0-3.0 psig.                                                                                                                                                                                                              | NG-301 to 1.0-3.0 PSIG                                                                                          |  |  |
| 11. CLOSE RC-507.                                                                                                                                                                                                                                       | CLOSED                                                                                                          |  |  |
| 12. CLOSE RC-508.                                                                                                                                                                                                                                       | CLOSED                                                                                                          |  |  |
| 13. (CR/L) Locally, CLOSE                                                                                                                                                                                                                               | RC-511. CLOSED                                                                                                  |  |  |
| 14. (CR/L) Locally, OPEN C                                                                                                                                                                                                                              | VC-802. OPEN                                                                                                    |  |  |
| <u>NOTE</u> : Engineering can evaluate actual conditions to determine<br>if RHR Heat Exchanger capacity is adequate or if other<br>actions will be required.                                                                                            |                                                                                                                 |  |  |
| 13. (CR/L) <u>IF</u> inlet temperature of<br>Service Water train, as locall<br>TI-12008 (Train A) and TI-1200<br>is greater than 50°F, <u>THEN</u> REQ<br>management contact Engineering<br>evaluation prior to removing a<br>from service. [PCR008661] | any operating RÉQUESTED/NA<br>y read on<br>9 (Train B),<br>UEST Operations<br>to conduct an<br>single RHR train |  |  |
| <u>NOTE</u> : Boration of the RCS should b<br>stopping the last RXCP to en<br>concentration in the RCS.                                                                                                                                                 | e accomplished before<br>sure uniform boric acid                                                                |  |  |
| 14. (&) <u>IF</u> boration is required, <u>T</u><br>per N-CVC-35A as follows:                                                                                                                                                                           | HEN BORATE the RCS APPLIES/NA                                                                                   |  |  |
| a. <u>IF</u> entry into mid-loop con<br><u>THEN</u> BORATE to greater tha                                                                                                                                                                               | ditions is planned, >1400 ppm/NA<br>n 1400 ppm.                                                                 |  |  |
| <u>OR</u>                                                                                                                                                                                                                                               |                                                                                                                 |  |  |
| b. <u>IF</u> refueling activities ar<br>BORATE to Refueling Shutdo<br>concentration.                                                                                                                                                                    | e planned, <u>THEN</u> RSD/NA<br>wn boron                                                                       |  |  |
| CONTINU                                                                                                                                                                                                                                                 | <u>ED</u>                                                                                                       |  |  |
|                                                                                                                                                                                                                                                         |                                                                                                                 |  |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                              | <b>NO.</b> N-0-05                                                      |  |  |  |
|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                      | TITLE Plant Cooldown from Hot Shutdown to Cold Shutdown Condition      |  |  |  |
| OPERATING PROCEDURE                                                                               | DATE OCT 06 2004 PAGE 23 of 24                                         |  |  |  |
|                                                                                                   | INITIALS                                                               |  |  |  |
|                                                                                                   |                                                                        |  |  |  |
| 4.4<br><u>CONTINUED</u>                                                                           |                                                                        |  |  |  |
| 15. (&) <u>WHEN</u> any RCS Cold Leg temp<br>than 145°F, <u>THEN</u> PERFORM the f                | erature is less<br>ollowing:                                           |  |  |  |
| a. STOP one RXCP per N-RC-36A                                                                     | . STOPPED                                                              |  |  |  |
| b. POSITION stopped RXCP C/S                                                                      | in PULLOUT. PULLOUT                                                    |  |  |  |
| c. TAG RXCP control switch fo                                                                     | r status control. TAGGED                                               |  |  |  |
| CAUTI                                                                                             | <u>ON</u>                                                              |  |  |  |
| RCS boron concentration requirements                                                              | shall be met prior to stopping the                                     |  |  |  |
| last RXCP.                                                                                        |                                                                        |  |  |  |
| 16. CONTINUE RCS depressurization to less than or ≤100 psig<br>equal to 100 psig per N-CVC-35B.   |                                                                        |  |  |  |
| 17. (&) <u>WHEN</u> RXCP #1 Seal D/P appr<br><u>THEN</u> PERFORM the following:                   | oaches 200 psid,                                                       |  |  |  |
| a. STOP running RXCP per N-RC                                                                     | -36A. STOPPED                                                          |  |  |  |
| b. POSITION stopped RXCP C/S                                                                      | in PULLOUT. PULLOUT                                                    |  |  |  |
| c. TAG RXCP control switch fo                                                                     | r status control. TAGGED                                               |  |  |  |
| 18. (&) <u>WHEN</u> RCS pressure is less than 100 psig, <u>THEN</u><br>ISOLATE RXCP seal leakoff: |                                                                        |  |  |  |
| a. CLOSE CVC-207A/CV-31237, R<br>Leakoff Isolation                                                | a. CLOSE CVC-207A/CV-31237, RXCP A #1 Seal CLOSED<br>Leakoff Isolation |  |  |  |
| b. CLOSE CVC-207B/CV-31238, R<br>Leakoff Isolation                                                | XCP B #1 Sea1 CLOSED                                                   |  |  |  |
| c. CLOSE CVC-250/CV-31239, RX<br>Bypass                                                           | CP A & B #1 Seal CLOSED                                                |  |  |  |
| CONTINUED                                                                                         |                                                                        |  |  |  |
|                                                                                                   |                                                                        |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION NO. N-0-05                             |                                                                         |                            |                       |                            |              |
|-----------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------------|-----------------------|----------------------------|--------------|
| KEWAUNEE NUCLEAR POWER PLANT TITLE Plant Cooldown fro<br>Cold Shutdown Conc |                                                                         | n from Hot Sh<br>Condition | utdown to             |                            |              |
| OI                                                                          | PERATING PROCEDURE                                                      | DATE                       | OCT 06 2004           | PAGE 24                    | <b>of</b> 24 |
|                                                                             |                                                                         |                            |                       | <u>INI</u>                 | TIALS        |
| 4.4<br><u>CONTINUED</u>                                                     |                                                                         |                            |                       |                            |              |
| 19.                                                                         | (&) <u>IF</u> RCS draining is require<br>Pressurizer relief line to PRT | d, <u>THEN</u><br>:        | PURGE                 | APPLIES/NA                 | _            |
|                                                                             | a. OPEN RC-46/SV-33663, RX/PR<br>Przr Relief Tank.                      | ZR Head                    | Vent to               | OPEN                       | _            |
|                                                                             | b. OPEN RC-49/SV-33662, RX/PR<br>Containment.                           | ZR Head                    | Vent To               | OPEN                       | _            |
|                                                                             | c. PURGE for 20 minutes.                                                | . PURGE for 20 minutes.    |                       | PURGED                     |              |
|                                                                             | d. CLOSE RC-46.                                                         | CLOSE RC-46.               |                       | CLOSED                     |              |
|                                                                             | e. CLOSE RC-49.                                                         |                            |                       | CLOSED                     |              |
| 20.                                                                         | (&) CONTINUE RCS cooldown to r temperature.                             | equired                    |                       | CONTINUED                  |              |
| 21.                                                                         | <u>IF</u> RCS draining is required, <u>T</u>                            | <u>HEN GO T</u>            | <u>0</u> N-RC-36E. TR | ANSITIONED <u>.</u><br>/NA |              |
|                                                                             |                                                                         |                            |                       |                            |              |
|                                                                             |                                                                         |                            |                       |                            |              |
|                                                                             |                                                                         |                            |                       |                            |              |
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| WISCONSIN PUBLIC SERVICE C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ORPORATION              | NO. N-CCI-56A                                                        |                              | <b>REV</b> F    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|----------------------------------------------------------------------|------------------------------|-----------------|
| KEWAUNEE NUCLEAR POWER PLANT TITLE Open Containment Boundary Trackir                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                         |                                                                      | ent Boundary Tracking        |                 |
| OPERATING PROCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | OPERATING PROCEDURE     |                                                                      | DATE SEP 23 2004 PAGE 1 of 4 |                 |
| REVIEWED BY William R                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Behrendt                | APPROVED BY Phillip A Short                                          |                              | Phillip A Short |
| NUCLEAR XES<br>SAFETY RELATED NO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PORC REVIEW<br>REQUIRED | ☑ YES     SRO APPROVAL OF     ☑ YES       □ NO     REQUIRED     □ NO |                              |                 |
| NUCLEAR<br>SAFETY RELATED       YES<br>NO       PORC REVIEW<br>REQUIRED       YES<br>NO       SRO APPROVAL OF<br>TEMPORARY CHANGES       YES<br>TEMPORARY CHANGES         1.0 INTRODUCTION         1.1 Procedure describes the method of tracking open containment boundaries<br>as required by N-CCI-56A-CLB.       NO         1.2 The purpose of the Open Boundary Tracking Log is to identify open<br>containment boundaries that require special attention if containment<br>closure is required.         2.0 PRECAUTIONS AND LIMITATIONS         2.1 Operable containment isolation valves and dampers stall satisfy<br>requirements of Technical Specifications.         2.2 Non-operable containment isolation valves and dampers shall satisfy<br>requirements of Tech Spec 3.8.a.1 or be recorded in the Open Boundary<br>Tracking Log.         2.3 Isolation boundaries for non-operable containment isolation valves and<br>dampers shall be administratively controlled by a Tagout.         2.4 All open containment boundaries, including non-operable containment<br>isolation valves and dampers that do <u>MOT</u> satisfy requirements of Tech<br>Spec 3.8.a.1, shall be recorded in the Open Boundary Tracking Log.         2.5 A person shall be appointed for each open containment boundary<br>to ensure the boundary is closed if Containment boundary<br>to ensure the boundary is closed if Containment isolation a 24-hour basis by<br>an appointed responsible person. |                         |                                                                      |                              |                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                         |                                                                      |                              |                 |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                             | NO. N-CCI-56A                                                                                                   |      |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT TITLE Open Containment Boundary T                                                                                                   |                                                                                                                 |      |  |  |
| OPERATING PROCEDURE DATE SEP 23 2004 PAGE 2                                                                                                                      |                                                                                                                 |      |  |  |
|                                                                                                                                                                  |                                                                                                                 |      |  |  |
| 3.0 INITIAL CONDITIONS                                                                                                                                           |                                                                                                                 |      |  |  |
| 3.1 <u>IF</u> in Midloop Conditions, <u>THEN</u> the                                                                                                             | following conditions ap                                                                                         | ply: |  |  |
| 1. Plant is in Cold Shutdown <u>OR</u> Re                                                                                                                        | fueling Shutdown                                                                                                |      |  |  |
| 2. Reactor Vessel level will be re<br>(reduced RCS inventory condition                                                                                           | <ol> <li>Reactor Vessel level will be reduced to less than 16%<br/>(reduced RCS inventory condition)</li> </ol> |      |  |  |
| 3. N-CCI-56A-CLA <u>OR</u> N-CCI-56A-CLB                                                                                                                         | is being performed                                                                                              |      |  |  |
| 3.2 <u>IF</u> in conditions other than Midloop, <u>THEN</u> the Shift Manager has determined special attention should be placed on an open containment boundary. |                                                                                                                 |      |  |  |
|                                                                                                                                                                  |                                                                                                                 |      |  |  |
|                                                                                                                                                                  |                                                                                                                 |      |  |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION |                                                                                                                                                                                                                                                                                                                    | NO. N-CCI-56A                            |  |  |
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| к                                    | EWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                        | TITLE Open Containment Boundary Tracking |  |  |
|                                      | OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                | DATE SEP 23 2004 PAGE 3 of 4             |  |  |
|                                      |                                                                                                                                                                                                                                                                                                                    |                                          |  |  |
| 4.0 <u>PROC</u>                      | EDURE                                                                                                                                                                                                                                                                                                              |                                          |  |  |
| 4.1                                  | 4.1 The Shift Manager shall determine if a penetration can be opened when approaching or in reduced RCS inventory condition. This depends on:                                                                                                                                                                      |                                          |  |  |
|                                      | <ul> <li>Nature of work</li> <li>Other means of isolation available</li> <li>Time required for alternate closure</li> <li>Environment in which closure would be accomplished</li> </ul>                                                                                                                            |                                          |  |  |
| 4.2                                  | 4.2 RECORD all open containment boundaries, including non-operable<br>containment isolation valves and dampers <u>NOT</u> satisfying requirements<br>of Tech Spec 3.8.a.1, that could provide a direct path from<br>containment atmosphere to the environment in the Open Boundary<br>Tracking Log (Attachment A). |                                          |  |  |
| 4.3                                  | RECORD the following information f                                                                                                                                                                                                                                                                                 | or each open containment boundary:       |  |  |
|                                      | 1. Associated penetration number                                                                                                                                                                                                                                                                                   |                                          |  |  |
|                                      | 2. Brief description of location including elevation                                                                                                                                                                                                                                                               |                                          |  |  |
|                                      | 3. Work group performing work on the boundary and responsible person(s) for the work group                                                                                                                                                                                                                         |                                          |  |  |
|                                      | 4. All associated tagout numbers                                                                                                                                                                                                                                                                                   |                                          |  |  |
|                                      | 5. A short description of the nature of the work being performed,<br>alternate closure means, additional precautions, or any other<br>pertinent information                                                                                                                                                        |                                          |  |  |
|                                      | 6. Name of person responsible for                                                                                                                                                                                                                                                                                  | closure                                  |  |  |
| 4.4                                  | 4.4 <u>WHEN</u> open containment boundary is closed and/or restored to operable<br>condition, <u>THEN</u> RECORD date and time and initial for completion.<br>(Independent Verification required)                                                                                                                  |                                          |  |  |
|                                      |                                                                                                                                                                                                                                                                                                                    |                                          |  |  |
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|------------------------------|------------------------|-------------------------------|---------------------------|------------------|----------|------------|
| KEWAUNEE NUCLEAR POWER PLANT |                        | TI                            | <b>FLE</b> Open Containme | ent Boundary     | Tracking |            |
|                              | OPERATING              | G PROCEDURE                   | DAT                       | TE SEP 23 2004   | PAGE 4   | of 4       |
|                              |                        | <u>TA</u>                     | TACHMENT                  | <u>A</u>         |          |            |
|                              |                        | <u>OPEN BOUN</u>              | <u>DARY TRA</u>           | <u>CKING LOG</u> |          |            |
| PENE<br>NO                   | LOCATION/<br>ELEVATION | WORK GROUP/<br>RESP PERSON(S) | TAGOUT<br>NO              | COMMENTS         |          | RTS/<br>IV |
|                              |                        |                               |                           |                  |          | ]          |
|                              |                        |                               |                           |                  |          |            |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                   |                         | <b>NO.</b> N-C                                                                            | CI-56A-CLA  | REV           | К                        |
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| KEWAUNEE NUCLEAR POWER PLANT                                                           |                         | Reduced Inventory Cntmt Integrity<br><b>TITLE</b> Checklist - SG Secondary Side<br>Intact |             |               | nt Integrity<br>ary Side |
| OPERATING PROCEI                                                                       | DURE                    | DATE M                                                                                    | IAY 13 2004 | PAGE          | 1 <b>of</b> 10           |
| REVIEWED BY                                                                            |                         | APPRO                                                                                     | VED BY      |               |                          |
| NUCLEAR XES<br>SAFETY RELATED NO                                                       | PORC REVIEW<br>REQUIRED | YES SRO APPROVAL OF<br>TEMPORARY CHANGES<br>NO REQUIRED                                   |             | ⊠ YES<br>□ NO |                          |
|                                                                                        | DATE                    |                                                                                           |             | - <u>-</u>    |                          |
| 1.0 <u>PLANT REQUIREMENTS</u>                                                          |                         |                                                                                           |             |               | OPER OPER                |
| 1.1 Plant in Cold Shutdo                                                               | wn or Refuelin          | g Shutdown.                                                                               |             |               |                          |
| 1.2 Containment vessel e                                                               | quipment hatch          | closed.                                                                                   |             |               |                          |
| 1.3 Reactor vessel level >17%.                                                         |                         |                                                                                           |             |               |                          |
| 1.4 Planned work includes reducing RCS level to enter reduced RCS inventory condition. |                         |                                                                                           |             |               |                          |
|                                                                                        |                         |                                                                                           |             |               |                          |
|                                                                                        |                         |                                                                                           |             |               |                          |
|                                                                                        |                         |                                                                                           |             |               |                          |
|                                                                                        |                         |                                                                                           |             |               |                          |
|                                                                                        |                         |                                                                                           |             |               |                          |
|                                                                                        |                         |                                                                                           |             |               |                          |
|                                                                                        |                         |                                                                                           |             |               |                          |
|                                                                                        |                         |                                                                                           |             |               |                          |
|                                                                                        |                         |                                                                                           |             |               |                          |
|                                                                                        |                         |                                                                                           |             |               |                          |
|                                                                                        |                         |                                                                                           |             |               |                          |
|                                                                                        |                         |                                                                                           |             |               |                          |
|                                                                                        |                         |                                                                                           |             |               |                          |
|                                                                                        |                         |                                                                                           |             |               |                          |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                          | NO. N-CCI-56A-CLA                                                                      |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                  | Reduced Inventory Cntmt Integrity<br>TITLE Checklist - SG Secondary Side<br>Intact     |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                           | DATE MAY 13 2004 PAGE 2 of 10                                                          |  |  |  |
| DATE                                                                                                                                                                                                                                          | FIRST SECOND                                                                           |  |  |  |
| 2.0 <u>SYSTEM_EQUIPMENT_STATUS</u>                                                                                                                                                                                                            |                                                                                        |  |  |  |
| 2.1 Containment Integrity is verified                                                                                                                                                                                                         | as follows:                                                                            |  |  |  |
| <ol> <li><u>IF</u> equipment can be verified in<br/>per this checklist, ESTABLISH<br/><u>AND</u> initial in First Oper space<br/>operator shall VERIFY this con-<br/>in Second Oper space.</li> </ol>                                         | n required condition<br>required condition<br>e. A second<br>dition <u>AND</u> INITIAL |  |  |  |
| <ol> <li><u>IF</u> equipment can <u>NOT</u> be verificed on the condition per this checklist, following:</li> </ol>                                                                                                                           | ed in required<br>PERFORM the                                                          |  |  |  |
| a. <u>IF</u> a Containment System Is<br>inoperable, PERFORM one of                                                                                                                                                                            | olation valve is<br>the following:                                                     |  |  |  |
| <ol> <li>DEACTIVATE inoperable valve in CLOSED<br/>position AND administratively control this<br/>isolation per NAD-3.3, Tagout Control.<br/>INITIAL in First Oper space <u>AND</u> RECORD<br/>tagout number in Second Oper space.</li> </ol> |                                                                                        |  |  |  |
| <u>OR</u>                                                                                                                                                                                                                                     |                                                                                        |  |  |  |
| 2. CLOSE at least one valve in line with<br>inoperable valve <u>AND</u> administratively<br>control this isolation per NAD-3.3, Tagout<br>Control. INITIAL in First Oper space <u>AND</u><br>RECORD tagout number in Second Oper<br>space.    |                                                                                        |  |  |  |
| b. <u>IF</u> an isolation boundary can <u>NOT</u> be<br>established, RECORD open boundary in Open<br>Boundary Tracking Log (N-CCI-56A). INITIAL in<br>First Oper space <u>AND</u> WRITE "OBTL" using red<br>ink in Second Oper space.         |                                                                                        |  |  |  |
| 2.2 RHR is in service in normal cooldo                                                                                                                                                                                                        | wn mode. SATISFIED                                                                     |  |  |  |
| 2.3 Containment Emergency Airlock:                                                                                                                                                                                                            |                                                                                        |  |  |  |
| 1. Satisfactory SP 56A-154A.                                                                                                                                                                                                                  | COMPLETED                                                                              |  |  |  |
| 2. Door interlocks OPERABLE.                                                                                                                                                                                                                  | OPERABLE                                                                               |  |  |  |
| 3. One door of airlock CLOSED.                                                                                                                                                                                                                | CLOSED                                                                                 |  |  |  |
|                                                                                                                                                                                                                                               |                                                                                        |  |  |  |

| ONSIN PUBLIC SERVICE CORPORATION                                                           | NO. N-CCI-56A-CLA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |
|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| EWAUNEE NUCLEAR POWER PLANT                                                                | Reduced Inven<br>TITLE Checklist - S<br>Intact                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | tory Cntmt Integrity<br>G Secondary Side                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |
| OPERATING PROCEDURE                                                                        | DATE MAY 13 2004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>PAGE</b> 3 of 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |
| DATE FIRST SECON                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |
| Containment Main Personnel Airlock                                                         | :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | UPER OPER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |
| 1. Satisfactory SP 56A-154A.                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | COMPLETED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |
| 2. Door interlocks OPERABLE.                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | OPERABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |
| 3. One door of airlock CLOSED.                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | CLOSED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |
| Valve enclosure for SI-350A/MV-320                                                         | 12, INSTALLED.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | INSTALLED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |
| Valve enclosure for SI-350B/MV-320                                                         | 13, INSTALLED.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | INSTALLED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |
| 2.7 Steam Generator 1A secondary side hand holes (2) and INSTALLED manways (2), INSTALLED. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |
| Steam Generator 1B secondary side  <br>manways (2), INSTALLED.                             | hand holes (2) and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | INSTALLED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |
| Containment Isolation Manual Pushbuttons, OPERABLE. OPERABLE                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |
| 2.10 At least one Containment Spray Pump and two OPERABLE                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |
| ITORING_AND_ALARM_REQUIREMENTS                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |
| Containment Isolation Active Statu                                                         | s Panel is OPERABLE.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | OPERABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |
| At least one Control Room SAS unit<br>Operation mode ON DISPLAY.                           | OPERABLE with RHR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | OPERABLE/<br>ON DISPLAY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |
| VERIFY Containment Evacuation Alar                                                         | m on MCC A operable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | OPERABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |
|                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |
|                                                                                            | CONSIN PUBLIC SERVICE CORPORATION<br>CEWAUNEE NUCLEAR POWER PLANT<br>OPERATING PROCEDURE<br>DATE<br>Containment Main Personnel Airlock<br>1. Satisfactory SP 56A-154A.<br>2. Door interlocks OPERABLE.<br>3. One door of airlock CLOSED.<br>Valve enclosure for SI-350A/MV-320<br>Valve enclosure for SI-350B/MV-320<br>Steam Generator 1A secondary side I<br>manways (2), INSTALLED.<br>Steam Generator 1B secondary side I<br>manways (2), INSTALLED.<br>Containment Isolation Manual Pushb<br>At least one Containment Spray Pum<br>Containment Fan Coil Units, OPERAB<br>(IORING AND ALARM REQUIREMENTS<br>Containment Isolation Active Statu:<br>At least one Control Room SAS unit<br>Operation mode ON DISPLAY.<br>VERIFY Containment Evacuation Alart | ONSIN PUBLIC SERVICE CORPORATION       NO. N-CC1-56A-CLA         Reduced Inven       Reduced Inven         OPERATING PROCEDURE       DATE         DATE       DATE         Containment Main Personnel Airlock:       Intact         1. Satisfactory SP 56A-154A.       Door interlocks OPERABLE.         3. One door of airlock CLOSED.       Valve enclosure for SI-350A/MV-32012, INSTALLED.         Yalve enclosure for SI-350B/MV-32013, INSTALLED.       Steam Generator 1A secondary side hand holes (2) and manways (2), INSTALLED.         Steam Generator 1B secondary side hand holes (2) and manways (2), INSTALLED.       Containment Isolation Manual Pushbuttons, OPERABLE.         At least one Containment Spray Pump and two Containment Isolation Active Status Panel is OPERABLE.       At least one Control Room SAS unit OPERABLE with RHR Operation mode ON DISPLAY.         VERIFY Containment Evacuation Alarm on MCC A operable.       At least one Control Room SAS unit OPERABLE with RHR |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                     | NO. N-CCI-56A-CLA                                                                  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                             | Reduced Inventory Cntmt Integrity<br>TITLE Checklist - SG Secondary Side<br>Intact |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                      | DATE MAY 13 2004 PAGE 4 of 10                                                      |  |  |  |
| DATE                                                                                                                                                                                                                                                                                                                                     | FIRST SECOND                                                                       |  |  |  |
| 4.0 <u>REMOTELY OPERATED_AND_AUTOMATIC_VALVES</u>                                                                                                                                                                                                                                                                                        | UPEK UPEK                                                                          |  |  |  |
| NOTE: The verification of integrity and administrative controls, of<br>inoperable or manual valves per N-FH-53-CLA, satisfy the<br>verification requirements of this checklist for all of<br>Section 4.0. Indicate the use of N-FH-53-CLA for verification by<br>initialing First Oper spaces and entering "#" in Second Oper<br>spaces. |                                                                                    |  |  |  |
| 4.1 <u>Control Room:</u>                                                                                                                                                                                                                                                                                                                 |                                                                                    |  |  |  |
| NG-107/CV-31253, Nitrogen Supply to                                                                                                                                                                                                                                                                                                      | o SI Accumulators OPERABLE                                                         |  |  |  |
| SI-9A/MV-32094, Safety Injection to                                                                                                                                                                                                                                                                                                      | o RCS Cold Legs CLOSED                                                             |  |  |  |
| SI-9B/MV-32095, Safety Injection to                                                                                                                                                                                                                                                                                                      | o Reactor Vessel CLOSED                                                            |  |  |  |
| CC-601A/MV-32084, Component Cooling                                                                                                                                                                                                                                                                                                      | g to RXCP A CLOSED <u>OR</u> CC<br>SYS INTACT<br>TO RXCP A                         |  |  |  |
| CC-612A/MV-32086, RXCP A Component                                                                                                                                                                                                                                                                                                       | Cooling Return Isol CLOSED <u>OR</u> CC<br>SYS INTACT<br>TO RXCP A                 |  |  |  |
| CC-601B/MV-32085, Component Cooling                                                                                                                                                                                                                                                                                                      | g to RXCP B CLOSED <u>OR</u> CC<br>SYS INTACT<br>TO RXCP B                         |  |  |  |
| CC-612B/MV-32087, RXCP B Component                                                                                                                                                                                                                                                                                                       | Cooling Return Isol CLOSED <u>OR</u> CC<br>SYS INTACT<br>TO RXCP B                 |  |  |  |
| CC-653/MV-32082, Excess Letdown Hx                                                                                                                                                                                                                                                                                                       | Comp Cooling Return OPERABLE                                                       |  |  |  |
| LD-6/CV-31234, Letdown Line Isolat                                                                                                                                                                                                                                                                                                       | ion OPERABLE                                                                       |  |  |  |
| CVC-212/MV-32115, RXCP Seal Water                                                                                                                                                                                                                                                                                                        | Return Isolation OPERABLE                                                          |  |  |  |
| CVC-211/MV-32124, RXCP Seal Water                                                                                                                                                                                                                                                                                                        | Return Isolation OPERABLE                                                          |  |  |  |
| AS-1/CV-31383, Containment Air Sam                                                                                                                                                                                                                                                                                                       | ple Isolation A OPERABLE                                                           |  |  |  |
| AS-32/CV-31385, Containment Air Sam                                                                                                                                                                                                                                                                                                      | mple Isolation C OPERABLE                                                          |  |  |  |
| AS-2/CV-31384, Containment Air Sam<br><u>CONTINU</u>                                                                                                                                                                                                                                                                                     | ple Isolation B OPERABLE                                                           |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION         | NO. N-CCI-56A-CLA                                     |                                          |  |
|----------------------------------------------|-------------------------------------------------------|------------------------------------------|--|
| KEWAUNEE NUCLEAR POWER PLANT                 | Reduced Inven<br><b>TITLE</b> Checklist – S<br>Intact | tory Cntmt Integrity<br>G Secondary Side |  |
| OPERATING PROCEDURE                          | DATE MAY 13 2004                                      | <b>PAGE 5 of</b> 10                      |  |
| DATE                                         |                                                       | FIRST SECOND<br>OPER OPER                |  |
| 4.1<br><u>CONTINUED</u>                      |                                                       |                                          |  |
| MD(R)-134/CV-31136, Cntmt Sump Pum<br>Isol   | ps Discharge Header                                   | OPERABLE                                 |  |
| MD(R)-135/CV-31137, Cntmt Sump Pum<br>Isol   | ps Discharge Header                                   | OPERABLE                                 |  |
| RC-402/CV-31263, Pressurizer Steam           | Sampling Isolation                                    | OPERABLE                                 |  |
| RC-412/CV-31264, Pressurizer Liqui           | OPERABLE                                              |                                          |  |
| RC-422/SV-33092, Rx Coolant Hot Le           | OPERABLE                                              |                                          |  |
| RC-403/CV-31267, Pressurizer Steam           | OPERABLE                                              |                                          |  |
| RC-413/CV-31268, Pressurizer Liqui           | OPERABLE                                              |                                          |  |
| RC-423/SV-33327, Rx Coolant Hot Le           | OPERABLE                                              |                                          |  |
| MU-1010-1/CV-31261, Przr Relief Ta<br>Isol   | nk Make Up Water                                      | OPERABLE                                 |  |
| MG(R)-512/CV-31259, Przr Relief Ta           | nk Gas Sampling Isol                                  | OPERABLE                                 |  |
| MG(R)-513/CV-31260, Przr Relief Ta           | nk Gas Sampling Isol                                  | OPERABLE                                 |  |
| NG-302/CV-31298, Przr Relief Tank            | Nitrogen Supply Isol                                  | OPERABLE                                 |  |
| RC-507/CV-31134, Rx Clnt Drain Pum           | RC-507/CV-31134, Rx Clnt Drain Pump Disch Header Isol |                                          |  |
| RC-508/CV-31135, Rx Clnt Drain Pum           | p Disch Header Isol                                   | OPERABLE                                 |  |
| MG(R)-509/CV-31132, RCDT Vent to W           | MG(R)-509/CV-31132, RCDT Vent to Waste Gas Header     |                                          |  |
| MG(R)-510/CV-31133, RCDT Vent to W           | MG(R)-510/CV-31133, RCDT Vent to Waste Gas Header     |                                          |  |
| MG(R)-503/CV-31216, RCDT to Gas An           | zr Header Isolation                                   | OPERABLE                                 |  |
| MG(R)-504/CV-31217, RCDT to Gas An           | zr Header Isolation                                   | OPERABLE                                 |  |
| MD(R)-323A/MV-32390, Deaerated Dra<br>Isol A | ins Tank Cntmt Disch                                  | OPERABLE                                 |  |
| CONTINU                                      | ED                                                    |                                          |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                            | NO. N-CCI-56A-CLA                                     |                                          |  |
|-----------------------------------------------------------------|-------------------------------------------------------|------------------------------------------|--|
| KEWAUNEE NUCLEAR POWER PLANT                                    | Reduced Inven<br><b>TITLE</b> Checklist - S<br>Intact | tory Cntmt Integrity<br>G Secondary Side |  |
| <b>OPERATING PROCEDURE</b>                                      | DATE MAY 13 2004                                      | <b>PAGE</b> 6 of 10                      |  |
| DATE                                                            |                                                       | FIRST SECOND<br>OPER OPER                |  |
| 4.1<br><u>CONTINUED</u>                                         |                                                       |                                          |  |
| MD(R)-323B/MV-32391, Deaerated Dra<br>Isol B                    | ins Tank Cntmt Disch                                  | OPERABLE                                 |  |
| WG-310/SV-33655, Deaerated Drains<br>Cntmt                      | OPERABLE                                              |                                          |  |
| CVC-54/SV-33651, VCT Vent to Cntmt                              | OPERABLE                                              |                                          |  |
| VB-10A/CV-31337, Power Operated Cntmt Vacuum Breaker A          |                                                       | OPERABLE                                 |  |
| VB-10B/CV-31338, Power Operated Cntmt Vacuum Breaker B          |                                                       | OPERABLE                                 |  |
| LOCA-201B/CV-31727, Post LOCA Hydrogen Recombiner B to<br>Cntmt |                                                       | OPERABLE                                 |  |
| LOCA-100B/CV-31725, Post LOCA Hydrogen to Recombiner B          |                                                       | OPERABLE                                 |  |
| SA-7003B/MV-32148, Hydrogen Diluti                              | OPERABLE                                              |                                          |  |
| LOCA-2B/MV-32146, Post LOCA Hydrog                              | en Cntmt Vent Isol B                                  | OPERABLE                                 |  |
| RBV–1/CV–31125, Cntmt Purge/Vent S                              | upply Valve A                                         | OPERABLE                                 |  |
| RBV-4/CV-31123, Cntmt Purge/Vent E                              | xhaust Valve A                                        | OPERABLE                                 |  |
| RBV-2/CV-31126, Cntmt Purge/Vent S                              | RBV-2/CV-31126, Cntmt Purge/Vent Supply Valve B       |                                          |  |
| RBV-3/CV-31124, Cntmt Purge/Vent E                              | xhaust Valve B                                        | OPERABLE                                 |  |
| BT-31A/CV-31334, S/G Sample Isol V                              | lvs                                                   | OPERABLE                                 |  |
| BT-31B/CV-31270, S/G Sample Isol V                              | lvs                                                   | OPERABLE                                 |  |
| BT-32A/CV-31335, S/G Sample Isol V                              | lvs                                                   | OPERABLE                                 |  |
| BT-32B/CV-31271, S/G Sample Isol V                              | lvs                                                   | OPERABLE                                 |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                        | NO. N-CCI-56A-CLA                                     | <u></u>                                    |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                | Reduced Inver<br><b>TITLE</b> Checklist - S<br>Intact | itory Cntmt Integrity<br>GG Secondary Side |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                         | DATE MAY 13 2004                                      | <b>PAGE</b> 7 of 10                        |  |
| DATE                                                                                                                                                                                                                                                                                                                                                                                                        |                                                       | FIRST SECOND<br>OPER_ OPER_                |  |
| 4.2 <u>Dedicated Snutdown Panel</u><br>CVC-212/MV-32115, Seal Water Leal<br>Local/Remote Su                                                                                                                                                                                                                                                                                                                 | off Isolation MV -<br>vitch                           | REMOTE                                     |  |
| LD-6/CV-31234, Letdown Flow to La<br>Keyswitch                                                                                                                                                                                                                                                                                                                                                              | dn Hx Isol CV -                                       | NORMAL                                     |  |
| 4.3 <u>Post LOCA Hydrogen Control Panel</u>                                                                                                                                                                                                                                                                                                                                                                 |                                                       |                                            |  |
| LOCA-2A/MV-32145, Post LOCA Hydro<br>Isol A                                                                                                                                                                                                                                                                                                                                                                 | ogen Cntmnt Vent                                      | CLOSED /<br>SEALED                         |  |
| SA-7003A/MV-32147, Hydrogen Dilu                                                                                                                                                                                                                                                                                                                                                                            | tion to Containment                                   | CLOSED /<br>SEALED                         |  |
| 5.0 LOCAL VALVE POSITIONS                                                                                                                                                                                                                                                                                                                                                                                   |                                                       |                                            |  |
| NOTE: The verification of integrity and administrative controls, of<br>inoperable or manual valves per N-FH-53-CLA, satisfy the<br>verification requirements of this checklist for all of<br>Section 5.0 EXCEPT those items marked with an astrisk (Pen 42N<br>and Pen 43N). Indicate the use of N-FH-53-CLA for verification<br>by initialing First Oper spaces and entering "#" in Second Oper<br>spaces. |                                                       |                                            |  |
| 5.1 <u>Auxiliary Building - East Penetra</u>                                                                                                                                                                                                                                                                                                                                                                | ation_Room_606'_Level                                 |                                            |  |
| ICS-80B Containment Spray Head                                                                                                                                                                                                                                                                                                                                                                              | ier 1B Test Conn                                      | CLOSED/<br>CAPPED/<br>SEALED               |  |
| ICS-79B Containment Spray Hea                                                                                                                                                                                                                                                                                                                                                                               | ler 1B Test Conn                                      | CLOSED/<br>CAPPED                          |  |
| ICS-7B Cntmt Spray Pump 1B to                                                                                                                                                                                                                                                                                                                                                                               | o Cntmt Vessel                                        | LOCKED/<br>CLOSED                          |  |
|                                                                                                                                                                                                                                                                                                                                                                                                             |                                                       |                                            |  |

| WISC | WISCONSIN PUBLIC SERVICE CORPORATION |                                   | NO. N                                                                                     | -CCI-56A-CLA |                              |                |
|------|--------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------|--------------|------------------------------|----------------|
| K    | KEWAUNEE NUCLEAR POWER PLANT         |                                   | Reduced Inventory Cntmt Integrity<br><b>TITLE</b> Checklist - SG Secondary Side<br>Intact |              |                              | tegrity<br>ide |
|      | OPERATI                              | ING PROCEDURE                     | DATE                                                                                      | MAY 13 2004  | PAGE 8                       | <b>of</b> 10   |
|      |                                      | DATE                              |                                                                                           |              | FIR                          | ST SECOND      |
| 5.2  | <u>Auxiliary</u>                     | <u>Building - North Penetra</u>   | tion Room                                                                                 | 606'_Level   | <u>UPC</u>                   | <u>K UPEK</u>  |
|      | ICS-80A                              | Containment Spray Header          | r 1A Test                                                                                 | Conn         | CLOSED/<br>CAPPED/<br>SEALED |                |
|      | ICS-79A                              | Containment Spray Heade           | r 1A Test                                                                                 | Conn         | CLOSED/<br>CAPPED            |                |
|      | ICS-7A                               | Cntmt Spray Pump 1A to            | Cntmt Ves                                                                                 | sel          | LOCKED/<br>CLOSED            |                |
|      | SI-39A                               | Cold Leg Inj Line Vent            | (Pen 28N)                                                                                 |              | CLOSED/<br>CAPPED            |                |
|      | SI-211                               | Test Line Vent (Pen 35)           |                                                                                           |              | CLOSED/<br>CAPPED/<br>LOCKED |                |
| 5.3  | <u>Auxiliary</u>                     | <u>Building Basement - SI P</u>   | <u>ump Area</u>                                                                           |              |                              |                |
|      | SI-204                               | Test Line to Refueling            | Water Stg                                                                                 | Tank Isol    | LOCKED/<br>CLOSED            |                |
| 5.4  | <u>Auxiliary</u>                     | Building - BAST_Room              |                                                                                           |              |                              |                |
|      | Penetrati                            | on 3 Pressurizer Pressu<br>Tester | re Dead W                                                                                 | leight       | CAPPED                       | <u> </u>       |
|      | SW-6010                              | Cntmt SW Hose Stations            | Isol                                                                                      |              | LOCKED/<br>CLOSED            |                |
|      |                                      |                                   |                                                                                           |              |                              |                |
|      |                                      |                                   |                                                                                           |              |                              |                |
|      |                                      |                                   |                                                                                           |              |                              |                |
|      |                                      |                                   |                                                                                           |              |                              |                |
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| WISCONSIN PUBLIC SERVICE CORPORATION                              | NO. N-CCI-56A-CLA                                                                  | |
|---|---|---|
| KEWAUNEE NUCLEAR POWER PLANT                                      | Reduced Inventory Cntmt Integrity<br>TITLE Checklist – SG Secondary Side<br>Intact |
| OPERATING PROCEDURE                                               | DATE MAY 13 2004 PAGE 9 of 10                                                      |
| DATE                                                              | FIRST SECOND                                                                       |
| <u>NOTE</u> : For Containment Vessel Pressuriza<br>B is required. | <u>OPER_OPER_</u><br>ation Test (PEN 42N), either A or                             |
| 5.5 <u>Reactor Building</u>                                       |                                                                                    |
| BT-40A Stm Gen 1A Blowdown Dra                                    | in CLOSED/<br>CAPPED/<br>SEALED                                                    |
| BT-40B Stm Gen 1B Blowdown Dra                                    | in CLOSED/ CAPPED/<br>SEALED                                                       |
| Penetration 3DWT Pressurizer Pres<br>Tester                       | ssure Dead Weight CAPPED                                                           |
| * <u>Containment_Vessel_Pressurization</u>                        | <u>Test (Pen 42N)</u> :                                                            |
| A Containment Vessel Blind Fla                                    | ange INSTALLED                                                                     |
| Blind Flange Test Conn                                            | CAPPED                                                                             |
| <u>OR</u>                                                         |                                                                                    |
| B Fiber Optic Cable Penetratio                                    | on Seal INSTALLED                                                                  |
| * <u>Refueling_Cables_(Pen_43N)</u> :                             |                                                                                    |
| Refueling Cable Penetration                                       | Blind Flange INSTALLED                                                             |
| AND                                                               |                                                                                    |
| Blind Flange Test Conn                                            | CAPPED                                                                             |
| MS-30A Steam Gen 1A Vent                                          | CLOSED                                                                             |
| MS-30B Steam Gen 1B Vent                                          | CLOSED                                                                             |
| FW-80A One Inch Vent at Stm Gen                                   | n 1A CLOSED/ CAPPED                                                                |
| FW-80B One Inch Vent at Stm Gen                                   | n 1B CLOSED/ CAPPED                                                                |
|                                                                   |                                                                                    |
| WISCONSIN PURLIC SERVICE CORPORATION                                                                                                                                             | NO. N-CCI-56A-CLA                                                                                            |                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                     | Reduced Invent<br><b>TITLE</b> Checklist – SG<br>Intact                                                      | ory Cntmt Integrity<br>Secondary Side |
| OPERATING PROCEDURE                                                                                                                                                              | <b>DATE</b> MAY 13 2004                                                                                      | PAGE 10 of 10                         |
| DATE                                                                                                                                                                             |                                                                                                              | FIRST SECOND<br><u>OPER OPER</u>      |
| CPT-60 Containment Vessel Pre                                                                                                                                                    | ssurization Line Vent                                                                                        | CLOSED                                |
| CPT-80 Penetration 43N Vent                                                                                                                                                      |                                                                                                              | CLOSED                                |
| PERFORMED BY         PERFORMED BY         PERFORMED BY         PERFORMED BY         PERFORMED BY         PERFORMED BY         SHIFT MANAGER         ASSISTANT MANAGER OPERATIONS | DATE         DATE         DATE         DATE         DATE         DATE         DATE         DATE         DATE |                                       |

|     | · · · · · · · · · · · · · · · · · · ·                                            |                         | 220 11 0      |                                     |                   | V                        |
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| ]   | WISCONSIN PUBLIC SERVICE C                                                       | ORPORATION              | NO. N-C       |                                     | REV               | K                        |
|     | KEWAUNEE NUCLEAR POWER PLANT TITLE Checklist - SG Seconda<br>Intact              |                         |               |                                     |                   | nt Integrity<br>ary Side |
|     | OPERATING PROCEE                                                                 | URE                     | DATE M        | AY 13 2004                          | PAGE              | 1 of 10                  |
|     | REVIEWED BY                                                                      | non)                    | APPRO         | IR                                  |                   |                          |
|     | NUCLEAR SAFETY RELATED NO                                                        | PORC REVIEW<br>REQUIRED | ⊠ YES<br>□ NO | SRO APPROV<br>TEMPORARY<br>REQUIRED | VAL OF<br>CHANGES | ⊠ YES<br>□ NO            |
|     |                                                                                  | DATE                    |               |                                     |                   |                          |
| 1.0 | PLANT REQUIREMENTS                                                               |                         |               |                                     |                   | OPER OPER                |
|     | 1.1 Plant in Cold Shutdown or Refueling Shutdown.                                |                         |               |                                     |                   |                          |
|     | 1.2 Containment vessel equipment hatch closed.                                   |                         |               |                                     |                   |                          |
|     | 1.3 Reactor vessel level >17%.                                                   |                         |               |                                     |                   |                          |
|     | 1.4 Planned work includes reducing RCS level to enter                            |                         |               |                                     |                   |                          |
|     |                                                                                  |                         |               |                                     |                   |                          |
|     |                                                                                  |                         |               |                                     |                   |                          |
|     | с.<br>С.<br>С.<br>С.<br>С.<br>С.<br>С.<br>С.<br>С.<br>С.<br>С.<br>С.<br>С.<br>С. |                         |               |                                     |                   |                          |
|     |                                                                                  |                         |               |                                     |                   |                          |
|     |                                                                                  |                         |               |                                     |                   |                          |
|     |                                                                                  |                         |               |                                     |                   |                          |
|     |                                                                                  |                         |               |                                     |                   |                          |
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|     |                                                                                  |                         |               |                                     |                   |                          |
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|     |                                                                                  |                         |               |                                     |                   |                          |
|     |                                                                                  |                         |               |                                     |                   |                          |
|     | - Concept of the second                                                          |                         |               | •                                   |                   |                          |
|     |                                                                                  |                         |               |                                     |                   |                          |
|     |                                                                                  | CONTINUC                | DUS USE       |                                     |                   |                          |

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|     | WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                               | NO. N-CCI-56A-CLA                                                                                         |                                            |  |  |  |  |  |
|     | KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                       | Reduced Inver<br>TITLE Checklist – S<br>Intact                                                            | itory Cntmt Intégrity<br>3G Secondary Side |  |  |  |  |  |
|     | OPERATING PROCEDURE                                                                                                                                                                                | DATE MAY 13 2004                                                                                          | PAGE 2 of 10                               |  |  |  |  |  |
|     | DATE                                                                                                                                                                                               |                                                                                                           | FIRST SECOND<br>OPER OPER                  |  |  |  |  |  |
| 2.0 | SYSTEM EQUIPMENT STATUS                                                                                                                                                                            |                                                                                                           |                                            |  |  |  |  |  |
|     | 2.1 Containment Integrity is verified                                                                                                                                                              | as follows:                                                                                               |                                            |  |  |  |  |  |
|     | <ol> <li><u>IF</u> equipment can be verified i<br/>per this checklist. ESTABLISH<br/><u>AND</u> initial in First Oper spac<br/>operator shall VERIFY this con<br/>in Second Oper space.</li> </ol> | n required condition<br>required condition<br>e. A second<br>dition <u>AND</u> INITIAL                    |                                            |  |  |  |  |  |
|     | <ol> <li><u>IF</u> equipment can <u>NOT</u> be verifi</li> <li>condition per this checklist,<br/>following:</li> </ol>                                                                             | ed in required<br>PERFORM the                                                                             |                                            |  |  |  |  |  |
|     | a. <u>IF</u> a Containment System Isolation valve is<br>inoperable, PERFORM one of the following:                                                                                                  |                                                                                                           |                                            |  |  |  |  |  |
|     | <ol> <li>DEACTIVATE inoperable<br/>position AND administr<br/>isolation per NAD-3.3.<br/>INITIAL in First Oper<br/>tagout number in Second</li> </ol>                                              | valve in CLOSED<br>atively control this<br>Tagout Control.<br>space <u>AND</u> RECORD<br>d Oper space.    |                                            |  |  |  |  |  |
|     | <u>OR</u>                                                                                                                                                                                          |                                                                                                           |                                            |  |  |  |  |  |
|     | 2. CLOSE at least one value<br>inoperable value <u>AND</u> and<br>control this isolation<br>Control. INITIAL in F<br>RECORD tagout number<br>space.                                                | ve in line with<br>dministratively<br>per NAD-3.3, Tagout<br>irst Oper space <u>AND</u><br>in Second Oper |                                            |  |  |  |  |  |
|     | b. <u>IF</u> an isolation boundary c<br>established, RECORD open B<br>Boundary Tracking Log (N-CO<br>First Oper space <u>AND</u> WRITE<br>ink in Second Oper space.                                | an <u>NOT</u> be<br>boundary in Open<br>CI-56A). INITIAL in<br>"OBTL" using red                           |                                            |  |  |  |  |  |
|     | 2.2 RHR is in service in normal cooldow                                                                                                                                                            | vn mode.                                                                                                  | SATISFIED                                  |  |  |  |  |  |
|     | 2.3 Containment Emergency Airlock:                                                                                                                                                                 |                                                                                                           |                                            |  |  |  |  |  |
|     | 1. Satisfactory SP 56A-154A.                                                                                                                                                                       |                                                                                                           | COMPLETED                                  |  |  |  |  |  |
|     | 2. Door interlocks OPERABLE.                                                                                                                                                                       |                                                                                                           | OPERABLE                                   |  |  |  |  |  |
| 1   | 3. One door of airlock CLOSED.                                                                                                                                                                     |                                                                                                           | CLOSED                                     |  |  |  |  |  |
|     |                                                                                                                                                                                                    |                                                                                                           |                                            |  |  |  |  |  |

### CONTINUOUS USE

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|       | WISCONSIN PUBLIC SERVICE CORPORATION                                          | NO. N-CCI-56A-CLA                                                                  |                                         |  |  |  |
|       | KEWAUNEE NUCLEAR POWER PLANT                                                  | Reduced Inventory Cntmt Integrity<br>TITLE Checklist - SG Secondary Side<br>Intact |                                         |  |  |  |
|       | OPERATING PROCEDURE                                                           | DATE MAY 13 2004                                                                   | PAGE 3 of 10                            |  |  |  |
|       | DATE                                                                          |                                                                                    | FIRST SECOND<br><u>OPER</u> <u>OPER</u> |  |  |  |
|       | 2.4 Containment Main Personnel Airlock                                        | <:                                                                                 |                                         |  |  |  |
|       | 1. Satisfactory SP 56A-154A.                                                  |                                                                                    | COMPLETED                               |  |  |  |
|       | 2. Door interlocks OPERABLE.                                                  |                                                                                    | OPERABLE                                |  |  |  |
|       | 3. One door of airlock CLOSED.                                                |                                                                                    | CLOSED                                  |  |  |  |
|       | 2.5 Valve enclosure for SI-350A/MV-320                                        | 012, INSTALLED.                                                                    | INSTALLED                               |  |  |  |
| I     | 2.6 Valve enclosure for SI-350B/MV-320                                        | 013, INSTALLED.                                                                    | INSTALLED                               |  |  |  |
|       | 2.7 Steam Generator 1A secondary side<br>manways (2), INSTALLED.              | hand holes (2) and                                                                 | INSTALLED                               |  |  |  |
| 1     | 2.8 Steam Generator 1B secondary side<br>manways (2), INSTALLED.              | hand holes (2) and                                                                 | INSTALLED                               |  |  |  |
| I     | 2.9 Containment Isolation Manual Pusht                                        | outtons, OPERABLE.                                                                 | OPERABLE                                |  |  |  |
| I     | 2.10 At least one Containment Spray Pun<br>Containment Fan Coil Units, OPERAE | np and two<br>BLE.                                                                 | OPERABLE                                |  |  |  |
| 3.0   | MONITORING AND ALARM REQUIREMENTS                                             |                                                                                    |                                         |  |  |  |
| 1     | i<br>3.1 Containment Isolation Active Statu<br>i                              | is Panel is OPERABLE.                                                              | OPERABLE                                |  |  |  |
|       | 3.2 At least one Control Room SAS unit<br>Operation mode ON DISPLAY.          | : OPERABLE with RHR                                                                | OPERABLE/<br>ON DISPLAY                 |  |  |  |
|       | 3.3 VERIFY Containment Evacuation Alar                                        | m on MCC A operable.                                                               | OPERABLE                                |  |  |  |
|       |                                                                               |                                                                                    |                                         |  |  |  |

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|     | WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                            | NO. N                                                        | -CCI-56A-CL                                                           | A                                                |                            |
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|     | KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                    | TITLE                                                        | Reduced In<br>Checklist<br>Intact                                     | ventory Cn<br>- SG Secon                         | tmt Integrity<br>dary Side |
|     | OPERATING PROCEDURE                                                                                                                                                                             | DATE                                                         | MAY 13 200                                                            | 4 PAGE                                           | : 4 of 10                  |
|     | DATE                                                                                                                                                                                            |                                                              |                                                                       |                                                  | FIRST SECOND               |
| 4.0 | REMOTELY OPERATED AND AUTOMATIC VALVES                                                                                                                                                          |                                                              |                                                                       |                                                  | UPER OPER                  |
|     | NOTE: The verification of integrity an<br>inoperable or manual valves per<br>verification requirements of thi<br>Section 4.0. Indicate the use o<br>initialing First Oper spaces and<br>spaces. | d adminis<br>N-FH-53-C<br>s checkli<br>f N-FH-53<br>entering | trative con<br>LA, satisfy<br>st for all<br>-CLA for ve<br>"#" in Sec | trols, of<br>the<br>of<br>rification<br>ond Oper | Ьу                         |
|     | 4.1 <u>Control Room:</u>                                                                                                                                                                        |                                                              |                                                                       |                                                  |                            |
|     | NG-107/CV-31253, Nitrogen Supply t                                                                                                                                                              | o SI Accu                                                    | mulators                                                              | OPERA                                            | 3LE                        |
|     | SI-9A/MV-32094, Safety Injection t                                                                                                                                                              | o RCS Col                                                    | d Legs                                                                | CLOS                                             | SED                        |
|     | SI-9B/MV-32095, Safety Injection t                                                                                                                                                              | o Reactor                                                    | Vessel                                                                | CLOS                                             | SED                        |
|     | CC-601A/MV-32084, Component Coolin                                                                                                                                                              | g to RXCP                                                    | A                                                                     | CLOSED <u>OR</u><br>SYS INT/<br>TO RXCI          | CC<br>ACT<br>2 A           |
|     | CC-612A/MV-32086, RXCP A Component                                                                                                                                                              | Cooling                                                      | Return Isol                                                           | CLOSED <u>OR</u><br>SYS INT/<br>TO RXCF          | CC<br>ACTA                 |
|     | CC-601B/MV-32085, Component Coolin                                                                                                                                                              | g to RXCP                                                    | В                                                                     | CLOSED <u>OR</u><br>SYS INT/<br>TO RXCF          | CC<br>ACT<br>? B           |
|     | CC-612B/MV-32087. RXCP B Component                                                                                                                                                              | Cooling                                                      | Return Isol                                                           | CLOSED <u>OR</u><br>SYS INT/<br>TO RXCF          | CC<br>ACT<br>B             |
|     | CC-653/MV-32082, Excess Letdown Hx                                                                                                                                                              | Comp Coo                                                     | ling Return                                                           | OPERAE                                           | 3LE                        |
|     | LD-6/CV-31234, Letdown Line Isolat                                                                                                                                                              | ion                                                          |                                                                       | OPERAE                                           | 3LE                        |
|     | CVC-212/MV-32115, RXCP Seal Water                                                                                                                                                               | Return Is                                                    | olation                                                               | OPERAE                                           | 3LE                        |
|     | CVC-211/MV-32124, RXCP Seal Water                                                                                                                                                               | Return Is                                                    | olation                                                               | OPERAE                                           | 3LE                        |
|     | AS-1/CV-31383, Containment Air Sam                                                                                                                                                              | ple Isola                                                    | tion A                                                                | OPERAE                                           | LE                         |
|     | AS-32/CV-31385. Containment Air Sa                                                                                                                                                              | mple Isol                                                    | ation C                                                               | OPERAE                                           | ILE                        |
|     | AS-2/CV-31384. Containment Air Sam                                                                                                                                                              | ple Isola                                                    | tion B                                                                | OPERAE                                           | LE                         |
|     | CONTINU                                                                                                                                                                                         | ED                                                           |                                                                       |                                                  |                            |
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# CONTINUOUS USE

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| WISCONSIN PUBLIC SERVICE CORPORATION          | NO. N-CCI-56A-CLA                                      |                                          |  |
| KEWAUNEE NUCLEAR POWER PLANT                  | Reduced Inven<br>TITLE Checklist – S<br>Intact         | tory Cntmt Integrity<br>G Secondary Side |  |
| OPERATING PROCEDURE                           | DATE MAY 13 2004                                       | PAGE 5 of 10                             |  |
| DATE                                          |                                                        | FIRST SECOND<br>OPER OPER                |  |
| 4.1<br><u>CONTINUED</u>                       |                                                        |                                          |  |
| MD(R)-134/CV-31136, Cntmt Sump Pump<br>Isol   | os Discharge Header                                    | OPERABLE                                 |  |
| MD(R)-135/CV-31137. Cntmt Sump Pump<br>Isol   | os Discharge Header                                    | OPERABLE                                 |  |
| RC-402/CV-31263, Pressurizer Steam            | Sampling Isolation                                     | OPERABLE                                 |  |
| RC-412/CV-31264, Pressurizer Liquid           | d Sampling Isolation                                   | OPERABLE                                 |  |
| RC-422/SV-33092, Rx Coolant Hot Leg           | RC-422/SV-33092, Rx Coolant Hot Leg Sampling Isolation |                                          |  |
| RC-403/CV-31267, Pressurizer Steam            | RC-403/CV-31267, Pressurizer Steam Sampling Isolation  |                                          |  |
| RC-413/CV-31268, Pressurizer Liquic           | d Sampling Isolation                                   | OPERABLE                                 |  |
| RC-423/SV-33327, Rx Coolant Hot Leg           | g Sampling Isolation                                   | OPERABLE                                 |  |
| MU-1010-1/CV-31261, Przr Relief Tar<br>Isol   | nk Make Up Water                                       | OPERABLE                                 |  |
| MG(R)-512/CV-31259, Przr Relief Tar           | nk Gas Sampling Isol                                   | OPERABLE                                 |  |
| MG(R)-513/CV-31260, Przr Relief Tar           | nk Gas Sampling Isol                                   | OPERABLE                                 |  |
| NG-302/CV-31298, Przr Relief Tank N           | litrogen Supply Isol                                   | OPERABLE                                 |  |
| RC-507/CV-31134, Rx Clnt Drain Pump           | ) Disch Header Isol                                    | OPERABLE                                 |  |
| RC-508/CV-31135, Rx Clnt Drain Pump           | ) Disch Header Isol                                    | OPERABLE                                 |  |
| MG(R)-509/CV-31132, RCDT Vent to Wa           | aste Gas Header                                        | OPERABLE                                 |  |
| MG(R)-510/CV-31133, RCDT Vent to Wa           | iste Gas Header                                        | OPERABLE                                 |  |
| MG(R)-503/CV-31216, RCDT to Gas Anz           | r Header Isolation                                     | OPERABLE                                 |  |
| MG(R)-504/CV-31217, RCDT to Gas Anz           | r Header Isolation                                     | OPERABLE                                 |  |
| MD(R)-323A/MV-32390, Deaerated Drai<br>Isol A | ns Tank Cntmt Disch                                    | OPERABLE                                 |  |
| CONTINUE                                      | <u>:D</u>                                              |                                          |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION         | NO. N-CCI-56A-CLA                              |                                                                                    |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                 | Reduced Inven<br>TITLE Checklist – S<br>Intact | Reduced Inventory Cntmt Integrity<br>TITLE Checklist – SG Secondary Side<br>Intact |  |  |  |  |
| OPERATING PROCEDURE                          | DATE MAY 13 2004                               | PAGE 6 of 10                                                                       |  |  |  |  |
| DATE                                         |                                                | FIRST SECOND<br>OPER OPER                                                          |  |  |  |  |
| 4.1<br><u>CONTINUED</u>                      |                                                |                                                                                    |  |  |  |  |
| MD(R)-323B/MV-32391. Deaerated Dra<br>Isol B | ins Tank Cntmt Disch                           | OPERABLE                                                                           |  |  |  |  |
| WG-310/SV-33655. Deaerated Drains<br>Cntmt   | Tank Vent Outside                              | OPERABLE                                                                           |  |  |  |  |
| CVC-54/SV-33651. VCT Vent to Cntmt           |                                                | OPERABLE                                                                           |  |  |  |  |
| VB-10A/CV-31337. Power Operated Cn           | tmt Vacuum Breaker A                           | OPERABLE                                                                           |  |  |  |  |
| VB-10B/CV-31338, Power Operated Cn           | tmt Vacuum Breaker B                           | OPERABLE                                                                           |  |  |  |  |
| LOCA-201B/CV-31727, Post LOCA Hydro<br>Cntmt | ogen Recombiner B to                           | OPERABLE                                                                           |  |  |  |  |
| LOCA-100B/CV-31725, Post LOCA Hydro          | ogen to Recombiner B                           | OPERABLE                                                                           |  |  |  |  |
| SA-7003B/MV-32148, Hydrogen Dilutio          | on to Containment                              | OPERABLE                                                                           |  |  |  |  |
| LOCA-2B/MV-32146, Post LOCA Hydrog           | en Cntmt Vent Isol B                           | OPERABLE                                                                           |  |  |  |  |
| RBV-1/CV-31125, Cntmt Purge/Vent Sc          | upply Valve A                                  | OPERABLE                                                                           |  |  |  |  |
| RBV-4/CV-31123. Cntmt Purge/Vent Ex          | khaust Valve A                                 | OPERABLE                                                                           |  |  |  |  |
| RBV-2/CV-31126. Cntmt Purge/Vent Su          | upply Valve B                                  | OPERABLE                                                                           |  |  |  |  |
| RBV-3/CV-31124, Cntmt Purge/Vent Ex          | khaust Valve B                                 | OPERABLE                                                                           |  |  |  |  |
| BT-31A/CV-31334, S/G Sample Isol V           | lvs                                            | OPERABLE                                                                           |  |  |  |  |
| BT-31B/CV-31270, S/G Sample Isol V           | lvs                                            | OPERABLE                                                                           |  |  |  |  |
| BT-32A/CV-31335, S/G Sample Isol Vi          | lvs                                            | OPERABLE                                                                           |  |  |  |  |
| BT-32B/CV-31271, S/G Sample Isol V           | lvs                                            | OPERABLE                                                                           |  |  |  |  |

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|           | WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                         | NO. N-CCI-56A-CLA                                                                                                                                                  |                                          |  |  |  |
|           | KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                 | Reduced Inventory Cntmt Integrity<br>TITLE Checklist – SG Secondary Side<br>Intact                                                                                 |                                          |  |  |  |
|           | OPERATING PROCEDURE                                                                                                                                                                                                                          | DATE MAY 13 2004                                                                                                                                                   | PAGE 7 of 10                             |  |  |  |
|           | DATE                                                                                                                                                                                                                                         |                                                                                                                                                                    | FIRST SECOND<br>OPER OPER                |  |  |  |
|           | CVC-212/MV-32115, Seal Water Leako<br>Local/Remote Swit                                                                                                                                                                                      | ff Isolation MV -<br>tch                                                                                                                                           | REMOTE                                   |  |  |  |
|           | LD-6/CV-31234. Letdown Flow to Ltdr<br>Keyswitch                                                                                                                                                                                             | n Hx Isol CV -                                                                                                                                                     | NORMAL                                   |  |  |  |
|           | 4.3 Post LOCA Hydrogen Control Panel                                                                                                                                                                                                         |                                                                                                                                                                    |                                          |  |  |  |
|           | LOCA-2A/MV-32145, Post LOCA Hydrogo<br>Isol A                                                                                                                                                                                                | CLOSED /<br>SEALED                                                                                                                                                 |                                          |  |  |  |
|           | SA-7003A/MV-32147, Hydrogen Dilutio                                                                                                                                                                                                          | CLOSED /<br>SEALED                                                                                                                                                 |                                          |  |  |  |
| 5.0       | LOCAL VALVE POSITIONS                                                                                                                                                                                                                        |                                                                                                                                                                    |                                          |  |  |  |
|           | NOTE: The verification of integrity and<br>inoperable or manual valves per M<br>verification requirements of this<br>Section 5.0 EXCEPT those items may<br>and Pen 43N). Indicate the use of<br>by initialing First Oper spaces a<br>spaces. | d administrative control<br>N-FH-53-CLA. satisfy the<br>s checklist for all of<br>arked with an astrisk (F<br>of N-FH-53-CLA for verif<br>and entering "#" in Seco | s, of<br>Pen 42N<br>Tication<br>Ond Oper |  |  |  |
|           | 5.1 <u>Auxiliary Building - East Penetrati</u>                                                                                                                                                                                               | ion Room 606' Level                                                                                                                                                |                                          |  |  |  |
|           | ICS-80B Containment Spray Header                                                                                                                                                                                                             | r 18 Test Conn                                                                                                                                                     | CLOSED/<br>CAPPED/<br>SEALED             |  |  |  |
|           | ICS-79B Containment Spray Header                                                                                                                                                                                                             | r 1B Test Conn                                                                                                                                                     | CLOSED/<br>CAPPED                        |  |  |  |
|           | ICS-7B Cntmt Spray Pump 1B to C                                                                                                                                                                                                              | Cntmt Vessel                                                                                                                                                       | LOCKED/<br>CLOSED                        |  |  |  |
|           |                                                                                                                                                                                                                                              |                                                                                                                                                                    |                                          |  |  |  |
|           |                                                                                                                                                                                                                                              |                                                                                                                                                                    |                                          |  |  |  |

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| WISC             | ONSIN PUBL                   | IC SERVICE CORPORATION            | NO. N     | -CCI-56A-CLA                                                                       |                              |        |  |  |
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| к                | KEWAUNEE NUCLEAR POWER PLANT |                                   |           | Reduced Inventory Cntmt Integrity<br>TITLE Checklist - SG Secondary Side<br>Intact |                              |        |  |  |
| 1                | OPERAT                       | ING PROCEDURE                     | DATE      | MAY 13 2004                                                                        | PAGE 8                       | of 10  |  |  |
| 4<br>9<br>1      |                              | DATE                              |           |                                                                                    | FIRST                        | SECOND |  |  |
| 5.2              | Auxiliary                    | <u>Building - North Penetral</u>  | tion Room | 606' Level                                                                         | 0121                         |        |  |  |
|                  | ICS-80A                      | Containment Spray Heade           | r 1A Test | Conn                                                                               | CLOSED/<br>CAPPED/<br>SEALED |        |  |  |
|                  | ICS-79A                      | Containment Spray Header          | r 1A Test | Conn                                                                               | CLOSED/<br>CAPPED            |        |  |  |
| ,                | ICS-7A                       | Cntmt Spray Pump 1A to (          | Cntmt Ves | sel                                                                                | LOCKED/<br>CLOSED            |        |  |  |
|                  | SI-39A                       | Cold Leg Inj Line Vent            | (Pen 28N) |                                                                                    | CLOSED/<br>CAPPED            |        |  |  |
| :                | SI-211                       | Test Line Vent (Pen 35)           |           |                                                                                    | CLOSED/<br>CAPPED/<br>LOCKED |        |  |  |
| 5.3              | Auxiliary                    | <u> Building Basement - SI Pr</u> | ump Area  |                                                                                    |                              |        |  |  |
| -<br>-<br>-      | SI-204                       | Test Line to Refueling N          | √ater Stg | Tank Isol                                                                          | LOCKED/<br>CLOSED            |        |  |  |
| 5.4              | <u>Auxiliary</u>             | <u>/ Building - BAST Room</u>     |           |                                                                                    |                              |        |  |  |
|                  | Penetrati                    | on 3 Pressurizer Pressu<br>Tester | re Dead W | leight                                                                             | CAPPED                       |        |  |  |
|                  | SW-6010                      | Cntmt SW Hose Stations .          | Isol      |                                                                                    | LOCKED/<br>CLOSED            |        |  |  |
| 2<br>-<br>-<br>- |                              |                                   |           |                                                                                    |                              |        |  |  |
| <b>1</b><br>N    |                              |                                   |           |                                                                                    |                              |        |  |  |
|                  |                              |                                   |           |                                                                                    |                              |        |  |  |
| ł                |                              |                                   |           |                                                                                    |                              |        |  |  |
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| WISCONSIN PUBLIC SERVI                  | CE CORPORATION           | NO.                                                                                | I-CCI-56A-CLA    |                              |              |
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| KEWAUNEE NUCLEAR                        | POWER PLANT              | Reduced Inventory Cntmt Integrity<br>TITLE Checklist - SG Secondary Side<br>Intact |                  |                              |              |
| OPERATING PRO                           | CEDURE                   | DATE                                                                               | MAY 13 2004      | PAGE 9                       | <b>of</b> 10 |
|                                         | DATE                     |                                                                                    |                  | FIRS                         | T SECOND     |
| NOTE: For Containment<br>B is required. | t Vessel Pressuri        | zation Te                                                                          | st (PEN 42N), ei | ther A or                    | <u>OPER</u>  |
| 5.5 <u>Reactor Building</u>             |                          |                                                                                    |                  |                              |              |
| BT-40A Stm Ge                           | en 1A Blowdown Dr        | ain                                                                                |                  | CLOSED/<br>CAPPED/<br>SEALED |              |
| BT-40B Stm Ge                           | en 18 Blowdown Dr        | ain                                                                                |                  | CLOSED/<br>CAPPED/<br>SEALED |              |
| Penetration 3DWT                        | Pressurizer Pr<br>Tester | essure Dea                                                                         | ed Weight        | CAPPED                       |              |
| * <u>Containment Vess</u>               | <u>sel Pressurizatio</u> | n Test (Po                                                                         | <u>en 42N)</u> : |                              |              |
| A Containmer                            | nt Vessel Blind F        | lange                                                                              |                  | INSTALLED                    |              |
| Blind Flar                              | nge Test Conn            |                                                                                    |                  | CAPPED                       |              |
|                                         | <u>OR</u>                |                                                                                    |                  |                              |              |
| B Fiber Opti                            | ic Cable Penetrat        | ion Seal                                                                           |                  | INSTALLED                    |              |
| * <u>Refueling_Cables</u>               | <u>(Pen 43N)</u> :       |                                                                                    |                  |                              |              |
| Refueling                               | Cable Penetratio         | n Blind F                                                                          | ange             | INSTALLED                    | <u> </u>     |
| 4.<br>                                  | AND                      |                                                                                    |                  |                              |              |
| Blind Flar                              | nge Test Conn            |                                                                                    |                  | CAPPED                       |              |
| MS-30A Steam                            | Gen 1A Vent              |                                                                                    |                  | CLOSED                       | <u> </u>     |
| MS-30B Steam                            | Gen 1B Vent              |                                                                                    |                  | CLOSED                       |              |
| FW-80A One Ir                           | ich Vent at Stm G        | en 1A                                                                              |                  | CLOSED/<br>CAPPED            |              |
| FW-80B One In                           | ich Vent at Stm G        | en 1B                                                                              |                  | CLOSED/<br>CAPPED            |              |
| ,                                       |                          |                                                                                    |                  |                              |              |

| WISCONSIN PUBLIC SERVICE CORPORATION       NO. N-CCI-56A-CLA         KEWAUNEE NUCLEAR POWER PLANT       Reduced Inventory Cntmt I         OPERATING PROCEDURE       DATE         DATE       DATE         DATE       MAY 13 2004         PAGE       II         DATE       DATE         DATE       OPERATING PROCEDURE         DATE       DATE         DATE       DATE         CPT-60       Containment Vessel Pressurization Line Vent       CLOSED_         CPT-80       Penetration 43N Vent       CLOSED_         PERFORMED BY       DATE       DATE         PERFORMED BY       DATE       DATE |                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| KEWAUNEE NUCLEAR POWER PLANT       Reduced Inventory Cntmt I         OPERATING PROCEDURE       DATE       MAY 13 2004       PAGE 10         DATE       MAY 13 2004       PAGE 10         DATE       DATE       MAY 13 2004       PAGE 10         DATE       DATE       MAY 13 2004       PAGE 10         DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                        |
| OPERATING PROCEDURE       DATE       MAY 13 2004       PAGE 10         DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ntegrity<br>Side       |
| DATE FI<br>OF<br>5.6 Annulus<br>CPT-60 Containment Vessel Pressurization Line Vent CLOSED_<br>CPT-80 Penetration 43N Vent CLOSED_<br>PERFORMED BY DATE<br>PERFORMED BY DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | of 10                  |
| 5.6       Annulus         CPT-60       Containment Vessel Pressurization Line Vent       CLOSED         CPT-80       Penetration 43N Vent       CLOSED         PERFORMED BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | RST SECOND<br>PER OPER |
| CPT-60       Containment Vessel Pressurization Line Vent       CLOSED         CPT-80       Penetration 43N Vent       CLOSED         PERFORMED BY        DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |
| CPT-80         Penetration 43N Vent         CLOSED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                        |
| PERFORMED BY       DATE         PERFORMED BY       DATE         PERFORMED BY       DATE         PERFORMED BY       DATE         PERFORMED BY       DATE         PERFORMED BY       DATE         PERFORMED BY       DATE         PERFORMED BY       DATE         PERFORMED BY       DATE         PERFORMED BY       DATE         PERFORMED BY       DATE         PERFORMED BY       DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                        |
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| PERFORMED BY         DATE           PERFORMED BY         DATE           SHIFT MANAGER         DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                        |
| PERFORMED BY DATE DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                        |
| SHIFT MANAGER DATE DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                        |
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| ASSISTANT MANAGER OPERATIONS DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                        |
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| WISCONSIN PUBLIC SERVICE C                       | ORPORATION                     | NO. N-C     | CI-56A-CLB                          | REV                    | J                    |              |
| KEWAUNEE NUCLEAR POW                             | ER PLANT                       | TITLE C     | educed Inven<br>hecklist - S        | tory Cntr<br>G Seconda | nt Integ<br>ary Side | rity<br>Open |
| OPERATING PROCED                                 | URE                            | DATE H      | IAY 13 2004                         | PAGE                   | l of                 | 15           |
| REVIEWED BY                                      | Lines                          | APPRO       | VED BY Du                           | 11                     |                      |              |
| NUCLEAR SAFETY RELATED NO                        | PORC REVIEW<br>REQUIRED        | YES 🗌 NO    | SRO APPROV<br>TEMPORARY<br>REQUIRED | AL OF<br>CHANGES       | ⊠ Y<br>□ N           | ES<br>O      |
|                                                  | DATE                           |             |                                     |                        | FIRST                | SECOND       |
| 1.0 PLANT REQUIREMENTS                           |                                |             |                                     |                        | <u>OPER</u>          | <u>OPER</u>  |
| 1.1 Plant is in Cold Shu                         | tdown or Refue                 | ling Shutdo | wn.                                 |                        |                      |              |
| 1.2 Containment vessel e                         | quipment door                  | is closed.  |                                     |                        |                      |              |
| 1.3 Reactor vessel level                         | is >17%.                       |             |                                     |                        |                      |              |
| 1.4 Planned work include<br>reduced RCS inventor | s reducing RCS<br>y condition. | level to e  | enter                               |                        | <u> </u>             |              |
|                                                  |                                |             |                                     |                        |                      |              |
| ng Ya mulaa n                                    |                                |             |                                     |                        |                      |              |
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| WISC                                     | ONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                        | NO. N-CCI-56A-CLB                                                                                     |                                               |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| K                                        | EWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                             | TITLE Reduced Invent<br>Checklist – SC                                                                | tory Cntmt Integrity<br>G Secondary Side Oper |
| 1 A                                      | OPERATING PROCEDURE                                                                                                                                                                                     | DATE MAY 13 2004                                                                                      | PAGE 2 of 15                                  |
| 2                                        | DATE                                                                                                                                                                                                    |                                                                                                       |                                               |
| .0 <u>\$YST</u>                          | EM EQUIPMENT STATUS                                                                                                                                                                                     |                                                                                                       | <u>urck</u> <u>urck</u>                       |
| 2.1                                      | Containment Integrity is verified a                                                                                                                                                                     | s follows:                                                                                            |                                               |
| n a ser n' n'an an a' nembra             | <ol> <li><u>IF</u> equipment can be verified in<br/>per this checklist. ESTABLISH r<br/><u>AND</u> initial in First Oper space<br/>operator shall VERIFY this cond<br/>in Second Oper space.</li> </ol> | required condition<br>required condition<br>2. A second<br>lition <u>AND</u> INITIAL                  |                                               |
| a ", ", ", ", ", ", ", ", ", ", ", ", ", | <ol> <li><u>IF</u> equipment can <u>NOT</u> be verified<br/>condition per this checklist, P<br/>following:</li> </ol>                                                                                   | ed in required<br>PERFORM the                                                                         |                                               |
| 16. La 19. La 19.                        | a. <u>IF</u> a Containment System Isc<br>inoperable, PERFORM one of                                                                                                                                     | lation valve is<br>the following:                                                                     |                                               |
|                                          | <ol> <li>DEACTIVATE inoperable v<br/>position AND administra<br/>isolation per NAD-3.3,<br/>INITIAL in First Oper s<br/>tagout number in Second</li> </ol>                                              | alve in CLOSED<br>tively control this<br>Tagout Control.<br>pace <u>AND</u> RECORD<br>Oper space.     |                                               |
| 1<br>1<br>1                              | <u>OR</u>                                                                                                                                                                                               |                                                                                                       |                                               |
| radius de la companya de la menta        | <ol> <li>CLOSE at least one valve<br/>inoperable valve <u>AND</u> ad<br/>control this isolation<br/>Control. INITIAL in Fi<br/>RECORD tagout number i<br/>space.</li> </ol>                             | e in line with<br>ministratively<br>per NAD-3.3. Tagout<br>rst Oper space <u>AND</u><br>n Second Oper |                                               |
|                                          | b. <u>IF</u> an isolation boundary ca<br>established, RECORD open b<br>Boundary Tracking Log (N-CC<br>First Oper space <u>AND</u> WRITE<br>ink in Second Oper space.                                    | n <u>NOT</u> be<br>oundary in Open<br>I-56A). INITIAL in<br>"OBTL" using red                          |                                               |
| 2.2                                      | RHR is in service in normal cooldow                                                                                                                                                                     | n mode.                                                                                               | SATISFIED                                     |
| 2.3                                      | Containment Emergency Personnel Air                                                                                                                                                                     | lock:                                                                                                 |                                               |
|                                          | 1. Satisfactory SP 56A-154A.                                                                                                                                                                            |                                                                                                       | COMPLETED                                     |
|                                          | 2. Door interlocks OPERABLE.                                                                                                                                                                            |                                                                                                       | OPERABLE                                      |
| •                                        | 3. One door of airlock CLOSED.                                                                                                                                                                          |                                                                                                       | CLOSED                                        |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                          | NO. N-CCI-56A-CLB                                                                        |                     |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                  | TITLE Reduced Inventory Cntmt Integrity<br>Checklist - SG Secondary Side Ope             |                     |  |  |  |  |
| OPERATING PROCEDURE                                                           | DATE MAY 13 2004                                                                         | PAGE 3 of 15        |  |  |  |  |
| DATE                                                                          |                                                                                          |                     |  |  |  |  |
| 2.4 Containment Main Personnel Airlock                                        | :                                                                                        | UPLA UPLA           |  |  |  |  |
| 1. Satisfactory SP 56A-154A.                                                  |                                                                                          | COMPLETED           |  |  |  |  |
| 2. Door interlocks OPERABLE.                                                  |                                                                                          | OPERABLE            |  |  |  |  |
| 3. One door of airlock CLOSED.                                                |                                                                                          | CLOSED              |  |  |  |  |
| 2.5 Valve enclosure for SI-350A/MV-320                                        | 12 INSTALLED.                                                                            | INSTALLED           |  |  |  |  |
| 2.6 Valve enclosure for SI-350B/MV-320                                        | 13 INSTALLED.                                                                            | INSTALLED           |  |  |  |  |
| 2.7 Containment Isolation Manual Pushbu                                       | Containment Isolation Manual Pushbuttons OPERABLE.                                       |                     |  |  |  |  |
| 2.8 At least one Containment Spray Pum<br>Containment Fan Coil Units. OPERABI | 2.8 At least one Containment Spray Pump and two<br>Containment Fan Coil Units. OPERABLE. |                     |  |  |  |  |
| 3.0 MONITORING AND ALARM REQUIREMENTS                                         |                                                                                          |                     |  |  |  |  |
| 3.1 Containment Isolation Active Status                                       | s Panel, OPERABLE.                                                                       | OPERABLE            |  |  |  |  |
| 3.2 At least one Control Room SAS unit Operation mode ON DISPLAY.             | OPERABLE with RHR                                                                        | OPERABLE/ON DISPLAY |  |  |  |  |
| 3.3 TLA-18 RHR SYSTEM MONITOR ABNORMAL OPERABLE.                              | (47033-43).                                                                              | OPERABLE            |  |  |  |  |
| 3.4 VERIFY Containment Evacuation Alarm                                       | n on MCC A operable.                                                                     | OPERABLE            |  |  |  |  |
|                                                                               |                                                                                          |                     |  |  |  |  |
|                                                                               |                                                                                          |                     |  |  |  |  |
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| WISC         | CONSIN PUBLIC SERVI                                                                                    | CE CORPORATION                                                                                                 | NO. N-CCI-56A-C                                                                                                | LB                                                       |                                       |  |
|--------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------|--|
|              | ŒWAUNEE NUCLEAR                                                                                        | POWER PLANT                                                                                                    | TITLE Reduced Inventory Cntmt Integrity<br>Checklist - SG Secondary Side Open                                  |                                                          |                                       |  |
| 11<br>•<br>• | OPERATING PRO                                                                                          | CEDURE                                                                                                         | DATE MAY 13 20                                                                                                 | 04 PAGE                                                  | 4 of 15                               |  |
|              |                                                                                                        | DATE                                                                                                           |                                                                                                                |                                                          | FIRST SECOND                          |  |
| D <u>Rem</u> | DTELY OPERATED AND                                                                                     | AUTOMATIC VALVES                                                                                               |                                                                                                                |                                                          | UPER UPER                             |  |
| NOTI         | The verification<br>inoperable or m<br>verification re<br>Section 4.0. I<br>initialing Firs<br>spaces. | on of integrity and<br>nanual valves per l<br>equirements of this<br>indicate the use of<br>it Oper spaces and | d administrative co<br>N-FH-53-CLB. satisf<br>s checklist for all<br>f N-FH-53-CLB for v<br>entering "#" in Se | ntrols, of<br>y the<br>of<br>erification by<br>cond Oper | y                                     |  |
| 4.1          | <u>Mechanical Consol</u>                                                                               | <u>e C</u>                                                                                                     |                                                                                                                |                                                          |                                       |  |
|              | NG-107/CV-31253                                                                                        | Nitrogen Supply 1                                                                                              | to SI Accumulators                                                                                             | OPERABLI                                                 |                                       |  |
|              | SI-9A/MV-32094                                                                                         | Safety Injection                                                                                               | to RCS Cold Legs                                                                                               | CLOSEI                                                   | )                                     |  |
|              | SI-9B/MV-32095                                                                                         | Safety Injection                                                                                               | to Reactor Vessel                                                                                              | CLOSE                                                    | )                                     |  |
|              | CC-601A/MV-32084                                                                                       | Component Cooling                                                                                              | to RXCP A                                                                                                      | CLOSED <u>OR</u> CO<br>SYS INTACT<br>TO RXCP #           |                                       |  |
|              | CC-612A/MV-32086                                                                                       | RXCP A Component                                                                                               | Cooling Return Iso                                                                                             | I CLOSED <u>OR</u> CO<br>SYS INTACT<br>TO RXCP A         |                                       |  |
|              | CC-601B/MV-32085                                                                                       | Component Cooling                                                                                              | to RXCP B                                                                                                      | CLOSED <u>OR</u> CC<br>SYS INTACT<br>TO RXCP B           |                                       |  |
|              | CC-612B/MV-32087                                                                                       | RXCP B Component                                                                                               | Cooling Return Isol                                                                                            | CLOSED <u>OR</u> CC<br>SYS INTACT<br>TO RXCP B           |                                       |  |
| :            | CC-653/MV-32082                                                                                        | Excess Letdown Hx                                                                                              | Comp Cooling Return                                                                                            | OPERABLE                                                 | · · · · · · · · · · · · · · · · · · · |  |
| 4.2          | <u>Mechanical Consol</u>                                                                               | <u>e_B</u>                                                                                                     |                                                                                                                |                                                          |                                       |  |
|              | LD-6/CV-31234                                                                                          | Letdown Line Is                                                                                                | olation                                                                                                        | OPERABLE                                                 | · · · · · · · · · · · · · · · · · · · |  |
|              | CVC-212/MV-32115                                                                                       | RXCP Seal Water                                                                                                | Return Isolation                                                                                               | OPERABLE                                                 |                                       |  |
| ; •          | CVC-211/MV-32124                                                                                       | RXCP Seal Water                                                                                                | Return Isolation                                                                                               | ΟΒΕΡΑΡΙΕ                                                 |                                       |  |

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| /ISC( | ONSIN PUBLIC SERVICE       | CORPORATION                    | NO. N-CCI-56A-CLB                                                            |              |  |
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| ĸ     | EWAUNEE NUCLEAR PO         | WER PLANT                      | TITLE Reduced Inventory Cntmt Integrity<br>Checklist - SG Secondary Side Ope |              |  |
|       | OPERATING PROCE            | EDURE                          | DATE MAY 13 2004                                                             | PAGE 5 of 15 |  |
|       |                            | DATE                           |                                                                              |              |  |
| .3    | <u>Mechanical_Vertical</u> | <u>Panel B</u>                 |                                                                              | UPER UPER    |  |
|       | AS-1/CV-31383              | Containment Ai                 | r Sample Isolation A                                                         | OPERABLE     |  |
|       | AS-32/CV-31385             | Containment Ai                 | r Sample Isolation C                                                         | OPERABLE     |  |
|       | AS-2/CV-31384              | Containment Ai                 | r Sample Isolation B                                                         | OPERABLE     |  |
|       | MD(R)-134/CV-31136         | Cntmt Sump Pum<br>Isol         | ps Discharge Header                                                          | OPERABLE     |  |
|       | _MD(R)-135/CV-31137        | Cntmt Sump Pum<br>Isol         | ps Discharge Header                                                          | OPERABLE     |  |
| .4    | <u>Mechanical Vertical</u> | Panel A                        |                                                                              |              |  |
|       | RC-402/CV-31263            | Pressurizer St<br>Isolation    | eam Sampling                                                                 | OPERABLE     |  |
|       | RC-412/CV-31264            | Pressurizer Li<br>Isolation    | quid Sampling                                                                | OPERABLE     |  |
|       | RC-422/SV-33092            | Rx Coolant Hot<br>Isolation    | Leg Sampling                                                                 | OPERABLE     |  |
|       | RC-403/CV-31267            | Pressurizer Sto<br>Isolation   | eam Sampling                                                                 | OPERABLE     |  |
|       | RC-413/CV-31268            | Pressurizer Lic<br>Isolation   | quid Sampling                                                                | OPERABLE     |  |
|       | RC-423/SV-33327            | Rx Coolant Hot<br>Isolation    | Leg Sampling                                                                 | OPERABLE     |  |
|       | MU-1010-1/CV-31261         | Przr Relief Tan<br>Isol        | nk Make Up Water                                                             | OPERABLE     |  |
|       | MG(R)-512/CV-31259         | Przr Relief Tar                | nk Gas Sampling Isol                                                         | OPERABLE     |  |
|       | MG(R)-513/CV-31260         | Przr Relief Tar                | nk Gas Sampling Isol                                                         | OPERABLE     |  |
|       | NG-302/CV-31298            | Przr Relief Tar<br>Supply Isol | nk Nitrogen                                                                  | OPERABLE     |  |
|       | RC-507/CV-31134            | Rx Clnt Drain F                | <sup>p</sup> ump Disch                                                       | OPERABLE     |  |

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| W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ISCONSIN PUBLIC SERVICE | CORPORATION                     | NO. N-CCI-56A-CLB                    |                                     |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | KEWAUNEE NUCLEAR PO     | WER PLANT                       | TITLE Reduced Inven<br>Checklist - S | itory Cntmt Inte<br>G Secondary Sic |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | OPERATING PROCE         | DURE                            | DATE MAY 13 2004                     | PAGE 6                              |
| and the second of the second o |                         | DATE                            |                                      | FIRST<br>OPER                       |
| 4.4<br>CONT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | INUED                   |                                 |                                      |                                     |
| :<br>;<br>;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | RC-508/CV-31135         | Rx Clnt Drain<br>Header Isol    | Pump Disch                           | OPERABLE                            |
| •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | MG(R)-509/CV-31132      | RCDT Vent to W                  | aste Gas Header                      | OPERABLE                            |
| I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | MG(R)-510/CV-31133      | RCDT Vent to W                  | aste Gas Header                      | OPERABLE                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | MG(R)-503/CV-31216      | RCDT to Gas An                  | zr Header Isolation                  | OPERABLE                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | MG(R)-504/CV-31217      | RCDT to Gas An                  | zr Header Isolation                  | OPERABLE                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | MD(R)-323A/MV-32390     | Deaerated Drai<br>Isol A        | ns Tank Cntmt Disch                  | OPERABLE                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | MD(R)-3238/MV-32391     | Deaerated Drai<br>Isol B        | ns Tank Cntmt Disch                  | OPERABLE                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | WG-310/SV-33655         | Deaerated Drai<br>Outside Cntmt | ns Tank Vent,                        | OPERABLE                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | CVC-54/SV-33651         | VCT Vent to Cn                  | tmt                                  | OPERABLE                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | VB-10A/CV-31337         | Power Operated<br>Breaker A     | Cntmt Vacuum                         | OPERABLE                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | VB-10B/CV-31338         | Power Operated<br>Breaker B     | Cntmt Vacuum                         | OPERABLE                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | LOCA-201B/CV-31727      | Post LOCA Hydr<br>to Cntmt      | ogen Recombiner B                    | OPERABLE                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | LOCA-1008/CV-31725      | Post LOCA Hydr                  | ogen to Recombiner B                 | OPERABLE                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SA-7003B/MV-32148       | Hydrogen Dilut                  | ion to Containment                   | OPERABLE                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | LOCA-2B/MV-32146        | Post LOCA Hydro<br>Isol B       | ogen Cntmt Vent                      | OPERABLE                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | RBV-1/CV-31125          | Cntmt Purge/Ve                  | nt Supply Valve A                    | OPERABLE                            |
| 1<br>-<br>-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | RBV-4/CV-31123          | Cntmt Purge/Ve                  | nt Exhaust Valve A                   | OPERABLE                            |
| 1<br>.*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | RBV-2/CV-31126          | Cntmt Purge/Ver                 | nt Supply Valve B<br>ED              | OPERABLE                            |

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| WISCONSIN PUBLIC SERVI      | CE CORPORATION                       | NO. N-CCI-56A-CLB            |                                                |
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| KEWAUNEE NUCLEAR            | POWER PLANT                          | TITLE Reduced Inver          | itory Cntmt Integrity<br>G Secondary Side Open |
|                             |                                      |                              |                                                |
| OPERATING PRO               | DCEDURE                              | DATE MAY 13 2004             | PAGE / of 15                                   |
|                             | DATE                                 |                              | FIRST SECOND<br><u>OPER</u> <u>OPER</u>        |
| 4.4<br><u>CONTINUED</u>     |                                      |                              |                                                |
| RBV-3/CV-32124              | Cntmt Purge/Ve                       | nt Exhaust Valve B           | OPERABLE                                       |
| 4.5 <u>Mechanical Conso</u> | <u>le A</u>                          |                              |                                                |
| BT-3A/MV-32078              | S/G A Blowdown I                     | solation Valve A2            | CLOSED                                         |
| BT-3B/MV-32080              | S/G B Blowdown I                     | solation Valve B2            | CLOSED                                         |
| MS-1A/CV-31015              | S/G A Main Steam                     | Isolation Valve              | CLOSED                                         |
| MS-1B/CV-31016              | S/G B Main Steam                     | Isolation Valve              | CLOSED                                         |
| MS-2A/MV-32007              | S/G A MSIV Bypas                     | s Valve                      | CLOSED                                         |
| MS-28/MV-32008              | S/G B MSIV Bypas                     | s Valve                      | CLOSED                                         |
| SD-3A/CV-31170              | A S/G Pwr Op Rlf<br>is CLOSED        | - Info that SD-2A            | SD-2A<br>CLOSED                                |
| SD-3B/CV-31174              | B S/G Pwr Op Rlf<br>is CLOSED        | - Info that SD-2B            | SD-2B<br>CLOSED                                |
| BT-31A/CV-31334             | S/G Sample Isol                      | Vlvs                         | OPERABLE                                       |
| BT-318/CV-31270             | S/G Sample Isol                      | Vlvs                         | OPERABLE                                       |
| BT-32A/CV-31335             | S/G Sample Isol                      | Vlvs                         | OPERABLE                                       |
| BT-32B/CV-31271             | S/G Sample Isol                      | Vlvs                         | OPERABLE                                       |
| FW-12A/MV-32015             | S/G A Feedwater                      | Isolation Valve              | CLOSED                                         |
| FW-128/MV-32016             | S/G B Feedwater                      | Isolation Valve              | CLOSED                                         |
| AFW-2A/CV-31315             | Aux FW Pmp/1A Ds<br>that AFW-3A is C | ch CV/Cont Sta Info<br>LOSED | AFW-3A<br>CLOSED                               |
| AFW-28/CV-31316             | Aux FW Pmp/1B Ds<br>that AFW-3B is C | ch CV/Cont Sta Info<br>LOSED | AFW-3B<br>CLOSED                               |
| MS-100A/MV-32038            | S/G A Steam Supp                     | ly to T/D AFW Pump           | CLOSED                                         |
| MS-100B/MV-32039            | S/G B Steam Supp<br><u>CONTINU</u>   | ly to T/D AFŴ Pump<br>ED     | CLOSED                                         |

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| •                                                   |                            |                                                   |                                         | So Secondary Side |
|-----------------------------------------------------|----------------------------|---------------------------------------------------|-----------------------------------------|-------------------|
| ,<br>}                                              | OPERATING PROC             | CEDURE                                            | DATE MAY 13 2004                        | PAGE 8 of         |
| 4)<br>                                              |                            | DATE                                              |                                         | FIRST S<br>OPER O |
| 4.5                                                 |                            |                                                   |                                         |                   |
| CONTI                                               | NUED                       | AFU Tabia A Casa                                  |                                         |                   |
| ne vi qera hu                                       | AFW-10A/MV-3202/           | AFW Train & Cros                                  | sover Valve                             |                   |
| 4.                                                  | 6 Dedicated Shutdow        | n_Panel                                           |                                         |                   |
| مرد در در این در این است.<br>مرد در این در این است. | AFW-2A/CV-31315            | 1A AFW Pump Flow<br>Local/Remote Swi<br>is CLOSED | CV Controller –<br>tch Info that AFW-3A | AFW-3A<br>CLOSED  |
| 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1            | AFW-10A/MV-32027           | Aux FW Pump 1A C<br>Local/Remote Swi              | rossover MV –<br>tch                    | REMOTE            |
|                                                     | SD-3A/CV-31170             | Stm Gen 1A Pwr O<br>SD-2A is CLOSED               | p Rlf - Info that                       | SD-2A<br>CLOSED   |
| t and an and an and                                 | CVC-212/MV-32115           | Seal Water Leako<br>Local/Remote Swi              | ff Isolation MV -<br>tch                | REMOTE            |
|                                                     | LD-6/CV-31234              | Letdown Flow to<br>Keyswitch                      | Ltdn Hx Isol CV -                       | NORMAL            |
| 4.                                                  | 7 <u>Post LOCA Hydroge</u> | <u>n Control Panel</u>                            |                                         |                   |
| 2                                                   | LOCA-2A/MV-32145           | Post LOCA H <sub>2</sub> Cn                       | tmnt Vent Isol 1A MV                    | CLOSED/MP         |
| * 2 <sup>*</sup> 2 * *                              | SA-7003A/MV-32147          | H <sub>2</sub> Dilution to (                      | Cntmt Isol 1A MV                        | CLOSED/MP         |
| •<br>•<br>*                                         |                            |                                                   |                                         |                   |
| f<br>F                                              |                            |                                                   |                                         |                   |
|                                                     |                            |                                                   |                                         |                   |
|                                                     |                            |                                                   |                                         |                   |

| WISCONSIN PUBLIC SERVICE CORPORATION |                                                                                   |                                                                                                            | NO. N                                                                                       | NO. N-CCI-56A-CLB                                                                         |                                 |          |
|--------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------|----------|
| KEV                                  | KEWAUNEE NUCLEAR POWER PLANT                                                      |                                                                                                            |                                                                                             | TITLE Reduced Inventory Cntmt Integrit<br>Checklist - SG Secondary Side Op                |                                 |          |
|                                      | OPERATIN                                                                          | IG PROCEDURE                                                                                               | DATE                                                                                        | MAY 13 2004                                                                               | PAGE 9                          | of 15    |
|                                      |                                                                                   | DA                                                                                                         | TE                                                                                          |                                                                                           | FIR                             | ST SECO  |
| OCAL                                 | VALVE POS                                                                         | ITIONS                                                                                                     |                                                                                             |                                                                                           | <u>UP21</u>                     | N UPER   |
|                                      | ine veri<br>inoperab<br>verificat<br>Section t<br>and Pen<br>by initia<br>spaces. | le or manual valve<br>tion requirements<br>5.0 EXCEPT those i<br>13N). Indicate the<br>aling First Oper sp | s per N-FH-53-C<br>of this checkli<br>tems marked wit<br>e use of N-FH-5<br>paces and enter | LB, satisfy the<br>st for all of<br>h an astrisk (f<br>3-CLB for verif<br>ing "#" in Seco | Pen 42N<br>Pication<br>and Oper |          |
| ). <u>I</u>                          | s steam and                                                                       | S/C R Dwp Op Lool                                                                                          | <u>ation Area</u>                                                                           |                                                                                           | 01.0550                         |          |
|                                      | SD-28<br>SD-181                                                                   | Safety to Atmos -                                                                                          | Steam Gen 1B,                                                                               |                                                                                           | YES                             |          |
| 9                                    | SD-182                                                                            | INSTALLED <u>OR</u> BLAN<br>Safety to Atmos -<br>INSTALLED <u>OR</u> BLAN                                  | K FLANGED<br>Steam Gen 1B.<br>K FLANGED                                                     |                                                                                           | YES                             | ·····    |
|                                      | SD-1B3                                                                            | Safety to Atmos -<br>INSTALLED <u>OR</u> BLAN                                                              | Steam Gen 1B.<br>K FLANGED                                                                  |                                                                                           | YES                             |          |
| 9                                    | SD-1B4                                                                            | Safety to Atmos -<br>INSTALLED <u>OR</u> BLAN                                                              | Steam Gen 1B,<br>K FLANGED                                                                  |                                                                                           | YES                             |          |
|                                      | SD-185                                                                            | Safety to Atmos -<br>INSTALLED <u>OR</u> BLAN                                                              | Steam Gen 1B,<br>K FLANGED                                                                  |                                                                                           | YES                             | <u> </u> |
| 1                                    | 1S-100B/MV                                                                        | -32039 Handwheel                                                                                           | S/G B Steam Su<br>AFW Pump                                                                  | pply to T/D                                                                               | CLOSED                          |          |
| ł                                    | PT-483                                                                            | B MS Pressure Tran<br>INSTALLED <u>OR</u> ROOT                                                             | nsmitter.<br>VALVE CLOSED                                                                   |                                                                                           | YES                             |          |
| F                                    | PT-17002                                                                          | B MS Pressure Tran<br>INSTALLED <u>OR</u> ROOT                                                             | nsmitter.<br>VALVE CLOSED                                                                   |                                                                                           | YES                             | <u></u>  |
| F                                    | PT-479                                                                            | B MS Pressure Tran<br>INSTALLED <u>OR</u> ROOT                                                             | nsmitter,<br>VALVE CLOSED                                                                   |                                                                                           | YES                             |          |
| 4                                    | 1S-2B/MV-32                                                                       | 2008 Handwheel                                                                                             | S/G B MSIV Byp                                                                              | ass Valve                                                                                 | CLOSED                          |          |
| :<br>. •                             | 1S-40B                                                                            | MS Hdr B Drain to                                                                                          | Trap at MSIV                                                                                |                                                                                           | CLOSED                          |          |
|                                      |                                                                                   |                                                                                                            |                                                                                             |                                                                                           |                                 |          |

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### CONTINUOUS USE

| wisc                  | ONSIN PUBLI      | IC SERVICE CORPOR                                             | ATION NO.                     | N-CCI-56            | A-CLB                 |                    |                 |                      |
|-----------------------|------------------|---------------------------------------------------------------|-------------------------------|---------------------|-----------------------|--------------------|-----------------|----------------------|
| ĸ                     | EWAUNEE N        | UCLEAR POWER PLA                                              | NT TI                         | LE Reduce<br>Checkl | d Invento<br>ist - SG | ry Cntm<br>Seconda | it Int<br>ry Si | egri<br>de C         |
|                       | OPERATI          | ING PROCEDURE                                                 | DAT                           | TE MAY 13           | 2004                  | PAGE               | 10              | of                   |
| 1.                    |                  | 1                                                             | DATE                          |                     |                       |                    | FIRS<br>OPER    | ;T SE<br><u>≥ OF</u> |
| 5.1<br><u>CONTINL</u> | IED              |                                                               |                               |                     |                       |                    |                 |                      |
|                       | FW-12B/MV        | -32016 Handwheel                                              | S/G B Feedv<br>Valve          | vater Isola         | tion                  | CLOSE              | D               |                      |
|                       | FW-75B           | Drain after Iso                                               | l Valve on FW                 | Supply to           | S/G                   | CLOSE              | D               |                      |
|                       | CI-232B          | Boiler Chemical                                               | to B FW Line                  |                     |                       | CLOSE              | D               |                      |
| -<br>-<br>-           | .CI-1228         | AFW Hydrazine to                                              | o B FW Line                   |                     |                       | CLOSE              | D               |                      |
| -                     | PT-478           | B MS Pressure Ti<br>INSTALLED <u>OR</u> RO(                   | ransmitter,<br>DT VALVE CLOSE | ED                  |                       | YE                 | S               |                      |
| :                     | PS-16113         | B MS Pressure Tu<br>INSTALLED <u>OR</u> RO(                   | ransmitter.<br>DT VALVE CLOSE | ED                  |                       | YE                 | S               |                      |
| 5.2                   | <u>Steam Gen</u> | erator Blowdown Fl                                            | lash Tank Area                | L                   |                       |                    |                 |                      |
| 1                     | BT-3A/MV-:       | 32078 Handwheel                                               | S/G A Blowd<br>Valve A2       | lown Isolat         | ion                   | CLOSE              | D               |                      |
|                       | BT-38/MV-3       | 32080 Handwheel                                               | S/G B Blowc<br>Valve B2       | lown Isolat         | ion                   | CLOSE              | D               |                      |
| 5.3                   | Auxiliary        | <u> Auxiliary Building – East Penetration Room 606' Level</u> |                               |                     | vel                   |                    |                 |                      |
| 19<br>2<br>2<br>2     | CI-128B          | AFW Hydrazine to                                              | S/G B AFW                     |                     |                       | CLOSE              | D               |                      |
|                       | ICS-80B          | Containment Spra                                              | ay Header 18 7                | est Conn            |                       | CLOSE              | D               |                      |
| =<br>                 | ICS-79B          | Containment Spra                                              | ay Header 1B T                | est Conn            |                       | CLOSE              | D               |                      |
| ĩ                     | ICS-7B           | Cntmt Spray Pump                                              | ) 1B to Cntmt                 | Vessel              |                       | CLOSE              | D               |                      |

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| wisc(                                                                                                          | ONSIN PUBLI      | C SERVICE CORPORATION                                   | NO. N-CCI            | -56A-CLB                    |                             |                       |
|----------------------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------------|----------------------|-----------------------------|-----------------------------|-----------------------|
| ĸ                                                                                                              | EWAUNEE N        | UCLEAR POWER PLANT                                      | TITLE Red<br>Che     | luced Invent<br>cklist - SC | tory Cntmt I<br>G Secondary | ntegrity<br>Side Oper |
| · · · · · · · · · · · · · · · · · · ·                                                                          | OPERATI          | NG PROCEDURE                                            | DATE MAY             | 13 2004                     | PAGE 11                     | of 15                 |
| the second second second second second second second second second second second second second second second s |                  | DATE                                                    |                      |                             | FI                          | RST SECON             |
| 5.4                                                                                                            | Auxiliary        | <u>Building - North Penetra</u>                         | tion Room 606        | Level                       | <u>UF</u>                   | YER UPER              |
| 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1                                                                       | ICS-80A          | Containment Spray Header                                | r 1A Test Con        | n                           | CLOSED_                     |                       |
|                                                                                                                | ICS-79A          | Containment Spray Header                                | r 1A Test Con        | n                           | CLOSED_                     |                       |
|                                                                                                                | ICS-7A           | Cntmt Spray Pump 1A to (                                | CLOSED               |                             |                             |                       |
| · * · · · · · · · ·                                                                                            | SI-39A           | Cold Leg Inj Line Vent                                  | CLOSED/<br>CAPPED    |                             |                             |                       |
|                                                                                                                | SI-211           | Test Line Vent (Pen 35)                                 |                      |                             | CLOSED_                     |                       |
| 5.5                                                                                                            | <u>Auxiliary</u> | Building Basement - SI Pu                               | ump Area             |                             |                             |                       |
| ÷                                                                                                              | SI-204           | Test Line to Refueling N                                | Water Stg Tan        | k Isol                      | CLOSED                      |                       |
| 5.6                                                                                                            | Auxiliary        | Building Basement North 1                               | East - <u>586' L</u> | <u>evel</u>                 |                             |                       |
| an Kara sa ka s                                                                                                | FI-18201         | A AFW Flow Indicator,<br>INSTALLED <u>OR</u> ISOLATED   |                      |                             | YES_                        |                       |
|                                                                                                                | F-23010          | A AFW Flow Transmitter.<br>INSTALLED <u>OR</u> ISOLATED |                      |                             | YES                         | <u></u>               |
|                                                                                                                | FE-27016         | A AFW Flow Element.<br>INSTALLED <u>AND</u> NO OPEN FI  | ITTINGS              |                             | YES                         |                       |
|                                                                                                                | FI-18202         | B AFW Flow Indicator.<br>INSTALLED <u>OR</u> ISOLATED   |                      |                             | YES                         | <u> </u>              |
|                                                                                                                | F-23012          | B AFW Flow Transmitter.<br>INSTALLED <u>OR</u> ISOLATED |                      |                             | YES                         | <u> </u>              |
| ·<br>•<br>•<br>•                                                                                               | FE-27017         | B AFW Flow Element,<br>INSTALLED <u>AND</u> NO OPEN FI  | ITTINGS              |                             | YES                         |                       |
| 5.7                                                                                                            | <u>Auxiliary</u> | Building Basement North -                               | - Above Door         | <u>196</u>                  |                             |                       |
|                                                                                                                | AFW-30           | S/G A AFW Line 3/4 in. [                                | Drain                |                             | CLOSED                      |                       |
| 5.8                                                                                                            | Auxiliary        | <u>Building - BAST Room</u>                             |                      |                             |                             |                       |
| 2<br>}                                                                                                         | Penetratic       | on 3DWT Pressurizer Pres<br>Tester                      | sure Dead We         | ight                        | CAPPED                      |                       |
| -<br>                                                                                                          | SW-6010          | Cntmt SW Hose Stations I                                | sol                  |                             | CLOSED                      |                       |

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| wisc                  | ONSIN PUBL                   | IC SERVICE CORPORATION                                    | NO. N-CCI-56A-CLB                                                        |                   |            |
|-----------------------|------------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------|-------------------|------------|
| i<br>J                | KEWAUNEE NUCLEAR POWER PLANT |                                                           | TITLE Reduced Inventory Cntmt Integri<br>Checklist – SG Secondary Side O |                   |            |
| 1                     | OPERAT                       | ING PROCEDURE                                             | DATE MAY 13 2004                                                         | PAGE 12           | of         |
|                       |                              | DATE                                                      |                                                                          |                   | ST SE      |
| 5.9                   | <u>A Steam L</u>             | ine Penetration Area                                      |                                                                          | 012               | <u> 01</u> |
|                       | MS-2A/MV-                    | 32007 Handwheel S/G A                                     | MSIV Bypass Valve                                                        | CLOSED            |            |
|                       | PT-482                       | A MS Pressure Transmit<br>INSTALLED <u>OR</u> ROOT VALV   | ter,<br>E CLOSED                                                         | YES               |            |
|                       | PT-469                       | A MS Pressure,<br>INSTALLED <u>OR</u> ROOT VALV           | E CLOSED.                                                                | YES               |            |
|                       | PT-21141                     | A MS Pressure,<br>INSTALLED <u>OR</u> ROOT VALV           | E CLOSED                                                                 | YES               |            |
|                       | SD-2A                        | S/G A Pwr Op Isol                                         |                                                                          | CLOSED            |            |
|                       | SD-32                        | A Stm Gen Relief Hdr Te                                   | est Conn                                                                 | CLOSED/<br>CAPPED |            |
|                       | SD-1A1                       | Safety to Atmos ~ Steam<br>INSTALLED <u>OR</u> BLANK FLAN | n Gen 1A,<br>NGED                                                        | YES               |            |
| 5<br>5<br>1<br>2      | SD-1A2                       | Safety to Atmos - Stear<br>INSTALLED <u>OR</u> BLANK FLAI | n Gen 1A,<br>NGED                                                        | YES               |            |
| a to a                | SD-1A3                       | Safety to Atmos - Stear<br>INSTALLED <u>OR</u> BLANK FLAN | n Gen 1A,<br>KGED                                                        | YES               |            |
|                       | SD-1A4                       | Safety to Atmos - Stear<br>INSTALLED <u>OR</u> BLANK FLAN | n Gen 1A.<br>NGED                                                        | YES               |            |
|                       | SD-1A5                       | Safety to Atmos - Stear<br>INSTALLED <u>OR</u> BLANK FLAN | n Gen 1A.<br>NGED                                                        | YES               |            |
|                       | MS-100A/M                    | /-32038 Handwheel S/G /<br>AFW F                          | A Steam Supply to T/D<br>Pump                                            | CLOSED            |            |
|                       | MS-45A                       | Freeblow for MS Hdr A                                     |                                                                          | CLOSED            |            |
|                       | MS-40A                       | MS Hdr A Drain to Trap                                    | at MSIV                                                                  | CLOSED            |            |
|                       | PT-17001                     | A MS Pressure Transmitt<br>INSTALLED <u>OR</u> ROOT VALVE | er,<br>E CLOSED                                                          | YES               |            |
| 2<br>4<br>7<br>1<br>1 | PS-16112                     | A MS Pressure Transmitt<br>INSTALLED <u>OR</u> ROOT VALVE | er,<br>CLOSED                                                            | YES               |            |
|                       | PT-468                       | A MS Pressure Transmitt                                   | er.                                                                      | YES               |            |

| WISCONSIN PUBLIC SERVICE CORPORATION NO. |                              | NO. N-CCI-56A-CLB                 |                                                 |
|------------------------------------------|------------------------------|-----------------------------------|-------------------------------------------------|
| KEWAUNEE N                               | UCLEAR POWER PLANT           | TITLE Reduced Inve<br>Checklist - | ntory Cntmt Integrity<br>SG Secondary Side Open |
| OPERATI                                  | NG PROCEDURE                 | DATE MAY 13 2004                  | PAGE 13 of 15                                   |
|                                          | DATE _                       |                                   | FIRST SECOND                                    |
| .10 <u>A Feedwat</u>                     | er Penetration Area          |                                   | UPER OPER                                       |
| FW-12A/MV                                | -32015 Handwhee] S/C<br>Val  | A Feedwater Isolation<br>ve       | CLOSED                                          |
| FW-75A                                   | Drain after Isol Valv        | e on FW Supply to S/G             | CLOSED                                          |
| CI-122A                                  | AFW Hydrazine to A FW        | l Line                            | CLOSED                                          |
| CI-232A                                  | Boiler Chemical to A         | FW Line                           | CLOSED                                          |
| CI-128A                                  | AFW Hydrazine to S/G         | A AFW                             | CLOSED                                          |
| .11 <u>AFW Pump</u>                      | Areas                        |                                   |                                                 |
| AFW-10A/M                                | V-32027 Handwheel AFW<br>Val | l Train A Crossover<br>ve         | CLOSED                                          |
| AFW-3A                                   | Aux Feedwater Pump 1A        | Disch                             | CLOSED                                          |
| AFW-10B/3                                | 2028 Handwheel AFW<br>Val    | Train B Crossover<br>ve           | CLOSED                                          |
| AFW-3B                                   | Aux Feedwater Pump 1B        | Disch                             | CLOSED                                          |

| WISC                                                                                             | ONSIN PUI        | BLIC SERVICE CORPORATION                             | NO. N-CCI-5          | 6A-CLB                 |                           |                        |
|--------------------------------------------------------------------------------------------------|------------------|------------------------------------------------------|----------------------|------------------------|---------------------------|------------------------|
| к                                                                                                | EWAUNEE          | NUCLEAR POWER PLANT                                  | TITLE Reduc<br>Check | ed Invent<br>list - SG | cory Cntmt<br>S Secondary | Integrity<br>Side Open |
| :                                                                                                | OPERA            | TING PROCEDURE                                       | DATE MAY 1           | 3 2004                 | PAGE 14                   | 4 <b>of</b> 15         |
|                                                                                                  |                  | DATE                                                 |                      | _                      | F                         | IRST SECOND            |
| <u>NOTE</u> :                                                                                    | For Co<br>B is r | ntainment Vessel Pressuriza <sup>.</sup><br>equired. | tion Test (PEN       | 42N), eit              | her A or.                 | PER_ UPER              |
| 5.12                                                                                             | <u>Reactor</u>   | Building                                             |                      |                        |                           |                        |
| •<br>•<br>•                                                                                      | BT-40A           | Stm Gen 1A Blowdown Dra                              | in                   |                        | CLOSED_                   |                        |
| • •                                                                                              | BT-40B           | Stm Gen 1B Blowdown Dra                              | in                   |                        | CLOSED_                   |                        |
| · • •                                                                                            | Penetra          | tion 3DWT Pressurizer Pre<br>Tester                  | essure Dead Wei      | ght                    | CAPPED                    |                        |
| 5 ° \$                                                                                           | * <u>Contai</u>  | nment Vessel Pressurization                          | Test (Pen 42N)       | :                      |                           |                        |
| 2<br>5<br>8<br>8                                                                                 | A                | Containment Vessel Blind F                           | lange                |                        | INSTALLED                 |                        |
| 1<br>2<br>2<br>2                                                                                 |                  | Blind Flange Test Conn                               |                      |                        | CAPPED                    |                        |
| ,<br>,<br>,<br>,<br>,                                                                            |                  | <u>OR</u>                                            |                      |                        |                           |                        |
|                                                                                                  | B                | Fiber Optic Cable Penetrati                          | ion Seal             |                        | INSTALLED                 | [                      |
| -<br>                                                                                            | * <u>Refuel</u>  | ing Cables (Pen 43N):                                |                      |                        |                           |                        |
|                                                                                                  |                  | Refueling Cable Penetration                          | n Blind Flange       |                        | INSTALLED                 |                        |
| *<br>*<br>2:                                                                                     |                  | AND                                                  |                      |                        |                           |                        |
| 5                                                                                                |                  | Blind Flange Test Conn                               |                      |                        | CAPPED                    |                        |
| 1                                                                                                | MS-30A           | Steam Gen 1A Vent                                    |                      |                        | CLOSED                    |                        |
|                                                                                                  | MS-30B           | Steam Gen 1B Vent                                    |                      |                        | CLOSED                    |                        |
|                                                                                                  | FW-80A           | One Inch Vent at Stm Ger                             | n 1A                 |                        | CLOSED                    |                        |
|                                                                                                  | FW-80B           | One Inch Vent at Stm Ger                             | 1B                   |                        | CLOSED                    |                        |
| 5.13                                                                                             | <u>Annulus</u>   |                                                      |                      |                        |                           |                        |
| ,<br>,<br>,                                                                                      | CPT-60           | Containment Vessel Press                             | urization Line       | Vent                   | CLOSED                    |                        |
| 2<br>4<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8<br>8 | CPT-80           | Penetration 43N Vent                                 |                      |                        | CLOSED                    | i                      |
| 3<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>                 |                  |                                                      |                      |                        |                           | i                      |
| *<br>*<br>*                                                                                      |                  |                                                      |                      |                        |                           |                        |

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| WISCONSIN PUBLIC SERVICE CORPORATION | NO. N-CCI-56A-CLB<br>TITLE Reduced Inventory Cntmt Integri<br>Checklist - SG Secondary Side ( |            |  |  |
|--------------------------------------|-----------------------------------------------------------------------------------------------|------------|--|--|
| KEWAUNEE NUCLEAR POWER PLANT         |                                                                                               |            |  |  |
| OPERATING PROCEDURE                  | DATE MAY 13 2004                                                                              | PAGE 15 of |  |  |
| DATE                                 |                                                                                               |            |  |  |
| PERFORMED BY                         | DATE                                                                                          |            |  |  |
| PERFORMED BY                         | DATE                                                                                          |            |  |  |
| PERFORMED BY                         | DATE                                                                                          |            |  |  |
| PERFORMED BY                         | DATE                                                                                          |            |  |  |
| PERFORMED BY                         | DATE                                                                                          |            |  |  |
| PERFORMED BY                         | DATE                                                                                          |            |  |  |
| SHIFT MANAGER                        | DATE                                                                                          |            |  |  |
| ASSISTANT MANAGER OPERATIONS         | DATE                                                                                          |            |  |  |
|                                      |                                                                                               |            |  |  |
|                                      | •                                                                                             |            |  |  |

| WISCONSIN PUBLIC SERVICE C              | <b>NO.</b> N-C                                                | 0M-44-CL                              | <b>REV</b> K                |             |  |  |
|-----------------------------------------|---------------------------------------------------------------|---------------------------------------|-----------------------------|-------------|--|--|
| KEWAUNEE NUCLEAR POV                    | VER PLANT                                                     | TITLE Communications System Checklist |                             |             |  |  |
| OPERATING PROCEI                        | DURE                                                          | <b>date</b> J                         | UL 08 2004                  | PAGE 1 of 3 |  |  |
| REVIEWED BY                             | APPRO                                                         | VED BY                                |                             |             |  |  |
| NUCLEAR I YES<br>SAFETY RELATED INO     | □ YES<br>⊠ NO                                                 | SRO APPROV<br>TEMPORARY<br>REQUIRED   | AL OF 🛛 YES<br>CHANGES 🗌 NO |             |  |  |
|                                         | DATE                                                          |                                       |                             | INITIALS    |  |  |
| 1.0 PLANT REQUIREMENTS                  |                                                               |                                       |                             |             |  |  |
| 1.1 Emergency AC Distrib                | oution System is                                              | s energized                           | l <b>.</b>                  | ENERGIZED   |  |  |
| '<br>2.0 <u>SYSTEM EQUIPMENT STATUS</u> |                                                               |                                       |                             |             |  |  |
| 2.1 <u>PBX_Telephone_System</u>         | <u>1:</u>                                                     |                                       |                             |             |  |  |
| 1. MCC1-46C, Cubic<br>LPB-15)           | 1. MCC1-46C, Cubicle B3 (Admin/PBX System Panel ON<br>LPB-15) |                                       |                             |             |  |  |
| 2. LPB-15 (Admin Bl                     | dg A/C Room):                                                 |                                       |                             |             |  |  |
| • Ckt 1,3 (                             | PBX Charger)                                                  |                                       |                             | ON          |  |  |
| • Ckt 2,4,6 (                           | Main Feed from                                                | MCC-46C, B                            | 3)                          | ON          |  |  |
| • Ckt 5,7 (                             | PBX Charger)                                                  |                                       |                             | ON          |  |  |
| • Ckt 9                                 | PBX                                                           |                                       |                             | ON          |  |  |
| • Ckt 11                                | PBX                                                           |                                       |                             | ON          |  |  |
| • Ckt 13,15,17 (                        | Alternate Main                                                | from RPA 3 Xfmr                       |                             | 0FF         |  |  |
| • Ckt 16/18 C                           | C3 Bridge (T-1                                                | s)                                    |                             | ON          |  |  |
| • Ckt 20/22 I                           | n-Plant Cell P                                                | hones                                 |                             | ON          |  |  |
| 2.2 <u>Radio Paging System</u> :        | <u>.</u>                                                      |                                       |                             |             |  |  |
| 1. RPB-10 (Rod Driv                     | ve Equip Room):                                               |                                       |                             |             |  |  |
| • Ckt 12 (1                             | Indoor Paging T                                               | ransmitter)                           | 1                           | ON          |  |  |
|                                         |                                                               |                                       |                             |             |  |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION<br>KEWAUNEE NUCLEAR POWER PLANT |                    |                                   | NO. N-COM-44-CL                       |             |
|----------------------------------------------------------------------|--------------------|-----------------------------------|---------------------------------------|-------------|
|                                                                      |                    |                                   | TITLE Communications System Checklist |             |
|                                                                      | OPERATING          | G PROCEDURE                       | DATE JUL 08 2004                      | PAGE 2 of 3 |
|                                                                      |                    | DATE                              |                                       | INITIALS    |
| 2.3                                                                  | <u>Intra-Plant</u> | Paging System (Gai-Tro            | nics):                                |             |
|                                                                      | 1. EMP-1 (1        | <pre>Furb Bldg Mezz North):</pre> |                                       |             |
|                                                                      | • Ckt 1            | (Zone 8, Turb Bl                  | dg Oper Floor)                        | ON          |
|                                                                      | • Ckt 2            | (Zone 1, Turb Bl                  | dg Bsmt)                              | ON          |
|                                                                      | • Ckt 5            | (Zone 4, Turb Bl                  | dg Mezz)                              | ON          |
|                                                                      | • Ckt 11           | l (Zone 5, Scrnhs &               | Admin Bldg)                           | ON          |
|                                                                      | 2. EMP-2 (/        | Aux Bldg Mezz):                   |                                       |             |
|                                                                      | • Ckt 1            | (Zone 7, Aux Bldg                 | Mezz)                                 | ON          |
|                                                                      | • Ckt 3            | (Zone 6, Aux Bldg                 | Mezz & C/R)                           | ON          |
|                                                                      | • Ckt 4            | (Zone 10, Aux Bldg                | Oper & SS Office)                     | ON          |
|                                                                      | • Ckt 9            | (Zone 2, Turb Bldg                | & Aux Bldg Bsmt)                      | ON          |
|                                                                      | • Ckt 11           | l (Zone 3, Aux Bldg               | Bsmt)                                 | ON          |
|                                                                      | • Ckt 14           | 4 (Zone 11, Aux Bldg              | 642' & 657')                          | ON          |
|                                                                      | 3. EMP-3 (I        | Rx Bldg 626' SE):                 |                                       |             |
|                                                                      | • Ckt 2            | (Zone 12, Cntmt)                  |                                       | ON          |
|                                                                      | 4. EMP-4 (7        | Telephone Equip Room):            |                                       |             |
|                                                                      | • Ckt 1            | (Zone 9, Admin Bld                | g )                                   | ON          |
| 1                                                                    | 5. EMP-6 (N        | Warehouse 1st Floor):             |                                       |             |
|                                                                      | • Ckt 5            | (Warehouse)                       |                                       | ON          |
|                                                                      | 6. Aux Secu        | urity Power Panel (See            | Badge Desk):                          |             |
|                                                                      | • Ckt 3            | (Security Bldg)                   |                                       | ON          |
| 2.4                                                                  | Emergency G        | ai-Tronics System:                |                                       |             |
|                                                                      | 1. BRA-127         | . Ckt 5 (Emrg Gai-Tron            | ics 101 Page System)                  | ON          |

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| WISCONSIN PUBLIC SERVICE CORPORATION       | NO. N     | -COM-44-CL     |              |       |
|--------------------------------------------|-----------|----------------|--------------|-------|
| KEWAUNEE NUCLEAR POWER PLANT               | TITLE     | Communications | System Check | list  |
| OPERATING PROCEDURE                        | DATE      | JUL 08 2004    | PAGE 3       | of 3  |
| DATE                                       |           |                | <u>INI</u>   | TIALS |
| 3.0 MONITORING AND ALARM REQUIREMENTS      |           |                |              |       |
| 3.1 PBX TELEPHONE POWER SUPPLY ABNORMA     | L (47065- | W) I           | N SERVICE    | _     |
| 4.0 REMOTELY OPERATED AND AUTOMATIC VALVES |           |                |              |       |
| 4.1 None                                   |           |                |              |       |
| 5.0 LOCAL VALVE POSITIONS                  |           |                |              |       |
| 5.1 None                                   |           |                |              |       |
|                                            |           |                |              |       |
|                                            |           | DATE           |              |       |
|                                            |           |                |              |       |
|                                            |           | UATE           |              |       |
| SHIFT MANAGER                              |           | DATE           |              |       |
|                                            |           |                |              |       |
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|                                            |           |                |              |       |
|                                            |           |                |              |       |
| ļ                                          |           |                |              |       |
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|                                            |           |                |              |       |

| WISCONSIN PUBLIC SERVICE O                                                | <b>NO.</b> N-C                                                                                                                                                                                | P-46                                                          | <b>REV</b> S                               |                           |  |  |
|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------|---------------------------|--|--|
| KEWAUNEE NUCLEAR POV                                                      | TITLE Honeywell Plant Process Computer                                                                                                                                                        |                                                               |                                            |                           |  |  |
| OPERATING PROCEI                                                          | DURE                                                                                                                                                                                          | DATE M                                                        | AR 25 2004                                 | PAGE 1 of 8               |  |  |
| REVIEWED BY                                                               | APPROVED BY                                                                                                                                                                                   |                                                               |                                            |                           |  |  |
| NUCLEAR SAFETY RELATED NO                                                 | ⊠ YES<br>□ NO                                                                                                                                                                                 | SRO APPROVAL OF STERN YES<br>TEMPORARY CHANGES<br>REQUIRED NO |                                            |                           |  |  |
| 1.0 INTRODUCTION                                                          |                                                                                                                                                                                               |                                                               |                                            |                           |  |  |
| 1.1 Procedure describes<br>Computer.                                      | normal operatio                                                                                                                                                                               | on of Honey                                                   | well Plant P                               | rocess                    |  |  |
| 2.0 PRECAUTIONS AND LIMITATIO                                             | INS                                                                                                                                                                                           |                                                               |                                            |                           |  |  |
| 2.1 <u>WHEN</u> PPCS is out of xenon and samarium w calculations.         | 2.1 <u>WHEN</u> PPCS is out of service during a power transient, values for xenon and samarium will <u>NOT</u> be accurate in subsequent reactivity calculations.                             |                                                               |                                            |                           |  |  |
| 2.2 <u>WHEN</u> building data b<br>protected.                             | locks for Grou                                                                                                                                                                                | p Output, t                                                   | he first 65                                | blocks are                |  |  |
| 2.3 "Delete Point Scan/A<br>which are below alar<br>action could adverse  | larm" function<br>m setpoint but<br>ly affect comp                                                                                                                                            | should <u>NOT</u><br><u>NOT</u> below<br>uter calcul          | be used to<br>its reset va<br>ated values. | clear alarms<br>lue. This |  |  |
| 3.0 INITIAL CONDITIONS                                                    |                                                                                                                                                                                               |                                                               |                                            |                           |  |  |
| 3.1 Computer is in opera                                                  | tion.                                                                                                                                                                                         |                                                               |                                            |                           |  |  |
| 4.0 <u>PROCEDURE</u>                                                      |                                                                                                                                                                                               |                                                               |                                            |                           |  |  |
| 4.1 <u>Startup</u>                                                        |                                                                                                                                                                                               |                                                               |                                            |                           |  |  |
| <u>NOTE</u> : Initializatio<br>under directi<br>an initializa<br>updated. | <u>NOTE</u> : Initialization of Computer System is performed by or<br>under direction of Nuclear Computer Group. Following<br>an initialization, certain plant parameters must be<br>updated. |                                                               |                                            |                           |  |  |
| 1. At Operator's co                                                       | nsole, perform                                                                                                                                                                                | following:                                                    |                                            |                           |  |  |
| a. PRESS "React                                                           | or Misc" pushb                                                                                                                                                                                | utton.                                                        |                                            |                           |  |  |
| b. EXECUTE Inte                                                           | grated Values I                                                                                                                                                                               | Manual Corr                                                   | ection progr                               | am.                       |  |  |
| c. TYPE "CTN",                                                            | to continue pr                                                                                                                                                                                | ogram.                                                        |                                            |                           |  |  |
|                                                                           | <u>CONTINU</u>                                                                                                                                                                                | <u>ED</u>                                                     |                                            |                           |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                         | NO. N-CP-46                            |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------|----------------------------------------|--|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                 | TITLE Honeywell Plant Process Computer |  |  |  |  |  |
| OPERATING PROCEDURE                                                                                          | DATE MAR 25 2004 PAGE 2 of 8           |  |  |  |  |  |
|                                                                                                              |                                        |  |  |  |  |  |
|                                                                                                              |                                        |  |  |  |  |  |
| 4.1<br><u>CONTINUED</u>                                                                                      |                                        |  |  |  |  |  |
| <u>NOTE</u> : This portion of update may<br>Engineering is available.                                        | be delayed until Reactor               |  |  |  |  |  |
| 2. <u>IF</u> required, the Plant Reactor Supervisor or his alternate will UPDATE the following Index values. |                                        |  |  |  |  |  |
| a. Xenon Concentration (FFP)                                                                                 |                                        |  |  |  |  |  |
| b. Iodine Concentration (FFP)                                                                                |                                        |  |  |  |  |  |
| c. Samarium Concentration (FF                                                                                | P)                                     |  |  |  |  |  |
| d. Promethium Concentration (                                                                                | FFP)                                   |  |  |  |  |  |
| e. Burnup (MD/U)                                                                                             |                                        |  |  |  |  |  |
| <u>NOTE</u> : This portion of update shal practical.                                                         | l be done as soon as                   |  |  |  |  |  |
| 3. UPDATE items below to agree wi                                                                            | th Control Room Panel Step Counters.   |  |  |  |  |  |
| a. Control Bank A Step Count (STEP)                                                                          |                                        |  |  |  |  |  |
| b. Control Bank B Step Count                                                                                 | (STEP)                                 |  |  |  |  |  |
| c. Control Bank C Step Count                                                                                 | (STEP)                                 |  |  |  |  |  |
| d. Control Bank D Step Count                                                                                 | (STEP)                                 |  |  |  |  |  |
| e. Shutdown Bank A Step Count                                                                                | (STEP)                                 |  |  |  |  |  |
| f. Shutdown Bank B Step Count                                                                                | (STEP)                                 |  |  |  |  |  |
| 4. TYPE "ABT" to abort program an                                                                            | d store updated values.                |  |  |  |  |  |
|                                                                                                              |                                        |  |  |  |  |  |
| CONTINU                                                                                                      | ED                                     |  |  |  |  |  |
|                                                                                                              |                                        |  |  |  |  |  |
|                                                                                                              |                                        |  |  |  |  |  |
|                                                                                                              |                                        |  |  |  |  |  |

NO. N-CP-46

KEWAUNEE NUCLEAR POWER PLANT

| TITLE | Honeywell | Plant | Process | Computer |  |
|-------|-----------|-------|---------|----------|--|
|       |           |       |         |          |  |

**OPERATING PROCEDURE** 

| DATE | MAR 25 2004 | PAGE | 3 | <b>of</b> 8 |
|------|-------------|------|---|-------------|
|      |             |      |   |             |

4.1 CONTINUED

#### <u>CAUTION</u>

Updating time on any 10 minute mark (i.e., 1200, 1210, etc.) is detrimental to certain Computer functions, and should be avoided if possible.

- 5. Update Date and Time on operator's console:
  - a. PRESS "Maint Functions" pushbutton.
  - b. ENTER appropriate "Date" and "Time".
  - c. PRESS "Execute" pushbutton.
- 6. VERIFY required points are removed from scan/alarm.
- 7. VERIFY correct parameters are displayed on analog pen recorders and digital displays.
- 8. UPDATE "Group Outputs" requested to be printed on Trend printer:
  - a. Group Output #4 30 minute trend.
  - b. Other Group Outputs per the plaque on the Trend printer.
- 4.2 <u>Steady State</u>
  - <u>NOTE</u>: Procedures for normal keyboard operations are provided in the Computer Manual under Operator's Manual Section.
  - 1. REQUEST a "Post Trip Log" printout for each "Post Trip Log Ready" message, to maintain program availability.
  - 2. UPDATE point R8102K, RCS Boron Conc-Lab, per Chemistry sample.
  - 3. VERIFY computer alarms per associated recorders, instruments, annunciators, or by other indicators.

#### <u>CONTINUED</u>

| WISCONSIN PUBLIC SERVICE CORPORATION |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | NO. N-CP-46                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                      |  |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--|
| KEWAI                                | UNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | TITLE Honeywell Plant Process Computer                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                      |  |
| OP                                   | PERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>DATE</b> MAR 25 2004                                                                                                                                                                                                                                                                                                                                                                                                                             | PAGE 4 of 8                                                                                                                          |  |
| 4.2<br>CONTINUED<br>4.               | <ul> <li>IF required, CHANGE Computer A<br/>[PCR014425]</li> <li>a. COMPLETE ATTACHMENT A, Parchange.</li> <li>b. OBTAIN an evaluation of the<br/>from an SRO other than the<br/>Part B.</li> <li>c. OBTAIN Shift Manager appro-<br/>change request per ATTACHM</li> <li>d. IF PPCS setpoint change is<br/>setpoint change as follows</li> <li>1. At the Operator's construction (key required)</li> <li>2. PRESS "Single Point Change Low Alarm Limit<br/>appropriate.</li> <li>5. ENTER new setpoint value<br/>6. PRESS "Execute" pushbut<br/>7. DISABLE the keyboard state<br/>8. RECORD PPCS setpoint clinations</li> <li>8. RECORD PPCS setpoint clinations</li> <li>9. IF PPCS setpoint clinations</li> </ul> | larm Setpoints as follow<br>t A describing the PPCS<br>e requested PPCS setpoin<br>Shift Manager per ATTAC<br>val for the PPCS setpoin<br>ENT A, Part B.<br>approved, IMPLEMENT the<br>:<br>ole, ENABLE the keyboard<br>ange" pushbutton.<br>fier.<br>button to move the curso<br>or Change High Alarm Li<br>ue.<br>tton.<br>witch.<br>hange in Control Room Sh<br>- Remarks.<br>t C.<br>f ATTACHMENT A as requir<br>T A.<br>NOT approved. GO TO to | vs:<br>setpoint<br>at change<br>HMENT A<br>at<br>PPCS<br>I switch.<br>or to the<br>mit as<br>oift Turnover<br>red by the<br>A-CP-46. |  |

| WISCONSIN PUBLIC SERVICE CORPORATION | NO. N-CP-46<br>TITLE Honeywell Plant Process Computer |  |  |  |
|--------------------------------------|-------------------------------------------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT         |                                                       |  |  |  |
| OPERATING PROCEDURE                  | DATE MAR 25 2004 PAGE 5 of 8                          |  |  |  |
|                                      |                                                       |  |  |  |

# 4.3 <u>Shutdown</u>

1. NOTIFY Nuclear Computer Group that the Honeywell Computer is coming off line.

2. REFER to A-CP-46.

| WISCONSIN PUBLIC SERVICE CORPORATION | NO. N-CP-46<br>TITLE Honeywell Plant Process Computer |  |  |  |
|--------------------------------------|-------------------------------------------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT         |                                                       |  |  |  |
| OPERATING PROCEDURE                  | DATE MAR 25 2004 PAGE 6 of 8                          |  |  |  |
|                                      |                                                       |  |  |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION                       |                                      | NO. N-CP-46                            |                                                                                        |                                                                                                                                             |  |
|------------------------------------------------------------|--------------------------------------|----------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--|
| KEWAUNEE NUCLEAR POWER PLANT                               |                                      | TITLE Honeywell Plant Process Computer |                                                                                        |                                                                                                                                             |  |
| OPERATING PROCEDURE                                        |                                      | DATE MAR 25                            | 2004                                                                                   | PAGE 7 of 8                                                                                                                                 |  |
| ATTACHMENT <u>B</u> - TLA COMPUTER POINTS<br>(Page 1 of 2) |                                      |                                        |                                                                                        |                                                                                                                                             |  |
| TLA 47033 BOX                                              |                                      |                                        |                                                                                        |                                                                                                                                             |  |
| WINDOW                                                     | ENGRAVING                            |                                        | COMPUTER POINT                                                                         |                                                                                                                                             |  |
| 47033-11/TLA-1                                             | Rod Supervision Alarm                |                                        | C0507G                                                                                 |                                                                                                                                             |  |
| 47033-12/TLA-2                                             | RCS Subcooling High/Low              |                                        | T0020G, T0021G, T0022G                                                                 |                                                                                                                                             |  |
| 47033-15/TLA-5                                             | AFD Outside Limits                   |                                        | N5051G                                                                                 |                                                                                                                                             |  |
| 47033-21/TLA-6                                             | Power Range Radial Flux Tilt         |                                        | N4045L                                                                                 |                                                                                                                                             |  |
| 47033-22/TLA-7                                             | Power Range Lower Radial Tilt        |                                        | N4245L                                                                                 |                                                                                                                                             |  |
| 47033-23/TLA-8                                             | Power Range Upper Radial Tilt        |                                        | N4145L                                                                                 |                                                                                                                                             |  |
| 47033-24/TLA-9                                             | Core Exit T/C Tilts                  |                                        | I1160L                                                                                 |                                                                                                                                             |  |
| 47033-25/TLA-10                                            | Steam Generator Tilts                |                                        | R2201G, R2202G                                                                         |                                                                                                                                             |  |
| 47033-31/TLA-11                                            | Reactor Thermal Power High           |                                        | R5110G, R5113G                                                                         |                                                                                                                                             |  |
| 47033-32/TLA-12                                            | Condenser Circ Water Delta Temp High |                                        | T2523G                                                                                 |                                                                                                                                             |  |
| 47033-33/TLA-13                                            | Gen Stator Diff Temp High            |                                        | T0380G,<br>T0383G                                                                      | T0381G. T0382G.                                                                                                                             |  |
| 47033-34/TLA-14                                            | Post Trip Log Ready                  |                                        | XOPTLG                                                                                 |                                                                                                                                             |  |
| 47033-35/TLA-15                                            | RMS Above Normal                     |                                        | G0001G<br>G0005G<br>G0009G<br>G0012G<br>G0015G<br>G0015G<br>G0018G<br>G0021G<br>G0031G | G0002G, G0004G,<br>G0006G, G0007G,<br>G0010G, G0011G,<br>G0013G, G0014G,<br>G0016G, G0017G,<br>G0019G, G0020G,<br>G0022G, G0023G,<br>G0033G |  |
| 47033-41/TLA-16                                            | AMSAC Channel Abnormal               |                                        | L0300D, L0301D, L0302D,<br>L0303D                                                      |                                                                                                                                             |  |
| 47033-42/TLA-17                                            | PPCS Program Abnormal                |                                        | None                                                                                   |                                                                                                                                             |  |
| WISCONSIN PUBLIC                                                | SERVICE CORPORATION         | NO. N-CP-46               |                                                                                                                                                                                  |  |  |
|-----------------------------------------------------------------|-----------------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| KEWAUNEE NUCLEAR POWER PLANT TITLE Honeywell Plant Process Comp |                             | 11 Plant Process Computer |                                                                                                                                                                                  |  |  |
| OPERATING PROCEDURE DATE MAR 25 2004 PAGE 8                     |                             |                           | 2004 <b>PAGE</b> 8 of 8                                                                                                                                                          |  |  |
| <u>ATTACHMENT B - TLA COMPUTER POINTS</u><br>(Page 2 of 2)      |                             |                           |                                                                                                                                                                                  |  |  |
|                                                                 | TLA 47033 BO                | X (continued)             |                                                                                                                                                                                  |  |  |
| WINDOW                                                          | ENGRAVII                    | NG                        | COMPUTER POINT                                                                                                                                                                   |  |  |
| 47033-43/TLA-18                                                 | RHR System Monitor Abnormal |                           | E0500A. E0501A. F0624A.<br>F0625A. F0626A. I1039G.<br>L0112A. L8020G. L8021G.<br>L9053A. L9054A. L9055A.<br>P0200A. P0201A. P0202A.<br>P0203A. P0210G. P0211G.<br>T0627A. T0630A |  |  |
| 47033-45/TLA-20                                                 | 416V Stator Temperature Hot |                           | T0417A, T0437A, T0700A,<br>T0701A, T0702A, T0703A,<br>T2474A, T2484A, T2555A,<br>T2565A, T2809A, T2829A                                                                          |  |  |

| TLA 47034 BOX   |                                    |                                                   |  |  |
|-----------------|------------------------------------|---------------------------------------------------|--|--|
| WINDOW          | ENGRAVING                          | COMPUTER POINT                                    |  |  |
| 47034-11/TLA-21 | Safeguards Bus Voltage Abnormal    | E0366A, E0367A, E0368A,<br>E0369A, E0370A, E0371A |  |  |
| 47034-12/TLA-22 | Control Bank D Position Abnormal   | C3004G, N8020G                                    |  |  |
| 47034-13/TLA-23 | Containment WR Level High          | L8001A, L8002A                                    |  |  |
| 47034-15/TLA-25 | Surveillance Procedure Performance | X0000L                                            |  |  |
| 47034-21/TLA-26 | Exh Hood DT High                   | T2501G                                            |  |  |
| 47034-22/TLA-27 | Circ Water Inlet Temperature High  | T2514G                                            |  |  |
| 47034-28/TLA-28 | Power Greater Than UFMD Limit      | FX530G, R5300G                                    |  |  |

## ATTACHMENT A - PPCS ALARM SETPOINT CHANGE FORM (Page 1 of 1)

| Part A                                 | A - PPCS Alarm S                              | etpoint Change Request            |               |
|----------------------------------------|-----------------------------------------------|-----------------------------------|---------------|
| PPCS Point No                          | Reques                                        | ted by:                           |               |
| PPCS Point Descriptor:                 |                                               |                                   |               |
| · · · · · · · · · · · · · · · · · · ·  |                                               |                                   |               |
| Request to change the:                 | ] Low Alarm Limi                              | 🗆 🗆 High Alarm Limit              |               |
| Current setpoint value:                | N                                             | ew (desired) setpoint value:      |               |
| Reason for setpoint change:            |                                               |                                   |               |
|                                        |                                               |                                   |               |
| l                                      |                                               |                                   | <u> </u>      |
|                                        |                                               | ····                              | <u></u>       |
|                                        |                                               |                                   |               |
|                                        | Part B - Evalu                                | ation / Approval                  |               |
| 1. The new setpoint value will be      | e adequate for mor                            | itoring the plant process         | □ Yes □ No    |
| 2. The computer point appears to       | b be trending the p                           | ant process correctly when        |               |
| The new setpoint will continu          | e to aid plant oper                           | cneck).<br>ation within Technical |               |
| Specifications limits where an         | plicable.                                     |                                   | ☐ Yes □ No    |
| 4. The affected PPCS point will        | NOT affect the TL                             | A inputs listed on                |               |
| ATTACHMENT B. (Check YE                | S if it will <u>NOT</u> , chec                | k NO if it will).                 | □ Yes □ No    |
| 5. There are no other known reas       | sons <u>OR</u> plant proc                     | edures that identify this change  |               |
| Setpoint change is:                    | YES if there are none,<br>ad (AII five states | check NO if there are any).       |               |
|                                        | oved                                          | inclus above must be encered TES  |               |
| Evaluated By: (SRO other than SI       | hift Manager)                                 | Approved By:                      |               |
|                                        |                                               |                                   |               |
| SRO Signature                          | Date                                          | Shift Manager Signature           | Date          |
|                                        | Date                                          |                                   |               |
| Cotraciat alegan and in Dart           | Part C - Im                                   | plementation                      |               |
| Derformed Dy: (Write N/A in bloc       | B above <u>AND</u> self                       | some change has been implemented  | per IN-CP-40. |
| Ferformed By. (write N/A in blai       | iks it setpoint char                          | ige was disapproved)              |               |
|                                        |                                               |                                   |               |
| Print                                  |                                               | Signature                         | Date          |
| Forward completed form to:             |                                               |                                   |               |
| Business Process Assistant - Operation | ns (original)                                 |                                   |               |

Shift Manager (copy) Plant Computer Group Engineering Analyst (copy) Requestor (copy, if disapproved)

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                          | NO. N-F                                          | H-53-CLA                            | REV                  | G               |             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-------------------------------------|----------------------|-----------------|-------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                  | TITLE S                                          | efueling-Con<br>/G Secondary        | tainment<br>Side Inf | Integri<br>tact | ty CL,      |
| OPERATING PROCEDURE                                                                                                                                                           | DATE M                                           | AY 25 2004                          | PAGE                 | 1 of            | 9           |
| REVIEWED BY Chines Byrand                                                                                                                                                     | APPRO                                            | VED BY                              | 11                   |                 |             |
| NUCLEAR VES PORC REVIEW<br>SAFETY RELATED REQUIRED                                                                                                                            | X YES                                            | SRO APPROV<br>TEMPORARY<br>REQUIRED | AL OF<br>CHANGES     | X YI            | ES<br>)     |
| DATE                                                                                                                                                                          | ······································           |                                     | <u></u>              |                 |             |
|                                                                                                                                                                               |                                                  |                                     |                      | FIRST OPER      | SECONE      |
| O <u>PLANT REQUIREMENTS</u>                                                                                                                                                   |                                                  |                                     |                      |                 |             |
| 1.1 Plant in Cold or Refueling Shutdown                                                                                                                                       | n.                                               |                                     | SATISFI              | ED              | <del></del> |
| 1.2 Containment Vessel Equipment Door                                                                                                                                         | is closed.                                       |                                     | CLOSE                | ED              | <u> </u>    |
| 1.3 Reactor vessel level greater than                                                                                                                                         | or equal to                                      | 17%.                                | ≥ 17                 | 7%              |             |
| O SYSTEM EQUIPMENT STATUS                                                                                                                                                     |                                                  |                                     |                      |                 |             |
| 2.1 Required automatic containment system<br>valves are operable <u>OR</u> are deactive<br>CLOSED position <u>OR</u> at least one value<br>having an inoperable valve is CLOS | tem isolati<br>ated in the<br>lve in each<br>ED. | on<br>line                          | SATISFI              | ED              |             |
| 2.2 Inoperable containment system isol<br>local valve positions shall be adm<br>controlled per NAD 03.03, Tagout Co                                                           | ation valve<br>inistrative<br>ontrol.            | s and<br>ly                         |                      |                 |             |
| 1. RECORD Tagout number for local<br>Tagout No                                                                                                                                | valves.                                          |                                     | RECORD               | ED              | <u></u>     |
| <ol> <li>RECORD Tag number in "Second O<br/>column for inoperable containm<br/>valves.</li> </ol>                                                                             | perator" in<br>ent system                        | itials<br>isolation                 | RECORDE              | ED              | <u></u>     |
| 2.3 RHR System is operating per N-RHR-<br>N-RHR-34-CL is complete.                                                                                                            | 34. <u>OR</u>                                    |                                     | SATISFIE             | ED              |             |
| 2.4 Charging and Volume Control System                                                                                                                                        | , operating                                      |                                     | OPERATIN             | ⊀G              |             |
| 2.5 Valve Enclosure for SI-350A/MV-321                                                                                                                                        | 02. install                                      | ed                                  | INSTALLE             | ED              |             |
|                                                                                                                                                                               |                                                  |                                     | THOTALL              |                 |             |

E.L.

The subscription

| 2<br>2<br>2                                          | ·· ·····                                                                                                                    | ·· · · · · · · · · ·       |                                      | ······ <u>-</u> ·····    |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------------|--------------------------|
| WISC                                                 | ONSIN PUBLIC SERVICE CORPORATION                                                                                            | NO. N-FH-53-CL             | A                                    |                          |
| K                                                    | EWAUNEE NUCLEAR POWER PLANT                                                                                                 | TITLE Refuelin<br>S/G Seco | g-Containment In<br>ndary Side Intac | tegrity CL,<br>t         |
|                                                      | OPERATING PROCEDURE                                                                                                         | DATE MAY 25 2              | 004 <b>PAGE</b> 2                    | of 9                     |
| 2.7                                                  | DATE<br><u>IF</u> reactor vessel head or upper intis<br>is lifted, VERIFY the following for<br>Emergency Personnel Airlock: | ternals<br>r Containment   | F<br><u>O</u><br>APPLIES/NA_         | IRST SECOND<br>PER_ OPER |
|                                                      | 1. SP56A-154A completed satisfacto                                                                                          | orily                      | COMPLETE_                            |                          |
|                                                      | 2. Door interlocks, operable                                                                                                |                            | OPERABLE_                            |                          |
|                                                      | 3. One door of airlock, closed                                                                                              |                            | CLOSED_                              |                          |
| 2.8                                                  | <u>IF</u> reactor vessel head or upper in<br>is lifted, VERIFY the following for<br>Main Personnel Airlock:                 | ternals<br>r Containment   | APPLIES/NA_                          |                          |
|                                                      | 1. SP56A-154A completed satisfacto                                                                                          | prily                      | COMPLETE_                            |                          |
|                                                      | 2. Door interlocks, operable                                                                                                |                            | OPERABLE_                            |                          |
|                                                      | 3. One door of airlock, closed                                                                                              |                            | CLOSED_                              |                          |
| 2.9                                                  | Steam Generator 1A secondary side hand holes (2) and manways (2), in:                                                       | stalled                    | INSTALLED_                           |                          |
| 2.10                                                 | Steam Generator 1B secondary side<br>hand holes (2) and manways (2), ins                                                    | stalled                    | INSTALLED_                           |                          |
| 3.0 <u>Moni</u>                                      | TORING AND ALARM REQUIREMENTS                                                                                               |                            |                                      |                          |
| 3.1                                                  | Containment Isolation Active Status                                                                                         | s Panel, operable          | OPERABLE_                            |                          |
| 3.2                                                  | Sequential Events Recorder, operabl                                                                                         | le                         | OPERABLE_                            |                          |
|                                                      |                                                                                                                             |                            |                                      | -                        |
| , o dala da fitto da Tableco managemente das esta mo |                                                                                                                             |                            |                                      |                          |

|       |                         |                                  | ···· · ······· ··· ··· ··· ···       | ······ -··· · · · · · · · · · · · · · ·           |                |
|-------|-------------------------|----------------------------------|--------------------------------------|---------------------------------------------------|----------------|
| W     | SCONSIN PUBLIC SERVICE  | CORPORATION                      | NO. N-FH-53-CLA                      |                                                   |                |
|       | KEWAUNEE NUCLEAR PO     | WER PLANT                        | TITLE Refueling-Cor<br>S/G Secondary | ntainment Integr<br>v Side Intact                 | ity CL.        |
| [     | OPERATING PROCE         | DURE                             | DATE MAY 25 2004                     | PAGE 3 c                                          | of 9           |
| 4 N R | EMOTELY OPERATED AND AN | DATE                             |                                      | FIRST<br><u>OPER</u>                              | SECOND<br>OPER |
| 4.0 1 | 1 Control Room          | <u></u>                          |                                      |                                                   |                |
|       | NG-107/CV-31253         | Nitrogen Supp<br>Accumulators    | ly to SI                             | OPERABLE                                          |                |
|       | SI-9A/MV-32094          | Safety Inject                    | ion to RCS Cold Legs                 | CLOSED                                            | <del></del>    |
|       | SI-9B/MV-32095          | Safety Inject<br>Reactor Vesse   | ion to<br>l                          | CLOSED                                            |                |
|       | CC-601A/MV-32084        | Component Coo                    | ling to RXCP A                       | CLOSED <u>OR</u><br>CC SYS<br>INTACT TO<br>RXCP A |                |
|       | CC-612A/MV-32086        | RXCP A Compone<br>Isol           | ent Cooling Return                   | CLOSED <u>OR</u><br>CC SYS<br>INTACT TO<br>RXCP A |                |
|       | CC-601B/MV-32085        | Component Coo                    | ling to RXCP B                       | CLOSED <u>OR</u><br>CC SYS<br>INTACT TO<br>RXCP B |                |
|       | CC-612B/MV-32087        | RXCP B Compone<br>Isol           | ent Cooling Return                   | CLOSED <u>OR</u><br>CC SYS<br>INTACT TO<br>RXCP B |                |
|       | CC-653/MV-32082         | Excess Letdown<br>Cooling Return | ו Hx Component<br>ו                  | OPERABLE                                          |                |
|       | LD-6/CV-31234           | Letdown Line                     | Isolation                            | OPERABLE                                          |                |
|       | CVC-212/MV-32115        | RXCP Seal Wate                   | er Return Isolation                  | OPERABLE                                          |                |
|       | CVC-211/MV-32124        | RXCP Seal Wate                   | er Return Isolation                  | OPERABLE                                          |                |
| · · · | AS-1/CV-31383           | Containment Ai<br>Isolation A    | ir Sample                            | OPERABLE                                          |                |
|       | AS-32/CV-31385          | Containment Ai<br>Isolation C    | r Sample                             | OPERABLE                                          |                |
|       |                         | <u>CONTINUE</u>                  | <u>.</u> D                           |                                                   |                |

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| W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ISCONSIN PUBLIC SERVICE      | CORPORATION                   | NO. N-FH-53-CLA                   |                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------------|-----------------------------------|-------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | KEWAUNEE NUCLEAR POWER PLANT |                               | TITLE Refueling-Co<br>S/G Seconda | ontainment Integrity CL<br>ry Side Intact |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | OPERATING PROCE              | DURE                          | DATE MAY 25 2004                  | PAGE 4 of 9                               |
| A summer state of the state               |                              | DATE                          |                                   | FIRST SECON<br>OPER OPER                  |
| .1<br>:0NT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | INUED                        |                               |                                   |                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | AS-2/CV-31384                | Containment A<br>Isolation B  | ir Sample                         | OPERABLE                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | MD(R)-134/CV-31136           | Cntmt Sump Pu<br>Header Isol  | nps Discharge                     | OPERABLE                                  |
| 14 <sup>77</sup> - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 - 244 | MD(R)-135/CV-31137           | Cntmt Sump Pur<br>Header Isol | nps Discharge                     | OPERABLE                                  |
| 177.<br>17.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.<br>1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | RC-402/CV-31263              | Pressurizer Si<br>Isolation   | team Sampling                     | OPERABLE                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | RC-412/CV-31264              | Pressurizer Li<br>Isolation   | iquid Sampling                    | OPERABLE                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | RC-422/SV-33092              | Rx Coolant Hot<br>Isolation   | t Leg Sampling                    | OPERABLE                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | RC-403/CV-31267              | Pressurizer St<br>Isolation   | ceam Sampling                     | OPERABLE                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | RC-413/CV-31268              | Pressurizer Li<br>Isolation   | quid Sampling                     | OPERABLE                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | RC-423/SV-33327              | Rx Coolant Hot<br>Isolation   | : Leg Sampling                    | OPERABLE                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | MU-1010-1/CV-31261           | Przr Relief Ta<br>Isol        | nk Make Up Water                  | OPERABLE                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | MG(R)-512/CV-31259           | Przr Relief Ta<br>Isol        | nk Gas Sampling                   | OPERABLE                                  |
| 14 - T - T - T - T - T - T - T - T - T -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | MG(R)-513/CV-31260           | Przr Relief Ta<br>Isol        | nk Gas Sampling                   | OPERABLE                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | NG-302/CV-31298              | Przr Relief Ta<br>Isol        | nk Nitrogen Supply                | OPERABLE                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | RC-507/CV-31134              | Rx Clnt Drain<br>Isol         | Pump Disch Header                 | OPERABLE                                  |

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|-----------------------------------------------------|------------------------------|---------------------------------|----------------------------------------|----------------------------------------|
| w                                                   | ISCONSIN PUBLIC SERVICE O    | CORPORATION                     | NO. N-FH-53-CLA                        |                                        |
|                                                     | KEWAUNEE NUCLEAR POWER PLANT |                                 | TITLE Refueling-Con<br>S/G Secondary   | tainment Integrity CL.<br>Side Intact  |
| Í                                                   | OPERATING PROCEI             | DURE                            | DATE MAY 25 2004                       | PAGE 5 of 9                            |
|                                                     |                              | DATE                            |                                        | FIRST SECOND<br>OPER OPER              |
| 4.1<br><u>CONT</u>                                  | INUED                        |                                 |                                        |                                        |
|                                                     | RC-508/CV-31135              | Rx Clnt Drain<br>Isol           | Pump Disch Header                      | OPERABLE                               |
|                                                     | MG(R)-509/CV-31132           | RCDT Vent to V                  | Waste Gas Header                       | OPERABLE                               |
|                                                     | MG(R)-510/CV-31133           | RCDT Vent to V                  | Vaste Gas Header                       | OPERABLE                               |
|                                                     | MG(R)-503/CV-31216           | RCDT to Gas Ar                  | nzr Header Isolation                   | OPERABLE                               |
|                                                     | MG(R)-504/CV-31217           | RCDT to Gas Ar                  | nzr Header Isolation                   | OPERABLE                               |
|                                                     | MD(R)-323A/MV-32390          | Deaerated Drai<br>Isol A        | ins Tank Cntmt Disch                   | OPERABLE                               |
|                                                     | MD(R)-323B/MV-32391          | Deaerated Drai<br>Isol B        | ins Tank Cntmt Disch                   | OPERABLE                               |
|                                                     | WG-310/SV-33655              | Deaerated Drai<br>Outside Cntmt | ins Tank Vent                          | OPERABLE                               |
|                                                     | CVC-54/SV-33651              | VCT Vent to Cr                  | ntmt                                   | OPERABLE                               |
| 1<br>1<br>1                                         | VB-10A/CV-31337              | Power Operatec<br>Breaker A     | i Cntmt Vacuum                         | OPERABLE                               |
|                                                     | VB-10B/CV-31338              | Power Operatec<br>Breaker B     | i Cntmt Vacuum                         | OPERABLE                               |
|                                                     | LOCA-201B/CV-31727           | Post LOCA Hydr<br>to Cntmt      | rogen Recombiner B                     | OPERABLE                               |
| tin states                                          | LOCA-100B/CV-31725           | Post LOCA Hydr<br>Recombiner B  | rogen to                               | OPERABLE                               |
|                                                     | SA-7003B/MV-32148            | Hydrogen Dilut                  | ion to Containment                     | OPERABLE                               |
|                                                     | LOCA-28/MV-32146             | Post LOCA Hydr<br>Isol B        | ogen Cntmt Vent                        | OPERABLE                               |
| Pringing courses                                    | RBV-1/CV-31125               | Cntmt Purge/Ve                  | nt Supply Valve A                      | OPERABLE                               |
| na garagan da a sa | RBV-4/CV-31123               | Cntmt Purge/Ve                  | nt Exhaust Valve A                     | OPERABLE                               |
| 4 · ####                                            |                              | CONTINUE                        | <u>D</u>                               |                                        |

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## **CONTINUOUS USE**

| wisc                                     | ONSIN PUBLIC SERVIC                                 | E CORPORATION                      | NO. N-FH-53-CLA                                                    | ·                     |
|------------------------------------------|-----------------------------------------------------|------------------------------------|--------------------------------------------------------------------|-----------------------|
| K                                        | KEWAUNEE NUCLEAR POWER PLANT<br>OPERATING PROCEDURE |                                    | TITLE Refueling-Containment Integrity<br>S/G Secondary Side Intact |                       |
| 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1 |                                                     |                                    | <b>DATE</b> MAY 25 2004                                            | PAGE 6 of 9           |
|                                          |                                                     | DATE                               |                                                                    | FIRST SEC<br>OPER OPE |
| 1<br><u>NT/INI</u>                       | JED                                                 |                                    | ·                                                                  |                       |
| ¥<br>- 7<br>2                            | RBV-2/CV-31126                                      | Cntmt Purge/V                      | ent Supply Valve B                                                 | OPERABLE              |
| a ta featro                              | RBV-3/CV-32124                                      | Cntmt Purge/V                      | ent Exhaust Valve B                                                | OPERABLE              |
|                                          | BT-31A/CV-31334                                     | S/G Sample Is                      | ol Vivs                                                            | OPERABLE              |
|                                          | BT-318/CV-31270                                     | S/G Sample Is                      | ol Vlvs                                                            | OPERABLE              |
|                                          | BT-32A/CV-31335                                     | S/G Sample Is                      | ol Vlvs                                                            | OPERABLE              |
| ng in a gen da a                         | BT-32B/CV-31271                                     | S/G Sample Iso                     | ol Vivs                                                            | OPERABLE              |
| 4.2                                      | Dedicated Shut Dov                                  | <u>in Panel</u>                    |                                                                    |                       |
| 가가, 우리는 것                                | CVC-212/MV-32115                                    | Seal Water Leak<br>Local/Remote Sw | off Isolation MV –<br>itch                                         | REMOTE                |
| ತರು. ಮಥವಾಧಿಕರಿ ಶಿವಧುರಿ                   | LD-6/CV-31234                                       | Letdown Flow to<br>Keyswitch       | Ltdn Hx Isol CV -                                                  | NORMAL                |
| 4.3                                      | <u>Post LOCA Hydroger</u>                           | Control Panel                      |                                                                    |                       |
| in a sa sa sa                            | LOCA-2A/MV-32145                                    | Post LOCA Hydrog<br>Isol A         | gen Cntmt Vent                                                     | CLOSED/MP             |
|                                          | SA-7003A/MV-32147                                   | Hydrogen Dilutio                   | on to Containment                                                  | CLOSED/MP             |

|     | W            | ISCONSIN PUBLIC SERVICE CORPORATION           | NO. N-FH-53-CLA                    |                                          |
|-----|--------------|-----------------------------------------------|------------------------------------|------------------------------------------|
|     |              | KEWAUNEE NUCLEAR POWER PLANT                  | TITLE Refueling-Co<br>S/G Secondar | ntainment Integrity CL,<br>y Side Intact |
|     |              | OPERATING PROCEDURE                           | DATE MAY 25 2004                   | PAGE 7 of 9                              |
| , . |              | DATE                                          |                                    | FIRST SECOND<br>OPER OPER                |
|     | 5.0 <u>L</u> | <u>OCAL VALVE POSITIONS</u>                   |                                    |                                          |
| · · | 5            | .1 <u>Auxiliary Building - East Penetrati</u> | <u>on Room (606' E1)</u>           |                                          |
|     |              | ICS-80B Containment Spray Heade               | er 1B Test Conn                    | CLOSED                                   |
|     |              | ICS-79B Containment Spray Heade               | er 1B Test Conn                    | CLOSED                                   |
|     |              | ICS-7B Cntmt Spray Pump 1B to                 | Cntmt Vessel                       | CLOSED                                   |
|     | 5            | .2 <u>Auxiliary Building - North Penetrat</u> | <u>ion Room (606' El)</u>          |                                          |
|     |              | ICS-80A Containment Spray Heade               | ir 1A Test Conn                    | CLOSED                                   |
| :   |              | ICS-79A Containment Spray Heade               | r 1A Test Conn                     | CLOSED                                   |
|     |              | ICS-7A Cntmt Spray Pump 1A to                 | Cntmt Vessel                       | CLOSED                                   |
|     |              | SI-39A Cold Leg Inj Line Vent                 | (Pen 28N)                          | CLOSED/                                  |
|     |              | SI-211 Test Line Vent (Pen 35)                |                                    | CLOSED                                   |
|     | 5            | .3 <u>Auxiliary Building Basement - SI Pu</u> | <u>mp_Area</u>                     |                                          |
|     |              | SI-204 Test Line to Refueling                 | Water Stg Tank Isol                | CLOSED                                   |
|     | 5            | .4 <u>Auxiliary Building - BAST Room</u>      |                                    |                                          |
|     |              | SW-6010 Cntmt SW Hose St                      | ations Isol                        | CLOSED                                   |
|     |              | Penetration 3DWT Pressurizer Pres             | sure Dead Weight                   | CAPPED                                   |
|     |              | rester                                        |                                    |                                          |
|     |              |                                               |                                    |                                          |
|     |              |                                               |                                    |                                          |
|     |              |                                               |                                    |                                          |
|     |              |                                               |                                    |                                          |
|     |              |                                               |                                    |                                          |
|     | teres a      |                                               |                                    |                                          |
|     |              |                                               | 양의 이상에서 가장 가운<br>반전 가운 이상을 수요.     |                                          |
|     |              |                                               |                                    |                                          |

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| WISC | ONSIN PUBLIC SERVICE CORPORATION                                                                | NO. N-FH-53-CLA                                                                                                   |                                                      |
|------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| K    | EWAUNEE NUCLEAR POWER PLANT                                                                     | TITLE Refueling-Con<br>S/G Secondary                                                                              | tainment Integrity CL.<br>Side Intact                |
|      | OPERATING PROCEDURE                                                                             | DATE MAY 25 2004                                                                                                  | PAGE 8 of 9                                          |
| NOTE | DATE<br>For Containment Vessel Pressuriza<br>B or C is required. For Refuelir<br>E is required. | ntion Test (PEN 42N), e<br>ng Cables (PEN 43N), ei                                                                | FIRST SECOND<br>OPER OPER<br>ither A or<br>ther D or |
| 5.5  | Auxiliary Building - South end of E                                                             | <u>533 ·</u>                                                                                                      |                                                      |
|      | Containment Vessel Pressurization 1                                                             | Test (Pen 42N):                                                                                                   |                                                      |
|      | A. Loop Seal Water Level                                                                        |                                                                                                                   | NORMAL                                               |
|      | CPT-70, Loop Seal Drain V                                                                       | lalve                                                                                                             | CLOSED                                               |
|      | <u>OR</u>                                                                                       |                                                                                                                   |                                                      |
|      | B. Fiber Optic Cable Penetra                                                                    | ition Seal                                                                                                        | INSTALLED                                            |
|      | <u>OR</u>                                                                                       |                                                                                                                   |                                                      |
|      | C. Containment Vessel Blind                                                                     | Flange                                                                                                            | INSTALLED                                            |
| 1    | Blind Flange Test Conn                                                                          |                                                                                                                   | CAPPED                                               |
|      | Refueling Cables (Pen 43N):                                                                     |                                                                                                                   |                                                      |
|      | D. Loop Seal Water Level                                                                        |                                                                                                                   | NORMAL                                               |
|      | CPT-75, Loop Seal Drain V                                                                       | /alve                                                                                                             | CLOSED                                               |
|      | <u>OR</u>                                                                                       |                                                                                                                   |                                                      |
|      | E. Containment Vessel Blind                                                                     | Flange                                                                                                            | INSTALLED                                            |
|      | Blind Flange Test Conn                                                                          |                                                                                                                   | CAPPED                                               |
|      |                                                                                                 |                                                                                                                   |                                                      |
|      |                                                                                                 |                                                                                                                   |                                                      |
|      |                                                                                                 |                                                                                                                   |                                                      |
|      |                                                                                                 | 생활 전에 가지 않는 것은 것이 가지 않는다.<br>일본 전문 이 가지 않는 것은 것은 것은 것은 것은 것은 것이 있다.<br>같은 것은 있다. |                                                      |
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| WISCONSIN PUBLIC SERVICE CORPORATION | NO. N-FH-53-CLA                       |                                      |
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| KEWAUNEE NUCLEAR POWER PLANT         | TITLE Refueling-Cont<br>S/G Secondary | tainment Integrity CL<br>Side Intact |
| OPERATING PROCEDURE                  | DATE MAY 25 2004                      | PAGE 9 of 9                          |
| DATE                                 |                                       | FIRST SECON                          |
| 5.6 <u>Reactor Building</u>          |                                       | <u>OPER OPER</u>                     |
| BT-40A Stm Gen 1A Blowdown D         | rain (                                | CLOSED                               |
| BT-40B Stm Gen 1B Blowdown D         | rain                                  | CLOSED                               |
| MS-30A Steam Gen 1A Vent             |                                       | CLOSED                               |
| MS-30B Steam Gen 1B Vent             |                                       | CLOSED                               |
| FW-80A One Inch Vent at Stm          | Gen 1A                                | CLOSED                               |
| FW-80B One Inch Vent at Stm          | Gen 1B                                | CLOSED                               |
| Penetration 3DWT Pressurizer         | Pressure Dead Weight                  | CAPPED                               |
| Tester                               |                                       |                                      |
| 5.7 <u>Annulus</u>                   |                                       |                                      |
| CPT-60 Containment Vessel Pr         | essurization Line Vent                | CLOSED                               |
| CPT-80 Penetration 43N Vent          |                                       | CLOSED                               |
|                                      |                                       |                                      |
|                                      |                                       |                                      |
| PERFORMED BY                         | DATE                                  |                                      |
| SHIFT MANAGER                        | DATE                                  |                                      |
| ASSISTANT MANAGER OPERATIONS         | DATE                                  |                                      |

ASSISTANT MANAGER OPERATIONS

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| •       | WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                   | NO. N-F                                          | H-53-CLB                            | REV G                                   |
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| • • • • | KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                           | TITLE S                                          | efueling-Con<br>/G Secondary        | tainment Integrity CL.<br>Side Open     |
|         | OPERATING PROCEDURE                                                                                                                                                    | date M                                           | AY 25 2004                          | PAGE 1 of 14                            |
|         | REVIEWED BY CROws 13 per 2)                                                                                                                                            | APPRO                                            | VED BY                              | 11/                                     |
|         | NUCLEAR XES PORC REVIEW<br>SAFETY RELATED REQUIRED                                                                                                                     | YES                                              | SRO APPROV<br>TEMPORARY<br>REQUIRED | AL OF YES<br>CHANGES NO                 |
|         | DATE<br>1.0 <u>PLANT REQUIREMENTS</u>                                                                                                                                  |                                                  |                                     | FIRST SECOND<br><u>OPER</u> <u>OPER</u> |
|         | 1.1 Plant in Cold or Refueling Shutdow                                                                                                                                 | n.                                               |                                     | SATISFIED                               |
|         | 1.2 Containment Vessel Equipment Door                                                                                                                                  | is closed.                                       |                                     | CLOSED                                  |
|         | 1.3 Reactor vessel level greater than                                                                                                                                  | or equal to                                      | 17%.                                | <u>&gt;</u> 17%                         |
|         | 2.0 SYSTEM EQUIPMENT STATUS                                                                                                                                            |                                                  |                                     |                                         |
|         | 2.1 Required automatic containment sys<br>valves are operable <u>OR</u> are deactiv<br>CLOSED position <u>OR</u> at least one va<br>having an inoperable valve is CLOS | tem isolati<br>ated in the<br>lve in each<br>ED. | on<br>line                          | SATISFIED                               |
|         | 2.2 Inoperable containment system isol<br>local valve positions shall be adm<br>controlled per NAD 03.03. Tagout C                                                     | ation valve<br>inistrative<br>ontrol.            | s and<br>ly                         |                                         |
|         | 1. RECORD Tagout number for local<br>Tagout No                                                                                                                         | valves.                                          |                                     | RECORDED                                |
| •       | 2. RECORD Tag number in "Second O<br>column for inoperable containm<br>valves.                                                                                         | perator* in<br>ent system                        | itials<br>isolation                 | RECORDED                                |
|         | 2.3 RHR System is operating per N-RHR-<br>N-RHR-34-CL is complete.                                                                                                     | 34, <u>OR</u>                                    |                                     | SATISFIED                               |
|         | 2.4 Charging and Volume Control System                                                                                                                                 | operating                                        |                                     | OPERATING                               |
|         | 2.5 Valve Enclosure for SI-350A/MV-3210                                                                                                                                | )2. installe                                     | ed                                  | INSTALLED                               |
|         | 2.6 Valve Enclosure for SI-350B/MV-3210                                                                                                                                | )3. installe                                     | ed                                  | INSTALLED                               |
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|                                                                                                                  | SCONSIN PUBLIC SERVICE CORPORATION                                                                                          | NO. 1                                  | I-FH-53-CLB                 |                                    |                                       |
|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------------|------------------------------------|---------------------------------------|
|                                                                                                                  | KEWAUNEE NUCLEAR POWER PLANT                                                                                                | TITLE                                  | Refueling-Co<br>S/G Seconda | ontainment Integr<br>ry Side Open  | ity C                                 |
|                                                                                                                  | OPERATING PROCEDURE                                                                                                         | DATE                                   | MAY 25 2004                 | PAGE 2                             | of 14                                 |
| 2.                                                                                                               | DATE<br>7 <u>IF</u> reactor vessel head or upper inf<br>is lifted. VERIFY the following for<br>Emergency Personnel Airlock: | cernals<br>Contair                     | ment                        | FIRST<br><u>OPER</u><br>APPLIES/NA | SECO<br>OPER                          |
|                                                                                                                  | 1. SP56A-154A completed satisfacto                                                                                          | orily                                  |                             | COMPLETE                           |                                       |
|                                                                                                                  | 2. Door interlocks, operable                                                                                                |                                        |                             | OPERABLE                           |                                       |
|                                                                                                                  | 3. One door of airlock, closed                                                                                              | tini<br>Selfan Selfan<br>Selfan Selfan |                             | CLOSED                             | · · · ·                               |
| 2.                                                                                                               | 8 <u>IF</u> reactor vessel head or upper int<br>is lifted, VERIFY the following for<br>Main Personnel Airlock:              | ernals<br>Contain                      | ment                        | APPLIES/NA                         |                                       |
|                                                                                                                  | 1. SP56A-154A completed satisfacto                                                                                          | rily                                   |                             | COMPLETE                           |                                       |
|                                                                                                                  | 2. Door interlocks, operable                                                                                                |                                        |                             | OPERABLE                           |                                       |
|                                                                                                                  | 3. One door of airlock, closed                                                                                              | <br>                                   | ·<br>· · ·                  | CLOSED                             | · · · · · · · · · · · · · · · · · · · |
| 3.0 <u>MÖ</u>                                                                                                    | NITORING AND ALARM REQUIREMENTS                                                                                             | 1                                      |                             |                                    |                                       |
| 3.                                                                                                               | 1 Containment Isolation Active Status                                                                                       | Panel.                                 | operable                    | OPERABLE                           |                                       |
| 3.                                                                                                               | 2 Sequential Events Recorder, operabl                                                                                       | е                                      |                             | OPERABLE                           |                                       |
|                                                                                                                  |                                                                                                                             |                                        |                             |                                    |                                       |
|                                                                                                                  |                                                                                                                             |                                        |                             |                                    |                                       |
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| WI                                                                                                               | SCONSIN PUBLIC SERVICE | CORPORATION NO. N-FH-53-CLB              |                                      |
|------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------------|--------------------------------------|
|                                                                                                                  | KEWAUNEE NUCLEAR PO    | WER PLANT TITLE Refueling-Co             | ontainment Integrity<br>ry Side Open |
|                                                                                                                  | OPERATING PROCI        | EDURE DATE MAY 25 2004                   | PAGE 3 of 1                          |
|                                                                                                                  |                        | DATE                                     | FIRST SEC                            |
| 4.0 <u>R</u> E                                                                                                   | MOTELY OPERATED AND AL | JTOMATIC VALVES                          |                                      |
| 4                                                                                                                | 1 <u>Control Room</u>  |                                          |                                      |
|                                                                                                                  | NG-107/CV-31253        | Nitrogen Supply to SI<br>Accumulators    | OPERABLE                             |
| 2                                                                                                                | SI-9A/MV-32094         | Safety Injection to RCS Cold Legs        | CLOSED                               |
|                                                                                                                  | SI-9B/MV-32095         | Safety Injection to<br>Reactor Vessel    | CLOSED                               |
|                                                                                                                  | CC-601A/MV-32084       | Component Cooling to RXCP A              | CLOSED OR                            |
|                                                                                                                  |                        |                                          | CC SYS<br>INTACT TO<br>RXCP A        |
|                                                                                                                  | CC-612A/MV-32086       | RXCP A Component Cooling Return<br>Isol  | CLOSED <u>OR</u>                     |
|                                                                                                                  |                        |                                          | INIALI IU<br>RXCP A                  |
|                                                                                                                  | CC-601B/MV-32085       | Component Cooling to RXCP B              | CLOSED OR                            |
|                                                                                                                  |                        |                                          | INTACT TO<br>RXCP B                  |
|                                                                                                                  | CC-612B/MV-32087       | RXCP B Component Cooling Return          |                                      |
| and the second second second second second second second second second second second second second second second |                        | 1501                                     | INTACT TO<br>RXCP B                  |
|                                                                                                                  | CC-653/MV-32082        | Excess Letdown Hx Comp Cooling<br>Return | OPERABLE                             |
| Pri -                                                                                                            | LD-6/CV-31234          | Letdown Line Isolation                   | OPERABLE                             |
|                                                                                                                  | CVC-212/MV-32115       | RXCP Seal Water Return Isolation         | OPERABLE                             |
|                                                                                                                  | CVC-211/MV-32124       | RXCP Seal Water Return Isolation         | OPERABLE                             |
|                                                                                                                  | AS-1/CV-31383          | Containment Air Sample<br>Isolation A    | OPERABLE                             |
|                                                                                                                  | AS-32/CV-31385         | Containment Air Sample<br>Isolation C    | OPERABLE                             |
|                                                                                                                  |                        | <u>Continued</u>                         |                                      |

CONTINUOUS USE

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| W                  | SCONSIN PUBLIC SERVICE | CORPORATION                   | NO. N-FH-53-CLB                    |                                      |
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|                    | KEWAUNEE NUCLEAR PO    | WER PLANT                     | TITLE Refueling-Co<br>S/G Secondar | ontainment Integrity<br>ry Side Open |
|                    | OPERATING PROCE        | DURE                          | DATE MAY 25 2004                   | PAGE 4 of                            |
|                    |                        | DATE                          |                                    | FIRST SE<br><u>OPER</u> OP           |
| 4.1<br><u>CONT</u> | <u>INUED</u>           |                               |                                    |                                      |
|                    | AS-2/CV-31384          | Containment Ai<br>Isolation B | r Sample                           | OPERABLE                             |
|                    | MD(R)-134/CV-31136     | Cntmt Sump Pum<br>Isol        | ps Discharge Header                | OPERABLE                             |
|                    | MD(R)-135/CV-31137     | Cntmt Sump Pum<br>Isol        | ps Discharge Header                | OPERABLE                             |
|                    | RC-402/CV-31263        | Pressurizer St<br>Isolation   | eam Sampling                       | OPERABLE                             |
|                    | RC-412/CV-31264        | Pressurizer Li<br>Isolation   | quid Sampling                      | OPERABLE                             |
|                    | RC-422/SV-33092        | Rx Coolant Hot<br>Isolation   | Leg Sampling                       | OPERABLE                             |
|                    | RC-403/CV-31267        | Pressurizer St<br>Isolation   | eam Sampling                       | OPERABLE                             |
|                    | RC-413/CV-31268        | Pressurizer Li<br>Isolation   | quid Sampling                      | OPERABLE                             |
|                    | RC-423/SV-33327        | Rx Coolant Hot<br>Isolation   | Leg Sampling                       | OPERABLE                             |
|                    | MU-1010-1/CV-31261     | Przr Relief Ta<br>Isol        | nk Make Up Water                   | OPERABLE                             |
|                    | MG(R)-512/CV-31259     | Przr Relief Tau<br>Isol       | nk Gas Sampling                    | OPERABLE                             |
|                    | MG(R)-513/CV-31260     | Przr Relief Ta<br>Isol        | nk Gas Sampling                    | OPERABLE                             |
|                    | NG-302/CV-31298        | Przr Relief Tau<br>Isol       | nk Nitrogen Supply                 | OPERABLE                             |
|                    | RC-507/CV-31134        | Rx Clnt Drain I<br>Isol       | Pump Disch Header                  | OPERABLE                             |
|                    |                        | <u>Continuer</u>              | 2                                  |                                      |

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| w           | ISCONSIN PUBLIC SERV | ICE CORPORATION      | NO. N   | -FH-53-CLB                     |                             |                     |
|             | KEWAUNEE NUCLEAF     | <b>ξ POWER PLANT</b> | TITLE   | Refueling-Con<br>S/G Secondary | tainment Integ<br>Side Open | grity CL.           |
|             | OPERATING PRO        | OCEDURE              | DATE    | MAY 25 2004                    | PAGE 5                      | of 14               |
| 4.1<br>CONT | INUED                | DATE                 |         |                                | FIRS<br><u>OPE</u>          | ST SECOND<br>R OPER |
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| RC-508/CV-31135     | Rx Clnt Drain Pump Disch Header<br>Isol     | OPERABLE |
|---------------------|---------------------------------------------|----------|
| MG(R)-509/CV-31132  | RCDT Vent to Waste Gas Header               | OPERABLE |
| MG(R)-510/CV-31133  | RCDT Vent to Waste Gas Header               | OPERABLE |
| MG(R)-503/CV-31216  | RCDT to Gas Anzr Header Isolation           | OPERABLE |
| MG(R)-504/CV-31217  | RCDT to Gas Anzr Header Isolation           | OPERABLE |
| MD(R)-323A/MV-32390 | Deaerated Drains Tank Cntmt Disch<br>Isol A | OPERABLE |
| MD(R)-323B/MV-32391 | Deaerated Drains Tank Cntmt Disch<br>Isol B | OPERABLE |
| WG-310/SV-33655     | Deaerated Drains Tank Vent<br>Outside Cntmt | OPERABLE |
| CVC-54/SV-33651     | VCT Vent to Cntmt                           | OPERABLE |
| VB-10A/CV-31337     | Power Operated Cntmt Vacuum<br>Breaker A    | OPERABLE |
| VB-10B/CV-31338     | Power Operated Cntmt Vacuum<br>Breaker B    | OPERABLE |
| LOCA-2018/CV-31727  | Post LOCA Hydrogen Recombiner B<br>to Cntmt | OPERABLE |
| LOCA-1008/CV-31725  | Post LOCA Hydrogen to<br>Recombiner B       | OPERABLE |
| SA-7003B/MV-32148   | Hydrogen Dilution to Containment            | OPERABLE |
| LOCA-2B/MV-32146    | Post LOCA Hydrogen Cntmt Vent<br>Isol B     | OPERABLE |
| RBV-1/CV-31125      | Cntmt Purge/Vent Supply Valve A             | OPERABLE |
| RBV-4/CV-31123      | Cntmt Purge/Vent Exhaust Valve A            | OPERABLE |
|                     | <u>CONTINUED</u>                            |          |

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| and the second second second second second second second second second second second second second second second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | KEWAUNEE NUCLEAR PO   | DWER PLANT                       | TITLE Refueling-Co<br>S/G Secondar | ntainment Integrity<br>y Side Open | CL                                            |
| دودهار القارد تبدأوانهم                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | OPERATING PROC        | EDURE                            | DATE MAY 25 2004                   | PAGE 6 of                          | 14                                            |
| and the second se |                       | DATE                             |                                    | FIRST SE<br><u>OPER</u> OP         | CON<br>ER                                     |
| .1<br><u>INTIN</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <u>IUED</u>           |                                  |                                    |                                    |                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | RBV-2/CV-31126        | Cntmt Purge/Ve                   | nt Supply Valve B                  | OPERABLE                           | •                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | RBV-3/CV-32124        | Cntmt Purge/Ve                   | nt Exhaust, Valve B                | OPERABLE                           |                                               |
| in the second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | BT-3A/MV-32078        | S/G A Blowdowr                   | Isolation Valve A2                 | OPERABLE                           |                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | BT-3B/MV-32080        | S/G B Blowdowr                   | Isolation Valve B2                 | OPERABLE                           | ;                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | MS-1A/CV-31015        | S/G A Main Ste                   | am Isolation Valve                 | CLOSED                             | <u> </u>                                      |
| -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | MS-1B/CV-31016        | S/G B Main Ste                   | am Isolation Valve                 | CLOSED                             | •• ,**                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | MS-2A/MV-32007        | S/G A MSIV Byp                   | ass Valve                          | CLOSED                             |                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | MS-2B/MV-32008        | S/G B MSIV Byp                   | ass Valve                          | CLOSED                             | <u>, , , , , , , , , , , , , , , , , , , </u> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SD-3A/CV-31170        | S/G A PORV - I<br>SD-2A is CLOSE | nfo that<br>D                      | SD-2A<br>CLOSED                    |                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SD-3B/CV-31174        | S/G B PORV - I<br>SD-2B is CLOSE | nfo that<br>D                      | SD-2B<br>CLOSED                    |                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | BT-31A/CV-31334       | S/G Sample Iso                   | 1 V1vs                             | OPERABLE                           | •••                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | BT-31B/CV-31270       | S/G Sample Iso                   | 1 Vivs                             | OPERABLE                           | •                                             |
| žuć meni                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | BT-32A/CV-31335       | S/G Sample Iso                   | 1 Vlvs                             | OPERABLE                           | <u>,</u>                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | BT-32B/CV-31271       | S/G Sample Iso                   | 1 Vlvs                             | OPERABLE                           |                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | FW-12A/MV-32015       | S/G A Feedwate                   | r Isolation Valve                  | CLOSED                             | · · · ·                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | FW-12B/MV-32016       | S/G B Feedwate                   | r Isolation Valve                  | CLOSED                             | · · · ·                                       |
| and the second second second second second second second second second second second second second second secon                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | AFW-2A/CV-31315       | AFW Flow Contr<br>Info that AFW- | ol AFWP A<br>3A is CLOSED          | AFW-3A<br>CLOSED                   |                                               |
| STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET, STREET,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | AFW-2B/CV-31316       | AFW Flow Contr<br>Info that AFW- | ol AFWP B<br>3B is CLOSED          | AFW-3B<br>CLOSED                   |                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | MS-100A/MV-32038      | S/G A Steam Su<br>AF₩ Pump       | pply to T/D                        | CLOSED                             |                                               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                       | <u>CONTINUE</u>                  | <u>D</u>                           |                                    |                                               |

CONTINUOUS USE

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| W     | SCONSIN PUBLIC SERVICE | CORPORATION NO. N-FH-53-CLB                                                             |                                          |
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| 1 ×   | KEWAUNEE NUCLEAR PO    | OWER PLANT TITLE Refueling-C                                                            | Containment Integrity (<br>ary Side Open |
|       | OPERATING PROC         | EDURE MAY 25 2004                                                                       | PAGE 7 of 14                             |
| 4.1   |                        | DATE                                                                                    | FIRST SECO<br>OPER OPER                  |
| CONT  | <u>ÍNUED</u>           |                                                                                         |                                          |
|       | MS-100B/MV-32039       | S/G B Steam Supply to T/D<br>AFW Pump                                                   | CLOSED                                   |
|       | AFW-10A/MV-32027       | AFW Train A Crossover Valve                                                             | CLOSED                                   |
| · · · | AFW-10B/MV-32028       | AFW Train B Crossover Valve                                                             | CLOSED                                   |
| 4     | 2 Dedicated Shut Dow   | n Panel                                                                                 |                                          |
|       | AFW-2A/CV-31315        | 1A AFW Pump Flow CV Controller -<br>Local/Remote Switch - Info<br>that AFW-3A is CLOSED | AFW-3A<br>CLOSED                         |
|       | AFW-10A/MV-32027       | Aux FW Pump 1A Crossover MV -<br>Local/Remote Switch                                    | REMOTE                                   |
|       | SD-3A/CV-31170         | Stm Gen 1A Pwr Op Rlf - Info that<br>SD-2A is CLOSED                                    | SD-2A<br>CLOSED                          |
|       | CVC-212/MV-32115       | Seal Water Leakoff Isolation MV -<br>Local/Remote Switch                                | REMOTE                                   |
|       | LD-6/CV-31234          | Letdown Flow to Ltdn Hx Isol CV -<br>Keyswitch                                          | NORMAL                                   |
| 4     | .3 Post LOCA Hydrogen  | Control Panel                                                                           |                                          |
|       | LOCA-2A/MV-32145       | Post LOCA Hydrogen Cntmt Vent<br>Isol A                                                 | CLOSED/MP                                |
|       | SA-7003A/MV-32147      | Hydrogen Dilution to Containment                                                        | CLOSED/MP                                |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | KEWAUNEE NUCLEAR          | POWER PLANT                  | TITLE       | Refueling-Co<br>S/G Seconda | ontainment Ir<br>ry Side Open | ntegrity (                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | OPERATING PRO             | CEDURE                       | DATE        | MAY 25 2004                 | PAGE 8                        | 3 <b>of</b> 14                        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                           | DATE                         |             |                             |                               | IRST SECO                             |
| 5.0 <u>L(</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | )<br>DCAL VALVE POSITIONS |                              |             |                             | <u> </u>                      | <u>ILK ULL</u>                        |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1 <u>B Steam and Feed</u> | water Penetration            | <u>Area</u> |                             |                               |                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SD-2B                     | S/G B Pwr Op Iso             | 1           | ,                           | CLOSED                        | · · · · · · · · · · · · · · · · · · · |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SD-1B1                    | Safety to Atmos              | - Steam G   | en 1B                       | INSTALLED <u>OR</u><br>BLANK  |                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                           |                              |             |                             | FLANGED                       |                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SD-1B2                    | Safety to Atmos              | - Steam G   | en 1B                       | INSTALLED <u>OR</u><br>BLANK  |                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                           |                              |             |                             | FLANGED                       |                                       |
| and the second second second second second second second second second second second second second second second                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | SD-1B3                    | Safety to Atmos              | - Steam G   | en 18 1                     | INSTALLED <u>OR</u><br>BLANK  |                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                           |                              |             |                             | FLANGED                       |                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SD-1B4                    | Safety to Atmos              | - Steam G   | en 1B                       | INSTALLED OR<br>BLANK         | · · · · · · · · · · · · · · · · · · · |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                           |                              | 1           |                             | FLANGED                       |                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SD-1B5                    | Safety to Atmos              | - Steam G   | en 18 1                     | INSTALLED OR                  |                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                           |                              |             |                             | FLANGED                       |                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | MS-100B/MV-32039          | Handwheel, S/G B<br>AFW Pump | Steam Su    | pply to T/D                 | CLOSED_                       |                                       |
| teres i since                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PT-483                    | B MS Pressure Tri            | ansmitter   | J                           | INSTALLED OR                  |                                       |
| Address of the second se |                           |                              |             |                             | ROOT VALVE<br>CLOSED          |                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | PT-17002                  | B MS Pressure Tra            | ansmitter   | 1                           | NSTALLED OR                   |                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                           |                              |             |                             | RODT VALVE<br>CLOSED          |                                       |
| Silver Charles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | PT-479                    | B MS Pressure: Tri           | ansmitter   | 1<br>1<br>1                 | NSTALLED OR                   |                                       |
| e is the futures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                           |                              |             |                             | ROOT VALVE<br>CLOSED          | <del></del>                           |
| تركبيمق والالد كمكوا                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | MS-28/MV-32008            | Handwheel S/G B              | MSIV Byn    | ass Valve                   | CLOSED                        |                                       |
| เจราะระกา                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | MS-40B                    | MS Hdr B Drain to            | o Tran at   | MSIV                        | ČLOSED                        |                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | MS-A5P                    | Freehlow for MS              | Hdr R       |                             | CINCED                        | x, t                                  |
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| WI                                                                                                              | SCONSIN PUBLIC SERVICE CORPORATION NO. N-FH-53-CL              | B                                 |                                                                                                                             |
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|                                                                                                                 | KEWAUNEE NUCLEAR POWER PLANT TITLE Refueling<br>S/G Second     | g-Containment<br>ndary Side Ope   | Integrity CL<br>n                                                                                                           |
|                                                                                                                 | OPERATING PROCEDURE DATE MAY 25 20                             | 004 PAGE                          | 9 of 14                                                                                                                     |
| 5.1<br><u>CONT</u> I                                                                                            | DATE                                                           |                                   | FIRST SECON<br>OPER OPER                                                                                                    |
| and a second second second second second second second second second second second second second second second  | FW-12B/MV-32016 Handwheel. S/G B Feedwater Isolatic<br>Valve   | on CLOSEI                         | )                                                                                                                           |
| tin the second second second second second second second second second second second second second second secon | FW-75B Drain after Isol Valve on FW Supply<br>to Stm Gen       | CLOSE                             | )                                                                                                                           |
| i stratt. "W with                                                                                               | CI-232B Boiler Chemical to B FW Line                           | CLOSEI                            | )                                                                                                                           |
|                                                                                                                 | CI-122B AFW Hydrazine to B FW Line                             | CLOSEI                            | )                                                                                                                           |
|                                                                                                                 | PT-478 B MS Pressure Transmitter                               | INSTALLED <u>OI</u><br>ROOT VALVI | <pre></pre>                                                                                                                 |
|                                                                                                                 | PC-16112 P MC Descripto Transmitton                            | INSTALLED OF                      |                                                                                                                             |
|                                                                                                                 | FJ-10115 D MJ FIESSULE HIGHSMILLER                             | ROOT VALVE                        |                                                                                                                             |
| 5.                                                                                                              | 2 <u>Steam Generator Blowdown Flash Tank Area</u>              | CLUSEL                            |                                                                                                                             |
|                                                                                                                 | BT-3A/MV-32078 Handwheel, S/G A Blowdown Isolation Valve A2    | n CLOSEI                          | )                                                                                                                           |
|                                                                                                                 | BT-3B/MV-32080 Handwheel, S/G B Blowdown Isolation<br>Valve B2 | n CLOSEI                          | )                                                                                                                           |
| 5.                                                                                                              | 3 <u>Auxiliary Building - East Penetration Room (606' El)</u>  |                                   |                                                                                                                             |
|                                                                                                                 | CI-128B AFW Hydrazine to S/G B AFW                             | CLOSE                             | )                                                                                                                           |
|                                                                                                                 | ICS-80B Containment Spray Header 1B Test Conn                  | CLOSE                             | ) (                                                                                                                         |
|                                                                                                                 | ICS-79B Containment Spray Header 1B Test Conn                  | CLOSED                            | ) <u></u>                                                                                                                   |
|                                                                                                                 | ICS-7B Cntmt Spray Pump 1B to Cntmt Vessel                     | CLOSEC                            | ing ang sy ang tang sa sa s<br><u>Ang sa sa</u> ng <u>ang sa s</u><br>La batagan ang sa sa sa sa sa sa sa sa sa sa sa sa sa |
| 5.                                                                                                              | 4 <u>Auxiliary Building - North Penetration Room (606' El)</u> |                                   |                                                                                                                             |
|                                                                                                                 | ICS-80A Containment Spray Header 1A Test Conn                  | CLOSED                            | ) <u></u>                                                                                                                   |
|                                                                                                                 | ICS-79A Containment Spray Header 1A Test Conn                  | CLOSED                            | )                                                                                                                           |
| water Print                                                                                                     | ICS-7A Cntmt Spray Pump 1A to Cntmt Vessel                     | CLOSED                            |                                                                                                                             |

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| NSIN PUBLIC SERVICE CORPORATION<br>WAUNEE NUCLEAR POWER PLANT<br>OPERATING PROCEDURE<br>DATE | TITLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Refueling<br>S/G Secon<br>MAY 25 20                                                                                                                                                                                                                                                                                                            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| WAUNEE NUCLEAR POWER PLANT<br>OPERATING PROCEDURE<br>DATE                                    | TITLE<br>DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Refueling<br>S/G Secor<br>MAY 25 20                                                                                                                                                                                                                                                                                                            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| SI-39A Cold Leg Inj Line Vent                                                                | (Pen 28N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ) .                                                                                                                                                                                                                                                                                                                                            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| SI-211 Test Line Vent (Pen 35)                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                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| <u> Auxiliary Building Basement - SI Pu</u>                                                  | <u>imp Area</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ۰<br>•                                                                                                                                                                                                                                                                                                                                         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| SI-204 Test Line to Refueling                                                                | Water St                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | g Tank Isc                                                                                                                                                                                                                                                                                                                                     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| FI-18201 A AFW Flow Indicator                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                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| F-23010 A AFW Flow Transmitter                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                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| FE-27016 A AFW Flow Element                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                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| FI-18202 B AFW Flow Indicator                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                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| F-23012 B AFW Flow Transmitter                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                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| FE-27017 B AFW Flow Element                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                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| Auxiliary Building Basement North -                                                          | Above Do                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | or 196                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | - 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| AFW-30 S/G A AFW Line 3                                                                      | /4 in. Dr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ain                                                                                                                                                                                                                                                                                                                                                                                                                                                    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| Auxiliary Building - BAST Room                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                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| Penetration 3DWT Pressurizer Pres<br>Tester                                                  | sure Dead                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Weight                                                                                                                                                                                                                                                                                                                                         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| SW-6010 Cntmt SW Hose St                                                                     | ations Is                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0]                                                                                                                                                                                                                                                                                                                                             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|                                                                                              | ESI-39ACold Leg Inj Line VentSI-211Test Line Vent (Pen 35)Auxiliary Building Basement - SI PuSI-204Test Line to RefuelingAuxiliary Building Basement North EFI-18201A AFW Flow IndicatorF-23010A AFW Flow IndicatorF-23010A AFW Flow TransmitterFE-27016A AFW Flow ElementFI-18202B AFW Flow IndicatorF-23012B AFW Flow IndicatorF-23012B AFW Flow IndicatorF-23012B AFW Flow IndicatorF-23017B AFW Flow TransmitterFE-27017B AFW Flow ElementAuxiliary Building Basement NorthAwxiliary Building - BAST RoomPenetration 3DWTPressurizer Pres<br>TesterSW-6010Cntmt SW Hose StCONTINUC | SI-39A       Cold Leg Inj Line Vent (Pen 28N         SI-211       Test Line Vent (Pen 35)         Auxiliary Building Basement - SI Pump Area         SI-204       Test Line to Refueling Water Stations         Auxiliary Building Basement North East (586         FI-18201       A AFW Flow Indicator         F23010       A AFW Flow Indicator         F23012       B AFW Flow Indicator         F23012       B AFW Flow Indicator         F23012       B AFW Flow Indicator         F23012       B AFW Flow Indicator         F23012       B AFW Flow Indicator         F23012       B AFW Flow Indicator         F23013       B AFW Flow Indicator         F23014       B AFW Flow Element         Auxiliary Building Basement North - Above De       Above De         AFW-30       S/G A AFW Line 3/4 in. Dr         Auxiliary Building - BAST Room       Penetration 3DWT         Penetration 3DWT       Pressurizer Pressure Dead         SW-6010       Cntmt SW Hose Stations Is | Si-39A       Cold Leg Inj Line Vent (Pen 28N)         Si-211       Test Line Vent (Pen 35)         Auxiliary Building Basement - Si Pump Area         Si-204       Test Line to Refueling Water Stg Tank Isc         Auxiliary Building Basement North East (586' E1)         F1-18201       A AFW Flow Indicator         F23010       A AFW Flow Transmitter         F23010       A AFW Flow Element         F1-18202       B AFW Flow Indicator         F23012       B AFW Flow Indicator         F23013       B AFW Flow Indicator         F23014       B AFW Flow Indicator         F23015       B AFW Flow Indicator         F23016       A FW Flow Indicator         F23017       B AFW Flow Indicator         F23018       AFW Flow Indicator         F23019       Continue Basement North         Above Door 196       AFW-30         AFW-30       S/G A AFW Line 3/4 in. Drain         Venetration 3DWT       Pressurize | SI-39A Cold Leg Inj Line Vent (Pen 28N)<br>SI-211 Test Line Vent (Pen 35)<br>Auxiliary Building Basement - SI Pump Area<br>SI-204 Test Line to Refueling Water Stg Tank Isol<br>Auxiliary Building Basement North East (586' E1)<br>FI-18201 A AFW Flow Indicator INSTA<br>F-23010 A AFW Flow Transmitter INSTA<br>F-23010 A AFW Flow Transmitter INSTA<br>FE-27016 A AFW Flow Element IN<br>FE-27016 A AFW Flow Indicator INSTA<br>F-23012 B AFW Flow Indicator INSTA<br>F-23012 B AFW Flow Indicator INSTA<br>F-23012 B AFW Flow Element IN<br>F-23012 B AFW Flow Element IN<br>F-23015 A FW Flow Element IN<br>F-23016 A AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23017 B AFW Flow Element IN<br>F-23010 F AFW Flow Element IN<br>F-23017 F AFW Flow Element IN<br>F-23017 F AFW Flow Element IN<br>F-23017 F AFW Flow Element IN<br>F-23017 F AFW Flow Element IN<br>F-23017 F AFW Flow Element IN<br>F-23017 F AFW Flow Flow Element IN<br>F-23017 F AFW Flow F | Si-39A Cold Leg Inj Line Vent (Pen 28N) CLOSED<br>CAPPEL<br>SI-211 Test Line Vent (Pen 35) CLOSED<br>Auxiliary Building Basement - SI Pump Area<br>SI-204 Test Line to Refueling Water Stg Tank Isol CLOSED<br>Auxiliary Building Basement North East (586' E1)<br>FI-18201 A AFW Flow Indicator INSTALLED OF<br>FI-18201 A AFW Flow Indicator INSTALLED OF<br>FI-23010 A AFW Flow Transmitter INSTALLED OF<br>SI-23010 A AFW Flow Element INSTALLED OF<br>FE-27016 A AFW Flow Element INSTALLED<br>FE-27016 A AFW Flow Indicator INSTALLED<br>FE-23012 B AFW Flow Indicator INSTALLED OF<br>ISOLATED<br>FI-18202 B AFW Flow Indicator INSTALLED OF<br>ISOLATED<br>FI-23012 B AFW Flow Indicator INSTALLED OF<br>ISOLATED<br>FE-27017 B AFW Flow Element INSTALLED OF<br>ISOLATED<br>FE-27017 B AFW Flow Element INSTALLED OF<br>ISOLATED<br>FW-30 S/G A AFW Line 3/4 in. Drain CLOSED<br>Waxiliary Building - BAST Room<br>Penetration 3DWT Pressurizer Pressure Dead Weight CAPPEL<br>Tester<br>SW-6010 Cntmt SW Hose Stations Isol CLOSED | SI-39A Cold Leg Inj Line Vent (Pen 28N) CLOSED/<br>CAPPED<br>SI-211 Test Line Vent (Pen 35) CLOSED<br>Auxiliary Building Basement - SI Pump Area<br>SI-204 Test Line to Refueling Water Stg Tank Isol CLOSED<br>Auxiliary Building Basement North East (586' E1)<br>FI-18201 A AFW Flow Indicator INSTALLED OR<br>F23010 A AFW Flow Transmitter INSTALLED OR<br>F23010 A AFW Flow Transmitter INSTALLED OR<br>F23010 A AFW Flow Transmitter INSTALLED OR<br>F2-27016 A AFW Flow Element INSTALLED OR<br>F1-18202 B AFW Flow Indicator INSTALLED OR<br>F1-18202 B AFW Flow Indicator INSTALLED OR<br>F2-23012 B AFW Flow Transmitter INSTALLED OR<br>F2-27017 B AFW Flow Element INSTALLED OR |

CONTINUOUS USE

| SCONSIN PUBLIC SERVI  | CE CORPORATION                   | NO. N            | -FH-53-CLE             |                                          |                       |                                       |
|-----------------------|----------------------------------|------------------|------------------------|------------------------------------------|-----------------------|---------------------------------------|
| KEWAUNEE NUCLEAR      | POWER PLANT                      | TITLE            | Refueling<br>S/G Secor | -Containment<br>dary Side Ope            | Integrity<br>en       | C                                     |
| OPERATING PRO         | CEDURE                           | DATE             | MAY 25 20              | 04 PAGE                                  | 11 of 1               | 14                                    |
| 5.9 A Steam Line Pene | DATE                             |                  | · · · · ·              |                                          | FIRST SEC<br>OPER OPE | COI<br>ER                             |
| MS-2A/MV-32007        | Handwheel, S/G                   | A MSIV By        | pass Valve             | CLOSE                                    | D                     |                                       |
| PT-482                | A MS Pressure T                  | ransmitte        | <b>r</b> .             | INSTALLED <u>(</u><br>ROOT VALV<br>CLOSE | R<br>E<br>D           | <u>.</u>                              |
| PT~469                | A MS Pressure T                  | ransmitte        | r                      | INSTALLED C<br>ROOT VALV                 | <u>R</u>              |                                       |
| PT-21141              | A MS Pressure T                  | ransmitte        | r                      | INSTALLED <u>C</u><br>ROOT VALV<br>CLOSE | R<br>E<br>D           | · · · · · · · · · · · · · · · · · · · |
| SD-2A                 | S/G A Pwr Op Is                  | <b>b1</b>        | • •.                   | CLOSE                                    | D                     | .ت.<br><u>ب</u>                       |
| SD-32                 | S/G A Relief He                  | ader Test        | Conn                   | CLOSED<br>CAPPE                          | /                     | <u> </u>                              |
| SD-1A1                | Safety to Atmos                  | - Steam (        | Gen 1A                 | INSTALLED OB<br>BLAN<br>FLANGE           | R<br>K<br>D           |                                       |
| SD-1A2                | Safety to Atmos                  | - Steam (        | Gen 1A                 | INSTALLED <u>O</u><br>Blan<br>Flange     | <u>R</u><br>K<br>D    |                                       |
| SD-1A3                | Safety to Atmos                  | - Steam (        | Gen 1A                 | INSTALLED <u>O</u><br>BLAN<br>FLANGE     | R<br>K<br>D           |                                       |
| SD-1A4                | Safety to Atmos                  | - Steam (        | Gen 1A                 | INSTALLED O<br>BLAN<br>FLANGE            | R<br>K<br>D           | · · · · · · · · · · · · · · · · · · · |
| SD-1A5                | Safety to Atmos                  | - Steam (        | Gen 1A                 | INSTALLED <u>O</u><br>BLAN<br>FLANGF     | <u>R</u><br>K<br>D    |                                       |
| MS-100A/MV-32038      | Handwheel. S/G /<br>T/D AFW Pump | <b>Steam S</b> t | upply to               | CLOSE                                    | D                     | · · ·                                 |
| MS-45A                | Freeblow for MS                  | Hdr A            | · · · ·                | CLOSE                                    | D                     | :::<br>:;<br>:::::                    |
| MS-40A                | MS Hdr A Drain t                 | o Trap at        | MSIV                   | CLOSE                                    | D                     |                                       |

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| KEWAUNEE N            | UCLEAR POWER PLANT              | TITLE               | Refueling-Co<br>S/G Secondar | ntainment In<br>y Side Open                | itegrity Cl                            |
|-----------------------|---------------------------------|---------------------|------------------------------|--------------------------------------------|----------------------------------------|
| OPERAT                | ING PROCEDURE                   | DATE                | MAY 25 2004                  | PAGE                                       | 2 of 14                                |
|                       | DATE                            |                     |                              | i<br>S                                     | IRST SECON                             |
| .9<br><u>INTINUED</u> |                                 |                     |                              |                                            |                                        |
| PT-17001              | A MS Pressur                    | e <b>Transmitte</b> | er I                         | NSTALLED <u>OR</u><br>ROOT VALVE<br>CLOSED | ······································ |
| PS-16112              | A MS Pressur                    | e Transmitte        | er I                         | NSTALLED <u>OR</u><br>ROOT VALVE<br>CLOSED |                                        |
| PT-468                | A MS Pressure                   | e Transmitte        | er I                         | NSTALLED <u>OR</u><br>ROOT VALVE<br>CLOSED |                                        |
| 5.10 <u>A Feedwat</u> | er Penetration Area             |                     |                              |                                            |                                        |
| FW-12A/MV             | -32015 Handwheel. S/(<br>Valve  | G A Feedwate        | er Isolation                 | CLOSED                                     |                                        |
| FW-75A                | Drain after Is<br>to Stm Gen    | sol Valve or        | FW Supply                    | CLOSED                                     |                                        |
| CI-122A               | AFW Hydrazine                   | to A FW Lir         | e                            | CLOSED                                     |                                        |
| CI-232A               | Boiler Chemica                  | al to A FW L        | ine                          | CLOSED                                     |                                        |
| CI-128A               | AFW Hydrazine                   | to S/G A AF         | W                            | CLOSED_                                    |                                        |
| 5.11 <u>AFW Pump</u>  | <u>Areas</u>                    |                     |                              |                                            |                                        |
| AFW-10A/M             | V-32027 Handwheel, AFI<br>Valve | N Train A Cr        | ossover                      | CLOSED                                     |                                        |
| AFW-3A                | Aux Feedwater                   | Pump 1A Dis         | ch                           | CLOSED                                     |                                        |
| AFW-10B/3             | 2028 Handwheel. AFN<br>Valve    | V Train B Cr        | ossover                      | CLOSED                                     |                                        |
| AFW-3B                | Aux Feedwater                   | Pump 1B Dis         | ch                           | CLOSED                                     |                                        |
|                       |                                 |                     |                              |                                            |                                        |

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| WISCONSIN PUBL                      | IC SERVICE CORPORATION                                                     | NO. N                    | -FH-53-CLB                        |                                              |                           |
|-------------------------------------|----------------------------------------------------------------------------|--------------------------|-----------------------------------|----------------------------------------------|---------------------------|
| KEWAUNEE I                          | NUCLEAR POWER PLANT                                                        | TITLE                    | Refueling-Con<br>S/G Secondary    | tainment Integ<br>Side Open                  | grity CL                  |
| OPERAT                              | ING PROCEDURE                                                              | DATE                     | MAY 25 2004                       | PAGE 13                                      | <b>of</b> 14              |
| NOTE: For Cont<br>B or C<br>is requ | DATE<br>tainment Vessel Pressurizat<br>is required. For Refueling<br>ired. | ion Test<br>Cables       | (PEN 42N). eit<br>(PEN 43N). eit! | FIR<br><u>OPE</u><br>ther A or<br>her D or E | ST SECON<br><u>R oper</u> |
| 5.12 <u>Auxiliary</u>               | / Building - South end of 6                                                | <u>33'</u>               |                                   |                                              |                           |
| <u>Containme</u>                    | ent Vessel Pressurization T                                                | <u>est (Pen</u>          | <u>42N)</u> :                     |                                              |                           |
| Α.                                  | Loop Seal Water Level                                                      |                          |                                   | NORMAL                                       |                           |
|                                     | CPT-70, Loop Seal Drain V<br><u>OR</u>                                     | alve                     |                                   | CLOSED                                       |                           |
| B                                   | Fiber Optic Cable Penetra                                                  | tion Sea                 | 1                                 | INSTALLED                                    |                           |
|                                     | <u>OR</u>                                                                  |                          |                                   |                                              |                           |
| С                                   | Containment Vessel Blind                                                   | Flange                   |                                   | INSTALLED                                    | ,<br>                     |
|                                     | Blind Flange Test Conn                                                     | 4<br>4<br>*****          |                                   | CAPPED                                       |                           |
| Refueling                           | <u>ı Cables (Pen 43N)</u> :                                                |                          |                                   |                                              |                           |
| D                                   | Loop Seal Water Level                                                      | n an l<br>An An<br>An An |                                   | NORMAL                                       |                           |
|                                     | CPT-75. Loop Seal Drain V                                                  | alve                     |                                   | CLOSED                                       |                           |
|                                     | <u>OR</u>                                                                  |                          |                                   |                                              |                           |
| Е                                   | Containment Vessel Blind                                                   | Flange                   |                                   | INSTALLED                                    |                           |
|                                     | Blind Flange Test Conn                                                     |                          |                                   | CAPPED                                       |                           |
| 5.13 <u>Reactor E</u>               | Building                                                                   |                          |                                   |                                              |                           |
| Penetrati                           | on 3DWT Pressurizer Press<br>Tester                                        | ure Dead                 | Weight                            | CAPPED                                       |                           |
| 5.14 <u>Annulus</u>                 |                                                                            |                          |                                   |                                              |                           |
| CPT-60                              | Containment Vessel Pressu                                                  | rization                 | Line Vent                         | CLOSED                                       |                           |
| CPT-80                              | Penetration 43N Vent                                                       |                          |                                   | CLOSED                                       |                           |
|                                     |                                                                            |                          |                                   |                                              |                           |

| WISCONSIN PUBLIC SERVICE CORPORATION | NO.                                   | N-FH-53-CLB                     |                            |           |
|--------------------------------------|---------------------------------------|---------------------------------|----------------------------|-----------|
| KEWAUNEE NUCLEAR POWER PLANT         | TITLE                                 | Refueling-Cont<br>S/G Secondary | tainment Inte<br>Side Open | grity CL. |
| OPERATING PROCEDURE                  | DATE                                  | MAY 25 2004                     | PAGE 14                    | of 14     |
| DATE                                 | •                                     |                                 |                            |           |
| PERFORMED BY                         | •                                     | DATE                            |                            |           |
| PERFORMED BY                         |                                       | DATE                            |                            |           |
| PERFORMED BY                         | · · ·                                 | DATE                            |                            | _         |
| PERFORMED BY                         |                                       | DATE                            |                            | [         |
| PERFORMED BY                         | · · · · · · · · · · · · · · · · · · · | DATE                            |                            | _         |
| PERFORMED BY                         |                                       | DATE                            |                            |           |
| SHIFT MANAGER                        | · · · ·                               | DATE                            |                            |           |
| ASSISTANT MANAGER OPERATIONS         |                                       | DATE                            |                            |           |

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| WISCONSIN PUBLIC SERVICE C   | WISCONSIN PUBLIC SERVICE CORPORATION |                                                                |            | <b>REV</b> K                                                                                                                                          |
|------------------------------|--------------------------------------|----------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT |                                      | TITLE POST-LOCA Hydrogen Control                               |            |                                                                                                                                                       |
| OPERATING PROCEDURE          |                                      | DATE A                                                         | UG 12 1997 | PAGE 1 of 17                                                                                                                                          |
| REVIEWED BY                  |                                      | APPROVED BY                                                    |            |                                                                                                                                                       |
| NUCLEAR SAFETY RELATED NO    | PORC REVIEW<br>REQUIRED              | W YES SRO APPROVAL OF YI<br>TEMPORARY CHANGES<br>NO REQUIRED N |            |                                                                                                                                                       |
| REVIEWED BY                  |                                      |                                                                |            | entainment<br>lowing<br>combiner<br>arough the<br>5% by volume.<br>5% by volume.<br>5% by volume.<br>5% by<br>ilding Vent<br>atainment<br>containment |

|                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | · .                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                      |  |
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| KEWAUNI                                                                                                    | EE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | TITLE                                                                                                                                                                                                                                                                                   | POST-LOCA Hydr                                                                                                                                                                                                                                                                                                                                                                                      | ogen Control                                                                                                                         |  |
| OPERATING PROCEDURE DATE AUG 12 1997                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                         | PAGE 2                                                                                                                                                                                                                                                                                                                                                                                              | <b>of</b> 17                                                                                                                         |  |
| 4.1 <u>Startu</u><br>4.1 <u>Startu</u><br>1. <u>Tr</u><br>Av<br>NO<br>a.<br>2. <u>Tr</u><br>Av<br>NO<br>a. | <ul> <li><sup>1</sup>D</li> <li><u>rain B Hydrogen Dilution of Covailable:</u></li> <li><u>DTE:</u> Train B is preferred becomponents are in the Contrain A components are of the Containment: <ol> <li>Locally OPEN SA-7003B/MV-32 Containment:</li> <li>REMOVE sealing device f</li> <li>POSITION SA-7003B Local</li> <li>OPEN SA-7003B.</li> </ol> </li> <li>ESTABLISH Instrument Air fl (Main Steam Penetration A A A)</li> <li>OPEN IA-1002B, Instrumed</li> <li>OPEN IA-1001B/CV-31392, Valve, and ESTABLISH 25 FI-18238, Post LOCA Instrumed</li> <li>OPEN IA-1001B/CV-31392, Valve, and ESTABLISH 25 FI-18238, Post LOCA Instrumed</li> <li>DTE: Train B is preferred becomponents are in the Contrain A components are of the Contrain A components are of the Contrain A components are of the Contrain A components are of the Contrain A components are of the Contrain A components are of the Contrain A components are of the Contrain A components are of the Contrain A components are of the Contrain A components are of the Contrain A components are of the Containment: <ol> <li>REMOVE sealing device f</li> <li>OPEN SA-7003A.</li> </ol> </li> </ul> | ontainment<br>cause all<br>ontrolled<br>on the cle<br>2148, Hydr<br>from SA-70<br>from SA-70<br>from SA-70<br>I/Remote s<br>low to Cor<br>Area)<br>ent Air Su<br>post LOC<br>5 SCFM air<br>strument A<br>ontainment<br>cause all<br>ontrolled<br>on the cle<br>2147, Hydr<br>from SA-70 | Train B<br>Area, while so<br>ean side.<br>Fogen Dilution<br>003B Local/Remo<br>003B control sw<br>witch to LOCAL<br>01000 as control sw<br>witch to LOCAL<br>01000 as indic<br>01000 as indic<br>00000 Dilution | ent Air<br>me<br>to<br>te switch.<br>ritch.<br><br>CA Hydrogen.<br>control<br>sated by<br>r indication.<br>ent Air<br>me<br>to<br>to |  |

| WISCONSIN                       | N PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | NO. N-RBV-18C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| KEWAI                           | UNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | TITLE POST-LOCA Hydr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | rogen Control                                                                                                                  |
| ОР                              | PERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DATE AUG 12 1997                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>PAGE</b> 3 of 17                                                                                                            |
| 4.1.2<br><u>CONTINUED</u><br>3. | <ul> <li>b. ESTABLISH Instrument Air f<br/>(Main Steam Penetration B /<br/>1. OPEN IA-1002A, Instrum</li> <li>2. OPEN IA-1001A/CV-31391<br/>Valve, and ESTABLISH 22<br/>FI-18237, Post LOCA In:<br/><u>Train B Hydrogen Dilution of CA<br/>Available</u></li> <li><u>NOTE</u>: Train B is preferred be<br/>components are in the CA<br/>Train A components are of<br/>a. Locally OPEN SA-7003B/MV-33<br/>Containment:</li> <li>1. REMOVE sealing device of<br/>2. REMOVE sealing device of<br/>3. POSITION SA-7003B Local<br/>4. OPEN SA-7003B.</li> <li>b. ESTABLISH Dilution Air floor<br/>(Auxiliary Building Loading<br/>1. INSTALL portable air com<br/>SA-7000B. Emergency Ai<br/>2. OPEN SA-7003B.</li> <li>3. START portable air com</li> </ul> | DATE AUG 12 1997<br>low to Containment:<br>Area)<br>ent Air Supply-Post LOCA<br>, Post LOCA Air Supply (<br>5 SCFM air flow as indic<br>strument Air Supply flow<br>ontainment with Instrume<br>cause all Train B<br>ontrolled Area, while so<br>on the clean side.<br>2148, Hydrogen Dilution<br>from SA-7003B Local/Remo<br>from SA-7003B Local/Remo<br>from SA-7003B control sw<br>1/Remote switch to LOCAL<br>w:<br>g Dock - South End)<br>ompressor to flange upst<br>r Supply - Post LOCA Hyd<br>pressor.<br>ED | PAGE 3 of 17<br>A Hydrogen.<br>Control<br>cated by<br>w indication.<br>ent Air NOT<br>ome<br>to<br>ote switch.<br>witch.<br>L. |
|                                 | <u>CONTINU</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <u>Ε</u> <u>υ</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | NO. N-RBV-18C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | TITLE POST-LOCA Hydrogen Control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | DATE AUG 12 1997 PAGE 4 of 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <ul> <li>4.1.3.b<br/><u>CONTINUED</u></li> <li>4. OPEN SA-7001B, Emergene<br/>to obtain 10-20 psig on<br/>Supply. (Main Steam Per<br/>4. <u>Train A Hydrogen Dilution of Ce</u><br/><u>Available</u></li> <li><u>NOTE</u>: Train B is preferred bea<br/>components are in the Ce<br/>Train A components are of<br/>a. Locally OPEN SA-7003A/MV-32<br/>Containment: <ol> <li>REMOVE sealing device for<br/>2. OPEN SA-7003A.</li> <li>INSTALL portable air compress<br/>SA-7000A, Emergency Air Sug<br/>(Steam Generator Blowdown for<br/>c. OPEN SA-7000A.</li> <li>START portable air compress<br/>e. OPEN SA-7001A, Emergency Air<br/>obtain 10-20 psig on PI-111<br/>(Main Steam Penetration B Air<br/>Bis Preferred bea<br/>components are in the Ce<br/>Train A components are of<br/>a. VERIFY Train B Hydrogen Di<br/>b. VERIFY Train B Hydrogen Di<br/>b. VERIFY Train B Venting and<br/>Shield Building Vent <u>NOT</u> of<br/><u>CONTINUE</u></li> </ol> </li> </ul> | Cy Air Supply - Post LOCA Hydrogen.<br>n PI-11404, Post LOCA Emergency Air<br>netration A Area)<br>ontainment with Instrument Air NOT<br>cause all Train B<br>ontrolled Area, while some<br>on the clean side.<br>2147, Hydrogen Dilution to<br>from SA-7003A control switch.<br>essor to flange upstream of<br>pply - Post LOCA Hydrogen.<br>Heat Exchanger Area)<br>sor.<br>ir Supply - Post LOCA Hydrogen, to<br>403, Post LOCA Emergency Air Supply.<br>Area)<br>ent Atmosphere through Hydrogen<br>cause all Train B<br>ontrolled Area, while some<br>on the clean side.<br>lution of Containment NOT operating.<br>Filtering Containment Air through<br>perating.<br>ED |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

| WISCONSIN I        | PUBLIC SERVICE CORPORATION                                             | <b>NO.</b> N-RBV-18C                                                                                                                   |                     |  |
|--------------------|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------|--|
| KEWAUN             | IEE NUCLEAR POWER PLANT                                                | TITLE POST-LOCA Hydrogen Control                                                                                                       |                     |  |
| OPE                | RATING PROCEDURE                                                       | DATE AUG 12 1997                                                                                                                       | <b>PAGE</b> 5 of 17 |  |
|                    |                                                                        |                                                                                                                                        |                     |  |
| 4.1.5<br>CONTINUED |                                                                        |                                                                                                                                        |                     |  |
| C                  | . VERIFY Containment Dome Fa                                           | n B, ON.                                                                                                                               |                     |  |
| d                  | . VERIFY Hydrogen Recombiner<br>(Auxiliary Building Loading            | VERIFY Hydrogen Recombiner properly INSTALLED:<br>(Auxiliary Building Loading Dock)                                                    |                     |  |
|                    | <ol> <li>Hydrogen Recombiner sud<br/>downstream of LOCA-101</li> </ol> | <ol> <li>Hydrogen Recombiner suction piping INSTALLED on flange<br/>downstream of LOCA-101B, Containment to Hyd Recombiner.</li> </ol> |                     |  |
|                    | 2. Hydrogen Recombiner di<br>upstream of LOCA-109B,                    | 2. Hydrogen Recombiner discharge piping INSTALLED on flange upstream of LOCA-109B, Hyd Recombiner to Containment.                      |                     |  |
|                    | 3. Power cord INSTALLED a<br>(Aux Bldg loading dock                    | t Junction Box JB-2139.<br>. NW corner by Door 87)                                                                                     |                     |  |
| e                  | •. VERIFY LOCA-202, 2" Cntmt (Auxiliary Building Loading               | Vent to Aux Bldg Exh Isc<br>g Dock)                                                                                                    | D1. CLOSED.         |  |
| f                  | <ul> <li>POSITION MCC-45B(A3), Hydra<br/>to ON.</li> </ul>             | ogen Recombiner 1B Dedic                                                                                                               | cated Feed,         |  |
| g                  | . VERIFY IA-1002B, Instrumen<br>Control, CLOSED. (Main Ste             | t Air Supply for Post L(<br>am Penetration A Area)                                                                                     | DCA H2              |  |
| h                  | . Locally REMOVE sealing dev                                           | ices from the following:                                                                                                               | :                   |  |
|                    | <ol> <li>LOCA-2B/MV-32146, Post<br/>Local/Remote switch.</li> </ol>    | LOCA Hydrogen Cntmt Ver                                                                                                                | nt Isol B.          |  |
|                    | 2. LOCA-2B control switch                                              |                                                                                                                                        |                     |  |
|                    | <ol> <li>LOCA-100B/CV-31725, Por<br/>Local/Remote switch.</li> </ol>   | st LOCA Hydrogen to Reco                                                                                                               | ombiner B,          |  |
|                    | 4. SA-7003B/MV-32148, Hyd<br>Local/Remote switch.                      | rogen Dilution to Contai                                                                                                               | inment,             |  |
|                    | 5. SA-7003B control switc                                              | h.                                                                                                                                     |                     |  |
|                    | <ol> <li>LOCA-201B/CV-31727, Po<br/>Cntmt, Local/Remote sw</li> </ol>  | <ol> <li>LOCA-201B/CV-31727, Post LOCA Hydrogen Recombiner B to<br/>Cntmt, Local/Remote switch.</li> </ol>                             |                     |  |
|                    | <u>CONTINU</u>                                                         | ED                                                                                                                                     |                     |  |
|                    |                                                                        |                                                                                                                                        |                     |  |

| WISCONSI           | IN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                            | NO. N-RBV-18C                                                                                                                                |                                           |  |
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| KEWA               | AUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                | TITLE POST-LOCA Hydr                                                                                                                         | ogen Control                              |  |
| 0                  | PPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                      | DATE AUG 12 1997                                                                                                                             | <b>PAGE</b> 6 of 17                       |  |
| 4.1.5<br>CONTINUED | <ul> <li>i. VERIFY LOCA-3B/CV-31388 Post Isolation B, CLOSED.</li> <li>j. POSITION Local/Remote switch following: <ul> <li>LOCA-2B</li> <li>LOCA-100B</li> <li>SA-7003B</li> <li>LOCA-201B</li> </ul> </li> <li>k. ESTABLISH flow through Hydre (Auxiliary Building Loading 1. UNLOCK and OPEN LOCA-100 2. OPEN LOCA-109B.</li> <li>3. OPEN SA-7001B, Emergency December 2010</li> </ul> | DATE AUG 12 1997<br>t LOCA Hydrogen Annulus<br>hes to LOCAL <u>AND</u> OPEN t<br>ogen Recombiner:<br>Dock)<br>1B.<br>y Air Supply - Post LOC | PAGE 6 of 17<br>Vent<br>he<br>A Hydrogen. |  |
| 6                  | Train A Pacinculating Containmo                                                                                                                                                                                                                                                                                                                                                          | er Owners Manual.<br>nt Atmosphere through H                                                                                                 | vdrogon                                   |  |
| 0.                 | Recombiner                                                                                                                                                                                                                                                                                                                                                                               | <u>nt Atmosphere through H</u>                                                                                                               | <u>yurugen</u>                            |  |
|                    | <u>NOTE</u> : Train B is preferred beca<br>components are in the Con<br>Train A components are of                                                                                                                                                                                                                                                                                        | ause all Train B<br>ntrolled Area, while so<br>n the clean side.                                                                             | me                                        |  |
|                    | a. VERIFY Train A Hydrogen Dil                                                                                                                                                                                                                                                                                                                                                           | ution of Containment <u>NO</u>                                                                                                               | <u>T</u> operating.                       |  |
|                    | b. VERIFY Train A Venting and<br>Shield Building Vent <u>NOT</u> op                                                                                                                                                                                                                                                                                                                      | ). VERIFY Train A Venting and Filtering Containment Air through<br>Shield Building Vent <u>NOT</u> operating.                                |                                           |  |
|                    | c. VERIFY Containment Dome Fan                                                                                                                                                                                                                                                                                                                                                           | A, ON.                                                                                                                                       |                                           |  |
|                    | d. VERIFY Hydrogen Recombiner (<br>(Machine Shop Area)                                                                                                                                                                                                                                                                                                                                   | properly INSTALLED:                                                                                                                          |                                           |  |
|                    | <ol> <li>Hydrogen Recombiner suc<br/>downstream of LOCA-101A</li> </ol>                                                                                                                                                                                                                                                                                                                  | tion piping INSTALLED o<br>, Containment to Hyd Re                                                                                           | n flange<br>combiner.                     |  |
|                    | CONTINUE                                                                                                                                                                                                                                                                                                                                                                                 | <u>D</u>                                                                                                                                     |                                           |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | TITLE POST-LOCA Hydrogen Control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>OPERATING PROCEDURE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>PAGE</b> 7 of 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <ol> <li>Hydrogen Recombiner dis<br/>upstream of LOCA-109A,</li> <li>Power cord INSTALLED at<br/>(Turb Bldg Mezz, South</li> <li>POSITION MCC-32G(A3), Hydro<br/>to ON.</li> <li>VERIFY IA-1002A, Instrument<br/>Control, CLOSED. (Main Steet<br/>OPEN SA-7001A, Emergency At<br/>(Main Steam Penetration B At<br/>ALIGN Train A as follows:</li> <li>VERIFY LOCA-3A/CV-31384<br/>Isol A, CLOSED.</li> <li>OPEN LOCA-201A/CV-31724<br/>to Cntmt.</li> <li>REMOVE sealing device a<br/>Dilution to Containment</li> <li>OPEN LOCA-100A/CV-31724<br/>Recombiner A.</li> <li>REMOVE sealing device a<br/>Hydrogen Cntmt Vent Ist<br/>ESTABLISH flow through Hyd<br/>(Machine Shop Area)</li> <li>UNLOCK and OPEN LOCA-109A.</li> </ol> | Scharge piping INSTALLEE<br>Hyd Recombiner to Conta<br>t Junction Box JB-2138.<br>of Secondary Analytical<br>ogen Recombiner 1A Dedic<br>t Air Supply for Post LO<br>am Penetration B Area)<br>ir Supply - Post LOCA Hy<br>Area)<br>6. Post LOCA Hydrogen Ar<br>5. Post LOCA Hydrogen Re<br>and OPEN SA-7003A/MV-321<br>t.<br>4. Post LOCA Hydrogen to<br>and OPEN LOCA-2A/MV-3214<br>ol A.<br>rogen Recombiner:<br>D1A.                                                                                                                                                                                                                                                                                                                  | PAGE / OI I/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | NUCLEAR POWER PLANT<br>TING PROCEDURE<br>2. Hydrogen Recombiner dis<br>upstream of LOCA-109A,<br>3. Power cord INSTALLED at<br>(Turb Bldg Mezz, South<br>POSITION MCC-32G(A3), Hydro<br>to ON.<br>VERIFY IA-1002A, Instrument<br>Control, CLOSED. (Main Stea<br>OPEN SA-7001A, Emergency A:<br>(Main Steam Penetration B A<br>ALIGN Train A as follows:<br>1. VERIFY LOCA-3A/CV-31384<br>Isol A, CLOSED.<br>2. OPEN LOCA-201A/CV-31724<br>to Cntmt.<br>3. REMOVE sealing device a<br>Dilution to Containment<br>4. OPEN LOCA-100A/CV-31724<br>Recombiner A.<br>5. REMOVE sealing device a<br>Hydrogen Cntmt Vent Isa<br>ESTABLISH flow through Hydr<br>(Machine Shop Area)<br>1. UNLOCK and OPEN LOCA-10<br>2. OPEN LOCA-109A.<br>CONTINU | NUCLEAR POWER PLANT         TITLE POST-LOCA Hydr         TITLE POST-LOCA Hydr         DATE AUG 12 1997         2. Hydrogen Recombiner discharge piping INSTALLET<br>upstream of LOCA-109A, Hyd Recombiner to Conta         3. Power cord INSTALLED at Junction Box JB-2138.<br>(Turb Bidg Mezz, South of Secondary Analytica)         POSITION MCC-32G(A3), Hydrogen Recombiner 1A Dedic<br>to ON.         VERIFY IA-1002A, Instrument Air Supply for Post LOCA Hydrogen<br>(Main Steam Penetration B Area)         OPEN SA-7001A, Emergency Air Supply - Post LOCA Hydrogen Ar<br>Isol A, CLOSED.         1. VERIFY LOCA-3A/CV-31386, Post LOCA Hydrogen Ar<br>Isol A, CLOSED.         2. OPEN LOCA-201A/CV-31726, Post LOCA Hydrogen Ar<br>Isol A, CLOSED.         3. REMOVE sealing device and OPEN SA-7003A/MV-321<br>Dilution to Containment.         4. OPEN LOCA-100A/CV-31724, Post LOCA Hydrogen to<br>Recombiner A.         5. REMOVE sealing device and OPEN LOCA-2A/MV-3214<br>Hydrogen Cntmt Vent Isol A.         ESTABLISH flow through Hydrogen Recombiner:<br>(Machine Shop Area)         1. UNLOCK and OPEN LOCA-101A.         2. OPEN LOCA-109A. |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                    | NO. N-RBV-18C                                                                                                                                          | ······································ |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                            | TITLE POST-LOCA H                                                                                                                                      | lydrogen Control                       |  |  |  |
| OPERATING PROCEDURE                                                                                                                     | DATE AUG 12 1997                                                                                                                                       | <b>PAGE</b> 8 of 17                    |  |  |  |
| 4.1.6<br><u>CONTINUED</u><br>j. START Hydrogen Recombiner                                                                               | per Owners Manual.                                                                                                                                     |                                        |  |  |  |
| 7. <u>Train B Venting and Filtering</u><br>Shield Building Vent                                                                         | <u>Containment Atmospher</u>                                                                                                                           | <u>e through</u>                       |  |  |  |
| a. REQUEST Discharge Permit.                                                                                                            |                                                                                                                                                        |                                        |  |  |  |
| b. VERIFY one train Shield Bu                                                                                                           | ilding Vent, ON.                                                                                                                                       |                                        |  |  |  |
| c. VERIFY Containment Dome Fa                                                                                                           | c. VERIFY Containment Dome Fan B, ON.                                                                                                                  |                                        |  |  |  |
| d. ESTABLISH Containment disc                                                                                                           | d. ESTABLISH Containment discharge to Shield Building Annulus:                                                                                         |                                        |  |  |  |
| 1. REMOVE sealing device<br>LOCAL on LOCA-2B/MV-32<br>Isol B.                                                                           | <ol> <li>REMOVE sealing device and POSITION Local/Remote switch in<br/>LOCAL on LOCA-2B/MV-32146, Post LOCA Hydrogen Cntmt Vent<br/>Isol B.</li> </ol> |                                        |  |  |  |
| 2. REMOVE sealing device                                                                                                                | 2. REMOVE sealing device and OPEN LOCA-2B.                                                                                                             |                                        |  |  |  |
| 3. VERIFY B Train Hyd Con<br>in MAX FLOW position.                                                                                      | 3. VERIFY B Train Hyd Control Vent Flow Control Switch 19594,<br>in MAX FLOW position.                                                                 |                                        |  |  |  |
| CAUTI                                                                                                                                   | <u>DN</u>                                                                                                                                              |                                        |  |  |  |
| Do <u>NOT</u> allow Shield Building Annulus<br>Auxiliary Building.                                                                      | to become pressurized                                                                                                                                  | d relative to                          |  |  |  |
| <u>NOTE</u> : FI-18240 reads 0-100 SCFM with switch 19594 in MAX FLOW position.                                                         |                                                                                                                                                        |                                        |  |  |  |
| 4. OPEN LOCA-3B/CV-31388,<br>Isol B, to obtain 25 S                                                                                     | Post LOCA Hydrogen /<br>CFM as indicated by F                                                                                                          | Annulus Vent<br>FI-18240.              |  |  |  |
| 5. VERIFY DPI 11407, Annulus/Aux differential pressure gauge,<br>reads 0-15" of water.<br>(Post LOCA Hydrogen Cntmt 1A Control Station) |                                                                                                                                                        |                                        |  |  |  |
| CONTINU                                                                                                                                 | ED                                                                                                                                                     |                                        |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NO. N-RBV-18C                                  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | TITLE POST-LOCA Hydrogen Control               |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | DATE AUG 12 1997 PAGE 9 of 17                  |  |  |  |
| <ul> <li>4.1.7.d<br/><u>CONTINUED</u></li> <li>6. RECORD information on Discharge Permit.</li> <li>8. <u>Train A Venting and Filtering Containment Atmosphere through Shield Building Vent</u></li> <li>a. REQUEST Discharge Permit.</li> <li>b. VERIFY one train Shield Building Vent, ON.</li> <li>c. VERIFY Containment Dome Fan A, ON.</li> <li>d. ESTABLISH Containment discharge to Shield Building Annulus:</li> <li>1. REMOVE sealing device and OPEN LOCA-2A/MV-32145. Post LOCA Hydrogen Cntmt Vent Isol A.</li> </ul> |                                                |  |  |  |
| in MAX FLOW position.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                |  |  |  |
| <u>CAUTI</u><br>Do <u>NOT</u> allow Shield Building Annulus<br>Auxiliary Building.                                                                                                                                                                                                                                                                                                                                                                                                                                               | <u>DN</u><br>to become pressurized relative to |  |  |  |
| <u>NOTE</u> : FI-18239 reads 0-10<br>MAX FLOW position.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0 SCFM with switch 19593 in                    |  |  |  |
| <ol> <li>OPEN LOCA-3A/CV-31386, Post LOCA Hydrogen Annulus Vent<br/>Isol A, to obtain 25 SCFM as indicated by FI-18239.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                               |                                                |  |  |  |
| 4. VERIFY DPI 11407, Annulus/Aux differential pressure gauge,<br>reads 0-15" of water.<br>(Post LOCA Hydrogen Cntmt 1A Control Station)                                                                                                                                                                                                                                                                                                                                                                                          |                                                |  |  |  |
| 5. RECORD information on I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Discharge Permit.                              |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                |  |  |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |   |     |      |                       |                                  | NO. N-RBV-18C |         |              |  |  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | к | EWA | UNEI | E NUCLEAR POWER PLANT | TITLE POST-LOCA Hydrogen Control |               |         |              |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   | O   | PERA | ATING PROCEDURE       | DATE                             | AUG 12 1997   | PAGE 10 | <b>of</b> 17 |  |  |
| <ul> <li>4.2 Steady State</li> <li>1. Hydrogen Dilution of Containment with Instrument Air Available</li> <li>a. If increased dilution flow is required, OPEN IA-10018 (IA-1001A) to obtain required flow. Do NOT exceed 100 SCFM as indicated by FI-18238 (FI-18237).</li> <li>NOTE: Both trains are required for flow &gt; 100 SCFM.</li> <li>b. If dilution flow &gt;100 SCFM is required ESTABLISH flow per 4.1.1 (4.1.2), Hydrogen Dilution of Containment with Instrument Air Available.</li> <li>1. THROTTLE IA-1001A and IA-1001B to balance flow evenly between both trains. Do NOT exceed 200 SCFM total flow as indicated by FI-18238 and FI-18237.</li> <li>c. WHEN Containment pressure is 13 psig, THROTTLE IA-1001B (IA-1001A) to maintain Containment pressure 12.5 - 13.5 psig.</li> <li>d. If Containment hydrogen concentration is 3.0% by volume and increasing, <u>60 TO</u> step 4.1.7 (4.1.8), Venting and Filtering Containment Air through Shield Building Vent.</li> <li>d. Hydrogen Dilution of Containment with Instrument Air NOT Available</li> <li>a. <u>WHEN</u> Containment pressure is 13 psig, THROTTLE SA-7001B (SA-7001A) to maintain Containment pressure 12.5 - 13.5 psig.</li> </ul> |   |     |      |                       |                                  |               |         |              |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   |     |      |                       |                                  |               |         |              |  |  |

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| WISCONSIN PUBLIC SERVICE                                                                                                                                                                     | CORPORATION                                                                                                                                                                                                                             | NO. N-RBV-18C                              |                                            |                      |              |  |  |  |  |  |
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| KEWAUNEE NUCLEAR PO                                                                                                                                                                          | WER PLANT                                                                                                                                                                                                                               | TITLE POST-LOCA Hydrogen Control           |                                            |                      |              |  |  |  |  |  |
| OPERATING PROCI                                                                                                                                                                              | EDURE                                                                                                                                                                                                                                   | DATE                                       | AUG 12 1997                                | PAGE 11              | <b>of</b> 17 |  |  |  |  |  |
|                                                                                                                                                                                              |                                                                                                                                                                                                                                         |                                            |                                            |                      |              |  |  |  |  |  |
| 4.2.2<br><u>CONTINUED</u>                                                                                                                                                                    |                                                                                                                                                                                                                                         |                                            |                                            |                      |              |  |  |  |  |  |
| b. <u>IF</u> Containment hydrogen concentration is 3.0% by volume and<br>increasing, <u>GO TO</u> step 4.1.7 (4.1.8), Venting and Filtering<br>Containment Air through Shield Building Vent. |                                                                                                                                                                                                                                         |                                            |                                            |                      |              |  |  |  |  |  |
| 3. <u>Recirculating (</u>                                                                                                                                                                    | 3. <u>Recirculating Containment Atmosphere through Hydrogen Recombiner</u>                                                                                                                                                              |                                            |                                            |                      |              |  |  |  |  |  |
| a. None.                                                                                                                                                                                     | None.                                                                                                                                                                                                                                   |                                            |                                            |                      |              |  |  |  |  |  |
| 4. <u>Venting and Fil</u>                                                                                                                                                                    | enting and Filtering Containment Air through Shield Building Vent                                                                                                                                                                       |                                            |                                            |                      |              |  |  |  |  |  |
| a. VERIFY Shie<br>Building pi<br>(Post LOCA                                                                                                                                                  | VERIFY Shield Building Annulus pressure less than Auxiliary<br>Building pressure, as indicated by DPI-11407.<br>(Post LOCA Hydrogen Cntmt 1A Control Station)                                                                           |                                            |                                            |                      |              |  |  |  |  |  |
| 1. <u>IF</u> Shid<br>than Au<br>(LOCA-3                                                                                                                                                      | <ol> <li><u>IF</u> Shield Building Annulus pressure is equal to or greater<br/>than Auxiliary Building pressure, THROTTLE LOCA-3A<br/>(LOCA-3B) CLOSED, to reduce Containment discharge rate.</li> </ol>                                |                                            |                                            |                      |              |  |  |  |  |  |
| b. <u>IF</u> Contain<br>increased (<br>(LOCA-3B) 1<br>indicated 1                                                                                                                            | b. <u>IF</u> Containment hydrogen concentration is increasing <u>OR</u><br>increased discharge flow rate is required, OPEN LOCA-3A<br>(LOCA-3B) to required flow. Do <u>NOT</u> exceed 100 SCFM as<br>indicated by FI-18239 (FI-18240). |                                            |                                            |                      |              |  |  |  |  |  |
| <u>NOTE</u> : Both tra                                                                                                                                                                       | ains are require                                                                                                                                                                                                                        | d for flo                                  | w > 100 SCFM.                              |                      |              |  |  |  |  |  |
| c. <u>IF</u> discharg<br>per 4.1.8<br>Atmosphere                                                                                                                                             | ge flow rate >100<br>(4.1.7), Venting<br>through Shield                                                                                                                                                                                 | D SCFM is<br>and Filt<br>Building          | required, ESTA<br>ering Containme<br>Vent. | ABLISH flow<br>ent   |              |  |  |  |  |  |
| 1. THROTTI<br>betweer<br>indicat                                                                                                                                                             | E LOCA-3A and LO<br>both trains. I<br>ted by FI-18239 a                                                                                                                                                                                 | DCA-3B to<br>Do <u>NOT</u> ex<br>and FI-18 | BALANCE flow e<br>ceed 200 SCFM t<br>240   | evenly<br>cotal flow |              |  |  |  |  |  |
|                                                                                                                                                                                              |                                                                                                                                                                                                                                         |                                            |                                            |                      |              |  |  |  |  |  |
|                                                                                                                                                                                              |                                                                                                                                                                                                                                         |                                            |                                            |                      |              |  |  |  |  |  |
|                                                                                                                                                                                              |                                                                                                                                                                                                                                         |                                            |                                            |                      |              |  |  |  |  |  |
|                                                                                                                                                                                              |                                                                                                                                                                                                                                         |                                            |                                            |                      |              |  |  |  |  |  |
| WISCONSIN PUBLIC SERVICE CORPORATION |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | NO. N-RBV-18C                                                                                                                                                                                                                                                                                                                                                                                |                                                                                            |
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| KEWAU                                | NEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | TITLE POST-LOCA Hydr                                                                                                                                                                                                                                                                                                                                                                         | rogen Control                                                                              |
| OPI                                  | ERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | DATE AUG 12 1997                                                                                                                                                                                                                                                                                                                                                                             | <b>PAGE</b> 12 of 17                                                                       |
| 4.3 <u>Shut</u><br>1.                | <ul> <li><u>down</u></li> <li><u>Train B Hydrogen Dilution of Ca</u></li> <li><u>Available</u></li> <li>a. ISOLATE Instrument Air flow (Main Steam Penetration A A</li> <li>1. CLOSE IA-1001B/CV-31392 Control Valve.</li> <li>2. CLOSE IA-1002B, Instrum Hydrogen.</li> <li>b. Locally CLOSE SA-7003B/MV-3 Containment:</li> <li>1. CLOSE SA-7003B.</li> <li>2. POSITION SA-7003B Loca</li> <li>3. INSTALL sealing device</li> <li>4. INSTALL sealing device</li> <li>Train A Hydrogen Dilution of Ca</li> <li>Available</li> <li>a. ISOLATE Instrument Air flow (Main Steam Penetration B A</li> <li>1. CLOSE IA-1001A/CV-31392 Valve.</li> <li>2. CLOSE IA-1002A, Instrum Hydrogen.</li> <li>b. Locally CLOSE SA-7003A.</li> </ul> | DATE AND TETSSY<br>Dentainment with Instrume<br>w to Containment:<br>Area)<br>2. Post LOCA Air Supply<br>ment Air Supply - Post L<br>32148, Hydrogen Dilution<br>1/Remote switch to REMOI<br>on SA-7003B control swi<br>on SA-7003B Local/Remot<br>ontainment with Instrume<br>w to Containment:<br>Area)<br>1. Post LOCA Air Supply<br>ment Air Supply - Post L<br>32147, Hydrogen Dilution | ent Air<br>OCA<br>a to<br>FE.<br>itch.<br>te switch.<br>ent Air<br>Control<br>LOCA<br>a to |
|                                      | <u>CONTINU</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ED                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                            |
|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                            |

| KEWAUNEE NUCLEAR POWER PLANT       TITLE POST-LOCA Hydrogen Control         OPERATING PROCEDURE       DATE       AUG 12 1997       PAGE       13         4.3.2.b<br>CONTINUED       2. INSTALL sealing device on SA-7003A control switch.         3. Train B Hydrogen Dilution of Containment with Instrument Air NOT<br>Available       a. ISOLATE dilution air flow:<br>(Auxiliary Building Loading Dock - South End)         1. STOP portable air compressor.       2. CLOSE SA-7000B, Emergency Air Supply - Post LOCA Hydrogen                                                                                                                                                                                                                                                                                                  | 1<br>of 17       |  |  |  |
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| OPERATING PROCEDURE       DATE       AUG 12 1997       PAGE       13         4.3.2.b<br>CONTINUED       2. INSTALL sealing device on SA-7003A control switch.         3. Train B Hydrogen Dilution of Containment with Instrument Air NOT<br>Available       a. ISOLATE dilution air flow:<br>(Auxiliary Building Loading Dock - South End)         1. STOP portable air compressor.       2. CLOSE SA-7000B, Emergency Air Supply - Post LOCA Hydrogen                                                                                                                                                                                                                                                                                                                                                                              | <b>of</b> 17     |  |  |  |
| <ul> <li>4.3.2.b<br/><u>CONTINUED</u></li> <li>2. INSTALL sealing device on SA-7003A control switch.</li> <li>3. <u>Train B Hydrogen Dilution of Containment with Instrument Air NOT Available</u> <ul> <li>a. ISOLATE dilution air flow:</li> <li>(Auxiliary Building Loading Dock - South End)</li> <li>1. STOP portable air compressor.</li> <li>2. CLOSE SA-7000B, Emergency Air Supply - Post LOCA Hydrogen</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                              |                  |  |  |  |
| <ul> <li>A. REMOVE portable air compressor from flange upstream of SA-7000B.</li> <li>4. CLOSE SA-7001B, Emergency Air Supply - Post LOCA Hydrogen (Main Steam Penetration A Area)</li> <li>b. Locally CLOSE SA-7003B/MV-32148, Hydrogen Dilution to Containment: <ol> <li>CLOSE SA-7003B.</li> <li>POSITION SA-7003B Local/Remote switch to REMOTE.</li> <li>INSTALL sealing device on SA-7003B control switch.</li> <li>INSTALL sealing device on SA-7003B Local/Remote switch.</li> </ol> </li> <li>4. <u>Train A Hydrogen Dilution of Containment with Instrument Air NOT Available</u> <ol> <li>ISOLATE dilution air flow:</li> <li>StoP portable air compressor.</li> <li>CLOSE SA-7000A, Emergency Air Supply - Post LOCA Hydroger 3. REMOVE portable air compressor from flange upstream of SA-7000A.</li> </ol> </li> </ul> | •                |  |  |  |
| CONTINUED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <u>CONTINUED</u> |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NO. N-RBV-18C                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| KEWAUI                                                 | NEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | TITLE POST-LOCA Hydrogen Control                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| OPE                                                    | ERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | DATE AUG 12 1997                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>PAGE</b> 14 of 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 4.3.4.a<br><u>CONTINUED</u><br>5. <u>1</u><br><u>4</u> | <ol> <li>CLOSE SA-7001A, Emerger<br/>(Main Steam Penetration</li> <li>Locally CLOSE SA-7003A/MV-3<br/>Containment:         <ol> <li>CLOSE SA-7003A.</li> <li>INSTALL sealing device</li> <li>Close SA-7003A.</li> <li>INSTALL sealing device</li> </ol> </li> <li>Auxiliary Building Containmer<br/>(Auxiliary Building Loading)</li> <li>STOP and ISOLATE Hydrogen F<br/>(Auxiliary Building Loading)</li> <li>STOP Hydrogen Recombine</li> <li>CLOSE SA-7001B, Emerger</li> <li>CLOSE SA-7001B, Emerger</li> <li>CLOSE LOCA-109B, Hyd Ref</li> <li>CLOSE and LOCK LOCA-101</li> <li>POSITION MCC-45B(A3), H<br/>Feed, to OFF.</li> <li>REMOVE Hydrogen Recombine<br/>upstream of LOCA-109B.</li> <li>REMOVE Hydrogen Recombined</li> <li>ALIGN Post LOCA System:</li> <li>CLOSE LOCA-201B/CV-3172<br/>to Cntmt.</li> <li>CLOSE SA-7003B/MV-32148<br/>and INSTALL sealing device</li> </ol> | DATE AUG 12 1997<br>ncy Air Supply - Post L<br>B Area)<br>32147, Hydrogen Dilutio<br>on SA-7003A control sw<br>ent Atmosphere through<br>Recombiner:<br>g Dock)<br>er per Owners Manual.<br>ncy Air Supply - Post L<br>ecombiner to Containmen<br>IB, Containment to Hyd<br>Hydrogen Recombiner 1B<br>iner power cord.<br>iner discharge piping f<br>iner suction piping fro<br>3.<br>27, Post LOCA Hydrogen<br>B, Hydrogen Dilution to<br>yice on control switch. | DCA Hydrogen.<br>In to<br>An 

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | NO. N-RBV-18C                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | TITLE POST-LOCA Hydrogen Control                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | DATE AUG 12 1997 PAGE 15 of 17                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
| 4.3.5.b<br>CONTINUED         3. CLOSE LOCA-100B/CV-3172<br>Recombiner B.         4. CLOSE LOCA-2B/MV-32146<br>Isol B and INSTALL sea         5. POSITION Local/Remote sealing devices:         • LOCA-2B         • SA-7003B         • LOCA-2B         • SA-7003B         • LOCA-2DIB         6. Train A Recirculating Containmer<br>Recombiner         a. STOP and ISOLATE Hydrogen I<br>(Machine Shop Area)         1. STOP Hydrogen Recombine         2. CLOSE LOCA-109A, Hyd Red         3. CLOSE and LOCK LOCA-101         4. POSITION MCC-32G(A3), I<br>Feed, to OFF.         5. REMOVE Hydrogen Recombine         6. REMOVE Hydrogen Recombine         7. REMOVE Hydrogen Recombine         7. REMOVE Hydrogen Recombine | DATE AUG 12 1997 PAGE 15 of 17<br>25. Post LOCA Hydrogen to<br>Post LOCA Hydrogen Cntmt Vent<br>ling device on control switch.<br>switches to REMOTE and INSTALL<br>ent Atmosphere through Hydrogen<br>Recombiner as follows:<br>er per Owners Manual.<br>ecombiner to Containment.<br>1A, Containment to Hyd Recombiner.<br>Hydrogen Recombiner 1A Dedicated<br>iner power cord.<br>iner discharge piping from flange<br>iner suction piping from flange |  |
| b. CLOSE SA-7001A, Emergency (Main Steam Penetration B)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Air Supply – Post LOCA Hydrogen<br>Area)                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
| CONTINU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ED                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |

| WISCONSIN PUBLIC SERVICE CORPORATIO                                  | NO. N-RBV-18C                                                           |
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| KEWAUNEE NUCLEAR POWER PLANT                                         | TITLE POST-LOCA Hydrogen Control                                        |
| OPERATING PROCEDURE                                                  | DATE AUG 12 1997 PAGE 16 of 17                                          |
|                                                                      |                                                                         |
| 4.3.6<br><u>CONTINUED</u>                                            |                                                                         |
| c. ALIGN Post LOCA System:                                           |                                                                         |
| 1. CLOSE LOCA-201A/CV-<br>to Cntmt.                                  | 31726, Post LOCA Hydrogen Recombiner A                                  |
| 2. CLOSE SA-7003A/MV-3<br>and INSTALL sealing                        | 2147, Hydrogen Dilution to Containment,<br>device on control switch.    |
| 3. CLOSE LOCA-100A/CV-<br>Recombiner A.                              | 31724, Post LOCA Hydrogen to                                            |
| 4. CLOSE LOCA-2A/MV-32<br>Isol A and INSTALL                         | 145, Post LOCA Hydrogen Cntmt Vent<br>sealing device on control switch. |
| 7. <u>Train A Venting and Filteri</u><br><u>Shield Building Vent</u> | ng Containment Atmosphere Through                                       |
| a. ISOLATE Containment dis                                           | charge to Shield Building Annulus:                                      |
| 1. CLOSE LOCA-3A/CV 31<br>Isol A.                                    | 386, Post LOCA Hydrogen Annulus Vent                                    |
| 2. CLOSE LOCA-2A/MV 32<br>Isol A.                                    | 145, Post LOCA Hydrogen Cntmt Vent                                      |
| A. INSTALL sealing                                                   | device on LOCA-2A control switch.                                       |
| 3. RECORD information                                                | on Discharge Permit.                                                    |
| b. RETURN Containment Dome                                           | Fan A to required alignment.                                            |
|                                                                      | ·                                                                       |
| CONT                                                                 | INUED                                                                   |
|                                                                      |                                                                         |

| WISCONSIN                         | PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | NO. N-RBV-18C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                        |
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| KEWAUNEE NUCLEAR POWER PLANT      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | TITLE POST-LOCA Hydr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | rogen Control                                                                                          |
| <b>OPERATING PROCEDURE</b>        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | DATE AUG 12 1997                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PAGE 17 of 17                                                                                          |
| 4.3.7<br><u>CONTINUED</u><br>  8. | <ul> <li>NOTE: Ensure Venting and Filt<br/>Atmosphere through Shid<br/>is NOT operating prior<br/>Building Vent to require</li> <li>c. RETURN Shield Building Vent</li> <li>a. ISOLATE Containment dischare</li> <li>1. CLOSE LOCA-3B/CV-31388<br/>Isol B.</li> <li>2. CLOSE LOCA-2B/MV-32146<br/>Isol B.</li> <li>2. CLOSE LOCA-2B/MV-32146<br/>Isol B.</li> <li>3. POSITION LOCA-2B Local.</li> <li>A. INSTALL sealing dev</li> <li>4. RECORD information on I<br/>5. RETURN Containment Dome<br/>NOTE: Ensure Venting and<br/>Atmosphere<br/>Building Vent Train<br/>to Returning Shield<br/>alignment.</li> <li>6. RETURN Shield Building</li> </ul> | LATE AUG 12 1997<br>tering Containment<br>eld Building Vent Train<br>to Returning Shield<br>ed alignment.<br>t to required alignment.<br><u>Containment Atmosphere 1</u><br>rge to Shield Building A<br>, Post LOCA Hydrogen Ann<br>. Post LOCA Hydrogen Ann<br>. Post LOCA Hydrogen Cnt<br>vice on LOCA-2B control<br>/Remote switch to REMOTH<br>vice on LOCA-2B control<br>/Remote switch to REMOTH<br>vice on LOCA-2B Local/Re<br>Discharge Permit.<br>e Fan B to required align<br>Filtering Containment<br>through Shield<br>A is <u>NOT</u> operating pr<br>Building Vent to requi | B<br>Inrough<br>Annulus:<br>nulus Vent<br>tmt Vent<br>switch.<br>E.<br>emote switch.<br>fined<br>nent. |
|                                   | <ol> <li>5. RETURN Containment Dome<br/><u>NOTE</u>: Ensure Venting and<br/>Atmosphere<br/>Building Vent Train<br/>to Returning Shield<br/>alignment.</li> <li>6. RETURN Shield Building</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                      | e Fan B to required alig<br>Filtering Containment<br>through Shield<br>A is <u>NOT</u> operating pr<br>Building Vent to requi                                                                                                                                                                                                                                                                                                                                                                                                                                                             | gnment.<br>rior<br>ired<br>ment.                                                                       |

| WISCONSIN PUBLIC SERVICE O                                                                     | NO. N-R                                                                                                                                                                                                                                                                           | C-36E                                   | <b>REV</b> AE            |               |  |  |  |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|--------------------------|---------------|--|--|--|
| KEWAUNEE NUCLEAR POV                                                                           | TITLE D                                                                                                                                                                                                                                                                           | raining the                             | Reactor Coo              | lant System   |  |  |  |
| OPERATING PROCEI                                                                               | <b>date</b> A                                                                                                                                                                                                                                                                     | UG 26 2004                              | PAGE 1                   | <b>of</b> 20  |  |  |  |
| REVIEWED BY                                                                                    | APPRO                                                                                                                                                                                                                                                                             | VED BY                                  |                          |               |  |  |  |
| NUCLEAR XES<br>SAFETY RELATED NO                                                               | ⊠ YES<br>□ NO                                                                                                                                                                                                                                                                     | SRO APPROV<br>TEMPORARY<br>REQUIRED     | AL OF<br>Changes         | ⊠ YES<br>□ NO |  |  |  |
| 1.0 <u>INTRODUCTION</u><br>1.1 Procedure describes                                             | 1.0 <u>INTRODUCTION</u>                                                                                                                                                                                                                                                           |                                         |                          |               |  |  |  |
| Residual Heat Remova<br>1.2 An IPTE Checklist, F<br>attached to procedur                       | 1 System or Was<br>form GNP-03.01.0<br>e prior to per                                                                                                                                                                                                                             | ste Disposa<br>03-1, shall<br>formance. | l System.<br>be complete | d <u>AND</u>  |  |  |  |
| 1.3 (CAS) indicates a Co<br>long duration and do<br>the step requires a                        | (CAS) indicates a Continuous Action Statement. It signifies a step of<br>long duration and does <u>NOT</u> have to be completed before continuing <u>OR</u><br>the step requires a certain plant condition prior to being performed.                                              |                                         |                          |               |  |  |  |
| 1.4 Steps marked (CR/L)<br>be initialed by the<br>operator that the st<br>completed the step u | 1.4 Steps marked (CR/L) have two initial signoff lines. These steps shall<br>be initialed by the Control Room Operator when informed by the local<br>operator that the step is completed <u>AND</u> by the local operator who<br>completed the step upon returning from the field |                                         |                          |               |  |  |  |
| 2.0 PRECAUTIONS AND LIMITATIO                                                                  | 2.0 PRECAUTIONS AND LIMITATIONS                                                                                                                                                                                                                                                   |                                         |                          |               |  |  |  |
| 2.1 Radiation Protection                                                                       |                                                                                                                                                                                                                                                                                   |                                         |                          |               |  |  |  |
| <ol> <li>Observe applicab<br/>radioactive liqu<br/>and gases.</li> </ol>                       | <ol> <li>Observe applicable Radiation Protection Procedures for handling<br/>radioactive liquids and for venting radioactive liquids, vapors<br/>and gases.</li> </ol>                                                                                                            |                                         |                          |               |  |  |  |
| 2.2 Reactor Coolant Syst                                                                       | em                                                                                                                                                                                                                                                                                |                                         |                          |               |  |  |  |
| 1. <u>WHEN</u> RCS pressur<br>be closed:                                                       | . <u>WHEN</u> RCS pressure is less than 100 psig, <u>THEN</u> the following shall be closed:                                                                                                                                                                                      |                                         |                          |               |  |  |  |
| • CVC-207A/CV-31<br>• CVC-207B/CV-31<br>• CVC-250/CV-312                                       | <ul> <li>CVC-207A/CV-31237 RXCP A #1 Seal Leakoff Isolation</li> <li>CVC-207B/CV-31238 RXCP B #1 Seal Leakoff Isolation</li> <li>CVC-250/CV-31239 RXCP A&amp;B #1 Seal Bypass</li> </ul>                                                                                          |                                         |                          |               |  |  |  |
| 2. Do <u>NOT</u> exceed 20<br>Exchanger. Incl                                                  | Do <u>NOT</u> exceed 2000 gpm for a single RHR Pump or RHR Heat<br>Exchanger. Include Letdown flow through RHR/CVC crossconnect.                                                                                                                                                  |                                         |                          |               |  |  |  |
| 3. Local Rx Vessel<br>pressure is <u>EQUA</u>                                                  | 3. Local Rx Vessel Level Sightglass is <u>NOT</u> accurate unless RCS<br>pressure is <u>EQUALIZED</u> with Containment pressure.<br><u>CONTINUED</u>                                                                                                                              |                                         |                          |               |  |  |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | NO. N-RC-36E                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | TITLE Draining the Reactor Coolant System                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | DATE AUG 26 2004 PAGE 2 of 20                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |  |
| OPERATING PROCEDURE         2.2         CONTINUED         4. Rx Vessel level indication is is vented to Przr and pressure         NOTE: Refer to Attachment A for r RCS level indications.         5. WHEN draining RCS, THEN comparto verify proper system respon         • RCS pressure         • PRT pressure         • CVCS Holdup Tank level         • Local Rx Vessel Level Sightg         • Reactor Vessel level         • Przr Cold Cal Level         • Przr Hot Cal Levels (for tre         • RVLIS         6. WHEN unbolting Rx Vessel Head, be at least 6 inches below Rx         7. WHEN removing instrumentation THEN Rx Vessel Head shall be e | DATE       AUG 26 2004       PAGE 2       of 20         NOT accurate unless Rx Vessel Head       a         s are EQUALIZED.       elationship between various         elationship between various       a         e the following indications       se:         llass       a         ind)       THEN water level in Rx Vessel shall         Vessel Flange.       port conoseals or Rx Vessel Head, wacuated of radioactive gases using |  |  |  |  |
| 8. <u>WHEN</u> fuel is in the reactor ve                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | essel <u>AND</u> RCS is drained below 19.7%                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |  |
| 9. RCS should <u>NOT</u> be drained belo<br>required by proposed maintenan<br>remain essentially full of wat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | w 13% Rx Vessel level unless<br>ce operations so that S/G tubes<br>cer.                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |  |
| 10. Draining RCS from a solid condition to centerline of hotleg will require draining approximately 33,150 gal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |  |  |

| WISC            | ONSIN PUBLIC SERVICE CORPORATION                                                                      | <b>NO.</b> N-RC-36E              |                      |
|-----------------|-------------------------------------------------------------------------------------------------------|----------------------------------|----------------------|
| к               | EWAUNEE NUCLEAR POWER PLANT                                                                           | TITLE Draining the               | Reactor Coolant Syst |
|                 | OPERATING PROCEDURE                                                                                   | <b>DATE</b> AUG 26 2004          | <b>PAGE</b> 3 of 20  |
|                 |                                                                                                       |                                  | INITIALS             |
| 3.0 <u>INIT</u> | TAL CONDITIONS                                                                                        |                                  |                      |
| 3.1             | RCS status:                                                                                           |                                  |                      |
|                 | <ol> <li>RCS is solid, pressure is less<br/>to 100 psig,</li> </ol>                                   | than or equal SA                 | TISFIED/NA           |
|                 | <u>OR</u>                                                                                             |                                  |                      |
| 1               | <ol> <li>Cavity Drain is complete with I<br/>below Flange.</li> </ol>                                 | Level at 6 inches SA             | TISFIED/NA           |
| 3.2             | .2 At least one Charging Pump <u>AND</u> letdown portion of CVC SATISFIED<br>System are operating.    |                                  |                      |
| 3.3             | RHR is in service <u>AND</u> RCS temperate                                                            | ure less than 200°F.             | SATISFIED            |
| 3.4             | Letdown <u>OR</u> Reactor Coolant Drain Ta<br>CVCS Holdup Tank designated for RCS                     | SATISFIED                        |                      |
| 3.5             | Waste Gas System operating.                                                                           |                                  | SATISFIED            |
| 3.6             | Waste Gas Decay Tank on fill for du<br>than 2% hydrogen concentration.                                | rain down has less               | < 2%                 |
| 3.7             | RC-41/CV-31262, Rx Vessel Flange Lo<br>CLOSED.                                                        | eakoff Isolation                 | CLOSED               |
| 3.8             | Low pressure Nitrogen header in se                                                                    | rvice.                           | SATISFIED            |
| 3.9             | Rx Vessel level transmitters calib<br>SP-36-196A, Refueling Water Level 1<br>Transmitter Calibration. | rated per<br>Indication System   |                      |
| ]               | • 21158 Refueling Water Level Nar                                                                     | row Range                        | SATISFIED            |
| ]               | • 21159 Refueling Water Level B W                                                                     | ide Range                        | SATISFIED            |
| 1               | • 24068 Refueling Water Level A W                                                                     | ide Range                        | SATISFIED            |
| 3.10            | "RAP" pump supplied by Radiation Pr<br>connected at RC-750, RVLIS Reference                           | rotection is<br>ce Chamber Vent. | CONNECTED            |

| wisco                        | DNSI                                              | N PUBLIC SERVICE CORP                                                                                     | DRATION                | NO.           | I-RĆ-36E  |            |              |
|------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------|---------------|-----------|------------|--------------|
| KEWAUNEE NUCLEAR POWER PLANT |                                                   | TITLE                                                                                                     | Draining the F         | leactor Coola | nt System |            |              |
| _                            | OPERATING PROCEDURE DATE AUG 26 2004 PAGE 4 of 20 |                                                                                                           |                        |               |           |            | <b>of</b> 20 |
| 4.0 <u>PROCE</u>             | EDUR                                              | <u></u>                                                                                                   |                        |               |           | <u>IN]</u> | TIALS        |
| 4.1                          | DRA                                               | IN Reactor Coolant Sy                                                                                     | stem:                  |               |           |            |              |
|                              | 1.                                                | TAG RXCP Breakers OP                                                                                      | EN. [PCRO              | 15068]        |           | TAGGED     |              |
| l                            | 2.                                                | OPEN the following v                                                                                      | alves:                 |               |           |            |              |
|                              |                                                   | • PS-1A/CV-31112, Pr                                                                                      | zr Spray C             | ontrol Lo     | op A/B.   | OPEN       |              |
|                              |                                                   | • PS-1B/CV-31111, Pr                                                                                      | zr Spray C             | ontrol Lo     | op A/B.   | OPEN       | <u> </u>     |
|                              | 3.                                                | ADJUST LD-10/CV-31099, Letdown Cont. Pressure ADJUSTED<br>during following step to maintain RCS pressure. |                        |               |           |            |              |
|                              | 4.                                                | REDUCE Charging Pump speed to minimum and CLOSE the following:                                            |                        |               | ind CLOSE |            |              |
|                              |                                                   | • CVC-7/CV-31103                                                                                          | Charging               | Control (     | Chg Line  | CLOSED     |              |
|                              |                                                   | • LD-2/CV-31108                                                                                           | Letdown I:             | solation      |           | CLOSED     |              |
|                              |                                                   | • LD-3/CV-31104                                                                                           | Letdown I:             | solation      |           | CLOSED     |              |
|                              |                                                   | • LD-4A/CV-31231                                                                                          | Letdown O              | rifice A      | Isolation | CLOSED     |              |
|                              |                                                   | • LD-4B/CV-31232                                                                                          | Letdown O              | rifice B      | Isolation | CLOSED     |              |
|                              |                                                   | • LD-4C/CV-31233                                                                                          | Letdown 0              | rifice C      | Isolation | CLOSED     |              |
|                              |                                                   | • CVC-207A/CV-31237                                                                                       | RXCP A #1<br>Isolation | Seal Lea      | koff      | CLOSED     |              |
|                              |                                                   | • CVC-207B/CV-31238                                                                                       | RXCP B #1<br>Isolation | Seal Lea      | koff      | CLOSED     |              |
|                              |                                                   | • CVC-250/CV-31239                                                                                        | RXCP A&B               | #1 Seal E     | Sypass    | CLOSED     |              |
|                              |                                                   |                                                                                                           |                        |               |           |            |              |
|                              |                                                   |                                                                                                           |                        |               |           |            |              |

## CONTINUED

| WISCONSIN PUBLIC SERVICE CORPORATION                                                        | NO. N-RC-36E                                                  |
|---------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                | TITLE Draining the Reactor Coolant System                     |
| OPERATING PROCEDURE                                                                         | DATE AUG 26 2004 PAGE 5 of 20                                 |
|                                                                                             | INITIALS                                                      |
| 4.1                                                                                         |                                                               |
| <u>CONTINUED</u>                                                                            |                                                               |
| <u>NOTE</u> : The following step will sta                                                   | rt draining the RCS.                                          |
| 5. INITIATE RCS draining via requ                                                           | ired flow path:                                               |
| a. <u>IF</u> Letdown drain path (pre<br>the required method, <u>THEN</u><br>following:      | ferred flow path) is APPLIES/NA<br>PERFORM the                |
| 1. (CR/L) RECORD level of                                                                   | CVC HUT on fill%                                              |
| 2. ADJUST LD-10 and Charg establish drain rate.                                             | ing Pump speed to ADJUSTED                                    |
| 3. (CAS) VERIFY CC-302/CV<br>Outl Temp, maintains le<br>as flow is increased.               | -31100, Letdown Cont VERIFIED<br>etdown temperature           |
| 4. (CAS) VERIFY LD-27/CV3<br>Tank Divert Valve in A<br>level as RCS drains.                 | 1096, VCT/Holdup VERIFIED<br>UTO maintaining VCT              |
| b. <u>IF</u> Loop Drain to RCDT (Alt<br>the required method, <u>THEN</u><br>following:      | ernate flow path) is APPLIES/NA<br>PERFORM the                |
| <u>NOTE</u> : RCS draining rate s<br>RCDT Pumps or Waste                                    | hall <u>NOT</u> exceed capacity of<br>Gas Compressors.        |
| <u>NOTE:</u> <u>WHEN</u> RCDT Pumps are<br>increase in RCDT le<br>35 gal.                   | <u>NOT</u> running, <u>THEN</u> a 10%<br>vel is approximately |
| <u>NOTE</u> : Excess letdown may a directed to RCDT.                                        | also be used with flow                                        |
| <ol> <li>ESTABLISH communication<br/>Room, Waste Disposal Pa<br/>of Containment.</li> </ol> | ns between Control ESTABLISHED<br>anel, and basement          |
| 2. OPEN RC-507.                                                                             | OPEN                                                          |
| 3. OPEN RC-508.<br><u>Continu</u>                                                           | ED OPEN                                                       |
|                                                                                             |                                                               |

| WISCONS        | IN PUBLIC SERVICE CORPORATION                                                                                               | NO. N-RC-36E                                                                  |                      |
|----------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------|
| KEWA           | UNEE NUCLEAR POWER PLANT                                                                                                    | TITLE Draining the                                                            | Reactor Coolant Syst |
| 0              | PERATING PROCEDURE                                                                                                          | DATE AUG 26 2004                                                              | PAGE 6 of 20         |
|                |                                                                                                                             |                                                                               | INITIALS             |
| <b>1</b> 1 5 b |                                                                                                                             |                                                                               |                      |
| CONTINUED      |                                                                                                                             |                                                                               |                      |
|                | 4. (CR/L) OPEN RC-200B, Lo<br>Leg to RCDT Isol.                                                                             | oop B Intermediate                                                            | OPEN                 |
|                | 5. (CR/L) THROTTLE OPEN R<br>Intermediate Leg to RC<br>establish drain rate a<br>level increase in RCDT                     | C-201B, Loop B<br>DT Isol, to<br>s determined by                              | THROTTLED            |
| 6.             | <u>WHEN</u> RCS pressure is less than PI-420), <u>THEN</u> OPEN the following                                               | 21 psig (PO42OA, NR<br>ng:                                                    |                      |
|                | a. PR-2A/CV-31110, Przr PORV                                                                                                |                                                                               | OPEN                 |
|                | b. PR-2B/CV-31109, Przr PORV                                                                                                |                                                                               | OPEN                 |
| 7.             | (CAS) <u>IF</u> draining RCS through<br>LD-10 draining rate to maintain<br>(PO440A).                                        | letdown, <u>THEN</u> ADJUST<br>n PRT -0.5-3.0 psig                            | ADJUSTED             |
| <u>NO</u>      | TE: Nitrogen overpressure from<br>RCS to 30% Pressurizer Leve<br>to draining below 30% Press<br>equalized with Containment. | PRT may be used to drai<br>l Cold Cal; however, pr<br>urizer pressure shall b | n<br>Tior<br>De      |
| 8.             | VERIFY proper response on Przr<br>channels.                                                                                 | Hot Cal Level                                                                 | VERIFIED             |
|                |                                                                                                                             |                                                                               |                      |
|                |                                                                                                                             |                                                                               |                      |
|                |                                                                                                                             |                                                                               |                      |
|                | CONTINU                                                                                                                     | ED                                                                            |                      |
|                |                                                                                                                             |                                                                               |                      |
|                |                                                                                                                             |                                                                               |                      |
|                |                                                                                                                             |                                                                               |                      |
|                |                                                                                                                             |                                                                               |                      |
|                |                                                                                                                             |                                                                               |                      |

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| WISCONSIN PUBLIC SERVICE CORPORATION | CORPORATION NO. N-RC-36E |                |           |      |              |
|--------------------------------------|--------------------------|----------------|-----------|------|--------------|
| KEWAUNEE NUCLEAR POWER PLANT         | TITLE                    | Draining the F | Reactor C | oola | nt System    |
| OPERATING PROCEDURE                  | DATE                     | AUG 26 2004    | PAGE      | 7    | <b>of</b> 20 |
|                                      |                          |                |           | INI  | TIALS        |

4.1 <u>CONTINUED</u>

## CAUTION

A minimum of one Przr Head Vent <u>AND</u> one Reactor Head Vent shall be open to provide an adequate vent path.

| 9. | WHEN directed | by the Shift   | Manager, THEN | VENT RCS |
|----|---------------|----------------|---------------|----------|
|    | and PRT to Co | ntainment as f | ollows:       |          |

a. OPEN one <u>OR</u> both of the following:

| • | PR-33A/SV-33660 | Przr Head V | ent Train A | OPEN/CLOSED |
|---|-----------------|-------------|-------------|-------------|
|---|-----------------|-------------|-------------|-------------|

| • PR-33B/SV-33661 | Przr Head Vent Train B | OPEN/CLOSED |
|-------------------|------------------------|-------------|
|                   |                        |             |

b. VERIFY at least one Przr Head Vent OPEN. VERIFIED\_\_\_\_\_

| c. | OPEN | one | <u>OR</u> | both | of | the | following: |
|----|------|-----|-----------|------|----|-----|------------|
|----|------|-----|-----------|------|----|-----|------------|

- RC-45A/SV-33658 Reactor Head Vent Train A OPEN/CLOSED\_\_\_\_\_
- RC-45B/SV-33659 Reactor Head Vent Train B OPEN/CLOSED\_\_\_\_

OPEN\_\_\_\_\_

CLOSED\_\_\_\_

OPEN\_\_\_\_\_

d. VERIFY at least one Reactor Head Vent OPEN. VERIFIED\_\_\_\_\_

- e. OPEN RC-49/SV-33662, Rx/Przr Head Vent to Containment.
- f. CLOSE NG-302/CV-31298, PRZR Relief Tank Nitrogen Supply Isolation.
- 10. (CR/L) OPEN RC-43-2, Reactor Vessel Head Vent Orifice Bypass.

## CONTINUED

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                               | <b>NO.</b> N-RC-36E                                            |                        |  |  |
|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|------------------------|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                       | TITLE Draining the                                             | Reactor Coolant System |  |  |
| OPERATING PROCEDURE                                                                                                | DATE AUG 26 2004                                               | PAGE 8 of 20           |  |  |
|                                                                                                                    |                                                                | INITIALS               |  |  |
|                                                                                                                    |                                                                |                        |  |  |
| 12. <u>IF</u> PRZR Safety Valve(s) to be<br>PERFORM the following:                                                 | removed, <u>THEN</u>                                           | APPLIES/NA             |  |  |
| a. VERIFY RCS depressurized.                                                                                       |                                                                | VERIFIED               |  |  |
| b. (CR/L) CONNECT tygon hose<br>ROUTE to floor drain.                                                              | to PR-51 <u>AND</u>                                            | PERFORMED              |  |  |
| c. (CR/L) OPEN PR-50A, Przr S<br>Drain.                                                                            | afety 3A Loop Seal                                             | OPEN                   |  |  |
| d. (CR/L) OPEN PR-50B, Przr S<br>Drain.                                                                            | d. (CR/L) OPEN PR-50B, Przr Safety 3B Loop Seal OPEN<br>Drain. |                        |  |  |
| e. (CR/L) Slowly OPEN PR-51.                                                                                       |                                                                | OPEN                   |  |  |
| 13. <u>IF</u> SP-56-078 is required, <u>THEN</u><br>while continuing with drain do                                 | PERFORM SP-56-078<br>wn.                                       | APPLIES/NA             |  |  |
| 14. (CAS) <u>WHEN</u> Pressurizer Level C<br>decreases to 50%, <u>THEN</u> PLACE R<br>Level indicators in service: | old Cal (LI-433A)<br>efueling Water                            |                        |  |  |
| a. Local Rx Vessel Level sigh<br>Cavity Level Lvl (LI-41337                                                        | tglass and Reactor<br>):                                       |                        |  |  |
| 1. (CR/L) CLOSE RC-5205-1<br>Sightglass Drain.                                                                     | , Rx Vessel Level                                              | CLOSED                 |  |  |
| 2. OPEN RC-200A, Loop A I<br>RCDT Isol.                                                                            | ntermediate Leg to                                             | OPEN                   |  |  |
| 3. (CR/L) OPEN RC-5202, R<br>Indicator Isolation.                                                                  | x Vessel Level                                                 | OPEN                   |  |  |
| 4. (CR/L) OPEN RC-5206, R<br>Indicator Vent to Przr                                                                | x Vessel Level<br>•                                            | OPEN                   |  |  |
| 5. (CR/L) REQUEST I&C blo<br>LT-24068 vent line usi<br>(Use RC-24031-4 and Ca                                      | w down transmitter<br>ng Nitrogen.<br>p on LT-24068).          | REQUESTED              |  |  |
| <u>CONTINU</u>                                                                                                     | ED                                                             |                        |  |  |
|                                                                                                                    |                                                                |                        |  |  |

| WISCONSI            | N PUBLIC SERVICE CORPORATION                                                                                                                                      | NO. N-RC-36E                                                               |                       |  |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------|--|
| KEWA                | UNEE NUCLEAR POWER PLANT                                                                                                                                          | TITLE Draining the Reactor Coolant System                                  |                       |  |
| O                   | PERATING PROCEDURE                                                                                                                                                | <b>DATE</b> AUG 26 200                                                     | 4 <b>PAGE</b> 9 of 20 |  |
|                     |                                                                                                                                                                   |                                                                            | INITIALS              |  |
| 4.1.14<br>CONTINUED |                                                                                                                                                                   |                                                                            |                       |  |
|                     | b. Refueling Water Level NR ( <br>B WR (L9054A):                                                                                                                  | L9055A) and                                                                |                       |  |
|                     | 1. (CR/L) OPEN RC-720, Re<br>NR and B WR Isol.                                                                                                                    | fueling Water Level                                                        | OPEN                  |  |
|                     | 2. (CR/L) OPEN RC-721, Re<br>NR and B WR Isol.                                                                                                                    | fueling Water Level                                                        | OPEN                  |  |
|                     | 3. (CR/L) OPEN RC-722, Re<br>NR and B WR Vent to Pr                                                                                                               | fueling Water Level<br>zr.                                                 | OPEN                  |  |
|                     | 4. (CR/L) REQUEST I&C blow<br>DPT- 21158 and DPT-2119<br>nitrogen. (Use Valves<br>RC-721-1)                                                                       | w down transmitters<br>59 vent lines using<br>RC-24030-3 and               | REQUESTED             |  |
|                     | c. Refer to Reference Sheets A<br>Vessel level indication, (<br>2.0, Step 2.2.4 through 2.0<br>Step 2.2.9, and 2.0, Step 2                                        | <u>AND</u> VERIFY Rx<br>see precautions<br>O, Step 2.2.6, 2.0,<br>2.2.10). | VERIFIED              |  |
| 15.                 | IF SP-33-110 is required, THEN                                                                                                                                    | PERFORM SP-33-110.                                                         | APPLIES/NA            |  |
| 16.                 | <u>IF</u> SP-33-110 was performed, <u>TH</u><br>disable Automatic SI & ICS.                                                                                       | <u>EN</u> REQUEST I&C                                                      | REQUESTED/NA          |  |
| 17.                 | TAG Pressurizer Heater Breakers                                                                                                                                   | s OPEN. [PCR015068]                                                        | TAGGED                |  |
| 18.                 | (CAS) <u>WHEN</u> Przr Level Cold Cal reaches 30%, <u>THEN</u> VERIFIED<br>VERIFY RCS pressure equalized with Containment<br>pressure. (PRT pressure is 0.0 psig) |                                                                            |                       |  |
| 19.                 | (CAS) <u>IF</u> draining below 33% Reactor Vessel Level, APPLIES/NA<br><u>THEN</u> MONITOR RVLIS indications.                                                     |                                                                            |                       |  |
| 20.                 | <u>WHEN</u> Rx Vessel level approximation<br>PERFORM the following:                                                                                               | tely 20.6%, <u>THEN</u>                                                    | PERFORMED/NA          |  |
|                     | a. OPEN CVC-7.                                                                                                                                                    |                                                                            | OPEN                  |  |
|                     | b. ADJUST LD-10 to maximize p<br><u>CONTINU</u>                                                                                                                   | urification flow.<br><u>ED</u>                                             | ADJUSTED              |  |

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| KEWAUNEE NUCLEAR POWER PLANT         |           | TITLE Draining the                                                                         | Reactor Coolant System                           |                      |
| OI                                   | PERA      | ATING PROCEDURE                                                                            | <b>DATE</b> AUG 26 2004                          | <b>PAGE</b> 10 of 20 |
|                                      |           |                                                                                            |                                                  | INITIALS             |
| 4.1.20<br>CONTINUED                  |           |                                                                                            |                                                  |                      |
|                                      | c.        | ADJUST Charging Pump speed<br>Reactor Vessel level appro                                   | to maintain<br>ximately 20.6%.                   | ADJUSTED             |
|                                      | d.        | <u>IF</u> the Loop Drain to RCDT<br>path) is in use, <u>THEN</u> PERF                      | (Alternate flow<br>DRM the following:            | APPLIES/NA           |
|                                      |           | <ol> <li>ESTABLISH communication<br/>Room, Waste Disposal P<br/>of Containment.</li> </ol> | ns between Control E<br>anel, and basement       | ESTABLISHED          |
| 1                                    |           | 2. (CR/L) CLOSE RC-201B.                                                                   |                                                  | CLOSED               |
| 1                                    |           | 3. (CR/L) CLOSE RC-200B.                                                                   |                                                  | CLOSED               |
|                                      |           | 4. CLOSE RC-508.                                                                           |                                                  | CLOSED               |
|                                      |           | 5. CLOSE RC-507.                                                                           |                                                  | CLOSED               |
|                                      | e.        | (CR/L) RECORD level of CVC                                                                 | HUT on fill.                                     |                      |
|                                      | <u>N0</u> | <u>TE</u> : Venting Reactor Vessel<br>cause indicated Reactor                              | Head with RAP Pump may<br>Vessel level to increa | ise.                 |
|                                      | f.        | VENT Reactor Vessel Head:                                                                  |                                                  |                      |
|                                      |           | <ol> <li>(CR/L) VERIFY Reactor<br/>Piece downstream of RC</li> </ol>                       | Head Vent Spool<br>-43 REMOVED.                  | REMOVED              |
|                                      |           | 2. (CR/L) OPEN RC-43.                                                                      |                                                  | OPEN                 |
| 1                                    |           | 3. (CR/L) CLOSE RC-43-2                                                                    |                                                  | CLOSED               |
|                                      |           | 4. (CR/L) OPEN RC-750.                                                                     |                                                  | OPEN                 |
|                                      |           | 5. (CR/L) START RAP Pump.                                                                  |                                                  | STARTED              |
|                                      |           | <ol> <li>INFORM Reactor Enginee<br/>disassembly may be sta</li> </ol>                      | ring that conoseal<br>rted.                      | INFORMED             |
| CONTINUED                            |           |                                                                                            |                                                  |                      |

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|                                                                                                                                   | INITIALS                                              |  |  |  |
| 4.1.20.f                                                                                                                          |                                                       |  |  |  |
| 7. <u>WHEN</u> requested by Reac<br><u>THEN</u> PERFORM the follow                                                                | tor Engineering,<br>ving:                             |  |  |  |
| A. (CR/L) STOP RAP Put                                                                                                            | np. STOPPED                                           |  |  |  |
| B. (CR/L) CLOSE RC-75                                                                                                             | ). CLOSED                                             |  |  |  |
| 8. (CR/L) OPEN RC-43-2.                                                                                                           | OPEN                                                  |  |  |  |
| <u>NOTE</u> : The following step will star                                                                                        | t draining the RCS.                                   |  |  |  |
| 21. <u>IF</u> additional draining is requ<br>RCS draining via required flow                                                       | ired, <u>THEN</u> INITIATE<br>path:                   |  |  |  |
| a. <u>IF</u> Letdown drain path (preferred flow path) APPLIES/NA<br>is the required method, <u>THEN</u> PERFORM the<br>following: |                                                       |  |  |  |
| 1. (CR/L) RECORD level of                                                                                                         | CVC HUT on fill%                                      |  |  |  |
| 2. ADJUST LD-10 and Charg<br>establish drain rate.                                                                                | ing Pump speed to ADJUSTED                            |  |  |  |
| 3. (CAS) VERIFY CC-302/CV<br>Cont Outl Temp, mainta<br>temperature as flow is                                                     | -31100, Letdown VERIFIED<br>ins letdown<br>increased. |  |  |  |
| 4. (CAS) VERIFY LD-27/CV3<br>Tank Divert Valve in A<br>level as RCS drains.                                                       | 1096, VCT/Holdup VERIFIED<br>UTO maintaining VCT      |  |  |  |
|                                                                                                                                   |                                                       |  |  |  |
|                                                                                                                                   |                                                       |  |  |  |
|                                                                                                                                   |                                                       |  |  |  |
|                                                                                                                                   |                                                       |  |  |  |
| ,<br>CONTINII                                                                                                                     | ED                                                    |  |  |  |
| <u></u>                                                                                                                           | <u></u>                                               |  |  |  |
|                                                                                                                                   |                                                       |  |  |  |

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| KEWA                                 | UNEE NUCLEAR POWER PLANT                                                                               | TITLE Draining the Reactor Coolant System                           |
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|                                      |                                                                                                        | INITIALS                                                            |
| 4.1.21<br>CONTINUED                  |                                                                                                        |                                                                     |
|                                      | b. <u>IF</u> Loop Drain to RCDT (Alt<br>is the required method, <u>TH</u><br>following:                | ternate flow path) APPLIES/NA<br><u>IEN</u> PERFORM the             |
|                                      | <u>NOTE</u> : RCS draining rate s<br>RCDT Pumps or Waste                                               | shall <u>NOT</u> exceed capacity of<br>e Gas Compressors.           |
|                                      | <u>NOTE: WHEN</u> RCDT Pumps are<br>increase in RCDT le<br>35 gal.                                     | e <u>NOT</u> running, <u>THEN</u> a 10%<br>evel is approximately    |
|                                      | <u>NOTE</u> : Excess letdown may directed to RCDT.                                                     | also be used with flow                                              |
|                                      | <ol> <li>ESTABLISH communication</li> <li>Room, Waste Disposal F</li> <li>of Containment.</li> </ol>   | ons between Control ESTABLISHED<br>Panel, and basement              |
|                                      | 2. OPEN RC-507.                                                                                        | OPEN                                                                |
|                                      | 3. OPEN RC-508.                                                                                        | OPEN                                                                |
| 1                                    | 4. (CR/L) OPEN RC-200B, L<br>Leg to RCDT Isol.                                                         | Loop B Intermediate OPEN                                            |
|                                      | 5. (CR/L) THROTTLE OPEN F<br>Intermediate Leg to R(<br>establish drain rate a<br>level increase in RCD | RC-201B, Loop B THROTTLED<br>CDT Isol, to<br>as determined by<br>T. |
| 22.                                  | Prior to draining RCS below 19<br>with fuel in the reactor, PERF                                       | 9.7% Rx Vessel level PERFORMED/NA<br>FORM the following:            |
|                                      | a. (CR/L) VERIFY Containment CLOSED.                                                                   | Equipment Hatch, CLOSED                                             |
|                                      | b. (CR/L) RECORD level of CVC                                                                          | CHUT on fill%                                                       |
| 23.                                  | <u>IF</u> RCS is going to be drained<br>level, <u>THEN</u> REFER to N-RHR-340                          | below 17% Rx Vessel APPLIES/NA<br>C.                                |
|                                      | CONTINU                                                                                                | JED                                                                 |
|                                      |                                                                                                        |                                                                     |

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|                                                                                                                              | INITIALS                                                             |
| 4.1<br><u>CONTINUED</u>                                                                                                      |                                                                      |
| 24. Prior to draining RCS below 13<br>with fuel in the vessel, VERIF<br>can be maintained with less th<br>1800 gpm RHR flow. | % Rx Vessel level VERIFIED/NA<br>Y RCS temperature<br>an or equal to |
| 25. <u>WHEN</u> required Rx Vessel level<br><u>THEN</u> PERFORM the following:                                               | is reached, APPLIES/NA                                               |
| a. <u>IF</u> draining via RCDT, <u>THEN</u><br>following:                                                                    | CLOSE the APPLIES/NA                                                 |
| 1. (CR/L) RC-201B                                                                                                            | CLOSED                                                               |
| 2. (CR/L) RC-200B                                                                                                            | CLOSED                                                               |
| 3. RC-507                                                                                                                    | CLOSED                                                               |
| 4. RC-508                                                                                                                    | CLOSED                                                               |
| b. OPEN CVC-7.                                                                                                               | OPEN                                                                 |
| c. ADJUST LD-10 for purificat                                                                                                | ion flow. ADJUSTED                                                   |
| d. ADJUST Charging Pump Speed<br>Reactor Vessel level.                                                                       | to maintain ADJUSTED                                                 |
| e. (CR/L) RECORD final level                                                                                                 | of CVC HUT%                                                          |
| f. CALCULATE total RCS invent                                                                                                | ory drainedgal                                                       |
| ······································                                                                                       |                                                                      |
| Step 4.1.5.a.1 Step 4.1                                                                                                      | .25.e                                                                |
| 26. <u>WHEN</u> Przr is vented to atmosph<br>non-isolable path, <u>THEN</u> CLOSE                                            | ere through a<br>the following:                                      |
| a. PR-2A/CV-31110, PRZR Porv                                                                                                 | CLOSED                                                               |
| b. PR-2B/CV-31109, PRZR Porv                                                                                                 | CLOSED                                                               |
| <u>CONTINU</u>                                                                                                               | <u>ED</u>                                                            |
|                                                                                                                              |                                                                      |

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| KEWAUNEE NUCLEAR POWER PLANT                                                                                             | TITLE Draining the Reactor Coolant System                       |
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|                                                                                                                          | INITIALS                                                        |
|                                                                                                                          |                                                                 |
| 27. <u>WHEN</u> Rx Vessel Level is less the to 10.8% <u>OR</u> vented to atmosphere non-isolable path, <u>THEN</u> CLOSE | nan or equal<br>re through a<br>the following:                  |
| a. PR-33A/SV-33660, Przr Head                                                                                            | Vent Train A CLOSED                                             |
| b. RC-45A/SV-33658, Reactor H                                                                                            | ead Vent Train A CLOSED                                         |
| c. RC-46/SV-33663, Rx/Przr V<br>Tank                                                                                     | ent to Przr Relief CLOSED                                       |
| d. PR-33B/SV-33661, Przr Head                                                                                            | Vent Train B CLOSED                                             |
| e. RC-45B/SV-33659, Reactor H                                                                                            | ead Vent Train B CLOSED                                         |
| f. RC-49/SV-33662, Rx/Przr H<br>Containme                                                                                | ead Vent to CLOSED                                              |
| NOTE: <u>IF</u> all fuel has been removed<br>may be stopped as necessary                                                 | from the vessel, <u>THEN</u> RHR<br>to control RCS temperature. |
| 28. (CAS) MAINTAIN RCS temperature of RHR.                                                                               | using one train MAINTAINED                                      |
|                                                                                                                          |                                                                 |
|                                                                                                                          |                                                                 |
|                                                                                                                          |                                                                 |
|                                                                                                                          |                                                                 |
| 1                                                                                                                        |                                                                 |
|                                                                                                                          |                                                                 |
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| WISCONSIN PUBLIC SERVICE CORPORATION |                   |                                                                        | <b>NO.</b> N-RC-36E         |                        |                                           |            |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT         |                   |                                                                        |                             |                        | TITLE Draining the Reactor Coolant System |            |  |  |
| OPERATING PROCEDURE                  |                   |                                                                        | DATE                        | AUG 26 2004            | <b>PAGE</b> 15 of 20                      |            |  |  |
|                                      |                   |                                                                        |                             |                        |                                           | INITIALS   |  |  |
| 4.2                                  | Dra<br>fol<br>(In | ining Reactor Coolant<br>lowing Cavity Drain:<br>conjunction with N-RH | System to<br>IR-34C)        | Reduced                | Inventory                                 | APPLIES/NA |  |  |
|                                      | 1.                | REDUCE Charging Pump<br>the following:                                 | speed to                    | minimum a              | ind, CLOSE                                |            |  |  |
|                                      |                   | • CVC-7/CV-31103                                                       | Charging                    | Control C              | hg Line                                   | CLOSED     |  |  |
|                                      |                   | • LD-2/CV-31108                                                        | Letdown I                   | solation               |                                           | CLOSED     |  |  |
|                                      |                   | • LD-3/CV-31104                                                        | Letdown I                   | solation               |                                           | CLOSED     |  |  |
|                                      |                   | • LD-4A/CV-31231                                                       | Letdown O                   | rifice A               | Isolation                                 | CLOSED     |  |  |
|                                      |                   | • LD-4B/CV-31232                                                       | Letdown O                   | rifice B               | Isolation                                 | CLOSED     |  |  |
|                                      |                   | • LD-4C/CV-31233                                                       | Letdown O                   | rifice C               | Isolation                                 | CLOSED     |  |  |
|                                      |                   | • CVC-207A/CV-31237                                                    | RXCP A #1                   | Seal Lea               | koff                                      | CLOSED     |  |  |
|                                      |                   | • CVC-207B/CV-31238                                                    | RXCP B #1<br>Isolation      | Seal Lea               | ikoff                                     | CLOSED     |  |  |
|                                      |                   | • CVC-250/CV-31239                                                     | RXCP A&B                    | #1 Seal E              | lypass                                    | CLOSED     |  |  |
|                                      | 2.                | VENT RCS and PRT to (                                                  | Containmen                  | t as foll              | ows:                                      |            |  |  |
|                                      |                   | a. OPEN the following                                                  | ng:                         |                        |                                           |            |  |  |
|                                      |                   | • PR-33A/SV-33660                                                      | ) Przr He                   | ad Vent 1              | rain A                                    | OPEN       |  |  |
|                                      |                   | • PR-33B/SV-33662                                                      | l Przr He                   | ad Vent 1              | rain B                                    | OPEN       |  |  |
|                                      |                   | • RC-45A/SV-33658                                                      | B Reactor                   | Head Ver               | nt Train A                                | OPEN       |  |  |
|                                      |                   | • RC-45B/SV-33659                                                      | 9 Reactor                   | Head Ver               | nt Train B                                | OPEN       |  |  |
|                                      |                   | • RC-49/SV-33662                                                       | Rx/Przr<br>Contain          | Head Ver<br>ment       | it to                                     | OPEN       |  |  |
|                                      |                   | b. CLOSE NG-302/CV-3<br>Nitrogen Supply 3                              | 31298, PRZ<br>Isolation.    | R Relief               | Tank                                      | CLOSED     |  |  |
|                                      | 3.                | (CR/L) OPEN RC-43-2,<br>Orifice Bypass.                                | Reactor V<br><u>CONTINU</u> | essel Hea<br><u>ED</u> | nd Vent                                   | OPEN       |  |  |

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| KEWAUNEE NUCLEAR POWER PLANT                                                     | TITLE Draining the Reactor Coolant System         |  |  |  |  |  |  |
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| 4.2                                                                              |                                                   |  |  |  |  |  |  |
| CONTINUED                                                                        |                                                   |  |  |  |  |  |  |
| 4. (CAS) (CR/L) At RC-49, VERIFY<br><u>AND</u> venting occurring. [PCR01         | NO obstructions, VERIFIED<br>2051]                |  |  |  |  |  |  |
| <u>NOTE</u> : The following steps will st                                        | art draining RCS.                                 |  |  |  |  |  |  |
| 5. <u>IF</u> Letdown drain path (preferr<br>required method, <u>THEN</u> PERFORM | ed flow path) is the APPLIES/NA<br>the following: |  |  |  |  |  |  |
| a. ADJUST LD-10 to establish                                                     | drain rate. ADJUSTED                              |  |  |  |  |  |  |
| b. VERIFY CC-302/CV-31100, Le<br>Temp, maintains letdown te<br>increased.        | tdown Cont Outl VERIFIED<br>mperature as flow is  |  |  |  |  |  |  |
| c. VERIFY LD-27/CV31096, VCT/<br>Valve, in AUTO, maintainin<br>drains.           | Holdup Tank Divert AUTO<br>g VCT level as RCS     |  |  |  |  |  |  |
| 6. <u>IF</u> Loop Drain to RCDT (Alterna<br>required method, <u>THEN</u> PERFORM | te flow path) is the APPLIES/NA<br>the following: |  |  |  |  |  |  |
| <u>NOTE</u> : RCS draining rate shall<br>RCDT Pumps or Waste Gas                 | <u>NOT</u> exceed capacity of<br>Compressors.     |  |  |  |  |  |  |
| <u>NOTE</u> : <u>WHEN</u> RCDT Pumps are <u>NOT</u><br>RCDT level is approxima   | running, a 10% increase in<br>tely 35 gal.        |  |  |  |  |  |  |
| <u>NOTE</u> : Excess letdown may also to RCDT.                                   | be used with flow directed                        |  |  |  |  |  |  |
| a. ESTABLISH communications b<br>Waste Disposal Panel, and<br>Containment.       | etween Control Room, ESTABLISHED<br>basement of   |  |  |  |  |  |  |
| b. OPEN RC-507.                                                                  | OPEN                                              |  |  |  |  |  |  |
| c. OPEN RC-508.                                                                  | OPEN                                              |  |  |  |  |  |  |
| d. (CR/L) OPEN RC-200B, Loop<br>to RCDT Isol.                                    | B Intermediate Leg OPEN                           |  |  |  |  |  |  |
| CONTINU                                                                          | CONTINUED                                         |  |  |  |  |  |  |
|                                                                                  |                                                   |  |  |  |  |  |  |

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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                     | TITLE Draining the Reactor Coolant System                 |
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|                                                                                                                                                  | INITIALS                                                  |
| 4.2.6<br><u>CONTINUED</u>                                                                                                                        |                                                           |
| e. (CR/L) THROTTLE OPEN RC-201<br>Intermediate Leg to RCDT Is<br>establish drain rate as det<br>level increase in RCDT.                          | B, Loop B THROTTLED<br>col. to<br>cermined by             |
| 7. STABILIZE refueling level at va<br>in N-RHR-34C, by ADJUSTING LD-1<br>required level.                                                         | rious hold points STABILIZED<br>O to maintain             |
| CAUTIC                                                                                                                                           | <u>IN</u>                                                 |
| <u>IF</u> actual level is maintained greater<br>Pressurizer Surge Line will remain sub<br>venting of Head.                                       | than or equal to 10.8%,<br>merged interfering with proper |
| <ol> <li><u>WHEN</u> Rx Vessel Level is less th<br/>to 10.8%, <u>OR</u> vented to atmosphe<br/>non-isolable path, <u>THEN</u> CLOSE t</li> </ol> | an or equal<br>ere through a<br>the following:            |
| a. PR-33A/SV-33660 Przr Head                                                                                                                     | Vent Train A CLOSED                                       |
| b. RC-45A/SV-33658 Reactor He                                                                                                                    | ead Vent Train A CLOSED                                   |
| c. RC-46/SV-33663 Rx/Przr Ve<br>Relief Tar                                                                                                       | ent to Przr CLOSED<br>ik                                  |
| d. PR-33B/SV-33661 Przr Head                                                                                                                     | Vent Train B CLOSED                                       |
| e. RC-45B/SV-33659 Reactor He                                                                                                                    | ead Vent Train B CLOSED                                   |
| f. RC-49/SV-33662 Rx/Przr He<br>Containmer                                                                                                       | ead Vent to CLOSED                                        |
| <u>NOTE: IF</u> all fuel has been removed be stopped as necessary to d                                                                           | from the vessel, RHR may control RCS temperature.         |
| 9. (CAS) MAINTAIN RCS temperature of RHR.                                                                                                        | using one train MAINTAINED                                |
|                                                                                                                                                  |                                                           |

| WISCON                 | SIN PUBLIC                                                           | SERVICE COR            | RPORATION NO. N-RC-36E                                                                                                                                                                                                                                                                  |  |  |  |  |  |  |
|------------------------|----------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|
| KEW                    | VAUNEE NU                                                            | CLEAR POWEF            | RPLANT TITLE Draining the Reactor Coolant System                                                                                                                                                                                                                                        |  |  |  |  |  |  |
|                        | OPERATIN                                                             | G PROCEDUI             | RE DATE AUG 26 2004 PAGE 18 of 20                                                                                                                                                                                                                                                       |  |  |  |  |  |  |
|                        | ATTACHMENT A - REACTOR VESSEL LEVEL REFERENCE SHEET<br>(Page 1 of 2) |                        |                                                                                                                                                                                                                                                                                         |  |  |  |  |  |  |
| <u>VESSEL</u><br>7.95% | <u>RVLIS</u><br>0.0%                                                 | <u>TYGON</u><br>(252") | <u>DESCRIPTION</u><br>Bottom of RVLIS instrument range.                                                                                                                                                                                                                                 |  |  |  |  |  |  |
| 9.0%                   | 4.1%                                                                 | (259")                 | Inlet to RHR System from Hotleg                                                                                                                                                                                                                                                         |  |  |  |  |  |  |
| 10.2%                  | 8.8%                                                                 | (266")                 | Centerline of hotleg: centerline of surge line at the<br>hotleg: centerline of RXCPs discharge pipe:centerline<br>of Rx Vessel safety injection nozzles: centerline of Rx<br>Vessel inlet and outlet nozzles. (PO420A will indicate<br>approx 11 psig with zero pressure on the system) |  |  |  |  |  |  |
| 12.38%                 | 17.3%                                                                | (280.5")               | Top of hot leg nozzles - mid-loop condition                                                                                                                                                                                                                                             |  |  |  |  |  |  |
| 13.0%                  | 19.7%                                                                | (284.5")               | Limit RHR flow to less than 3000 gpm. S/G Tubes remain filled.                                                                                                                                                                                                                          |  |  |  |  |  |  |
| 13.1%                  | 20.1%                                                                | (285")                 | Bottom of manway opening                                                                                                                                                                                                                                                                |  |  |  |  |  |  |
| 15.0%                  | 27.5%                                                                | (297.5")               | Level of RXCP seals                                                                                                                                                                                                                                                                     |  |  |  |  |  |  |
| 16.0%                  | 31.4%                                                                | (304")                 | 36" below Rx Vessel flange - reduced inventory condition                                                                                                                                                                                                                                |  |  |  |  |  |  |
| 16.9%                  | 34.9%                                                                | (310")                 | 30" below the Rx Vessel flange                                                                                                                                                                                                                                                          |  |  |  |  |  |  |
| 17.0%                  | 35.3%                                                                | (311")                 | Entry Conditions for N-RHR-34C                                                                                                                                                                                                                                                          |  |  |  |  |  |  |
| 19.7%                  | 45.8%                                                                | (328")                 | 12" below Rx Vessel flange. Containment Equipment Hatch<br>Shall be closed.                                                                                                                                                                                                             |  |  |  |  |  |  |
| 20.6%                  | 49.3%                                                                | (334")                 | 6" below the Rx Vessel flange                                                                                                                                                                                                                                                           |  |  |  |  |  |  |
| 21.5%                  | 52.8%                                                                | (340")                 | Rx Vessel flange                                                                                                                                                                                                                                                                        |  |  |  |  |  |  |
| 25.8%                  | 69.6%                                                                | (368")                 | Przr surge nozzle                                                                                                                                                                                                                                                                       |  |  |  |  |  |  |
| 30.8%                  | 89.0%                                                                | (400")                 | Highpoint of the Rx Vessel Head                                                                                                                                                                                                                                                         |  |  |  |  |  |  |
| 33.4%                  | 99.0%                                                                | (417")                 | Rx Vessel vent RC-43                                                                                                                                                                                                                                                                    |  |  |  |  |  |  |
| 33.65%                 | 100.0%                                                               | (419")                 | Top of RVLIS instrument range                                                                                                                                                                                                                                                           |  |  |  |  |  |  |
| 34.3%                  |                                                                      | (423")                 | Przr lower instrument tap                                                                                                                                                                                                                                                               |  |  |  |  |  |  |
| 64.0%                  |                                                                      | (616")                 | 23 feet above Rx Vessel flange                                                                                                                                                                                                                                                          |  |  |  |  |  |  |
| 66.3%                  |                                                                      | (631")                 | Inlet to upender cable trough                                                                                                                                                                                                                                                           |  |  |  |  |  |  |
| 68.5%                  |                                                                      | (645")                 | Reactor Building refueling floor                                                                                                                                                                                                                                                        |  |  |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                      | NO. N-RC-36E                                                                                                                                                                                                                                                                |  |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                              | TITLE Draining the Reactor Coolant System                                                                                                                                                                                                                                   |  |  |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                       | DATE AUG 26 2004 PAGE 19 of 20                                                                                                                                                                                                                                              |  |  |  |  |  |  |
| ATTACHMENT A - REACTOR VESSEL LEVEL REFERENCE SHEET<br>(Page 2 of 2)                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                             |  |  |  |  |  |  |
| Rx Level Transmitter (24068) at 595'<br>(200 INWC = 10 MV = 0% at                                                                                                                                                                                                                                                         | -8" elevation, Range = 200-850 INWC<br>612'-4" elevation)                                                                                                                                                                                                                   |  |  |  |  |  |  |
| 1% = 6.5 INWC % = <u>INWC - 20</u><br>6.5                                                                                                                                                                                                                                                                                 | 0 INWC = (%)(6.5) + 200                                                                                                                                                                                                                                                     |  |  |  |  |  |  |
| (Inches of Water) x (0.03613) = psi                                                                                                                                                                                                                                                                                       | (Feet of Water) x (0.4335) = psi                                                                                                                                                                                                                                            |  |  |  |  |  |  |
| With Pressurizer full and zero press                                                                                                                                                                                                                                                                                      | ure (P0420A) will indicate 21.0 psi                                                                                                                                                                                                                                         |  |  |  |  |  |  |
| PRZR Level indications during draindown fr                                                                                                                                                                                                                                                                                | om solid condition                                                                                                                                                                                                                                                          |  |  |  |  |  |  |
| 1. PRZR hot cal levels start decreasing from 100% indicated level when PRZR cold cal level reaches 60%.                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                             |  |  |  |  |  |  |
| 2. Draindown from solid condition to 17% P                                                                                                                                                                                                                                                                                | RZR level equals 18% level change in CVC HUT.                                                                                                                                                                                                                               |  |  |  |  |  |  |
| 3. 10% PRZR cold cal level equals 36.4% ve                                                                                                                                                                                                                                                                                | ssel level.                                                                                                                                                                                                                                                                 |  |  |  |  |  |  |
| Draining to the Center of the Hot Leg Pene                                                                                                                                                                                                                                                                                | <u>trations Piping (past_experience)</u>                                                                                                                                                                                                                                    |  |  |  |  |  |  |
| <ol> <li>A substantial amount of water is trapped in the S/G tubes. This water can NOT be<br/>completely drained until the Przr surge line is uncovered. It is necessary to drain<br/>RCS to the center line of the hot leg nozzles to ensure that the S/G tubes are empty</li> </ol>                                     |                                                                                                                                                                                                                                                                             |  |  |  |  |  |  |
| 2. Level will decrease at a steady rate. WHEN the Przr empties, a rapid drop in level will occur as the surge line empties.                                                                                                                                                                                               |                                                                                                                                                                                                                                                                             |  |  |  |  |  |  |
| 3. Continue to drain. Level again will decrease at a steady rate until the top of the surge line penetration to B RCS loop is reached. At this point level will remain almost constant. It will decrease and increase slightly as the water in the S/G tubes is drained. S/G Tubes contain about 12,342 gallons of water. |                                                                                                                                                                                                                                                                             |  |  |  |  |  |  |
| 4. Continue to drain. Level will indicate<br>empty. WHEN the tubes are empty, level<br>to the center line of the hot leg vesse<br>(10.2% on Reactor Level Indicator)                                                                                                                                                      | 4. Continue to drain. Level will indicate a very slow downward trend as the S/G tubes<br>empty. WHEN the tubes are empty, level will again decrease at a steady rate. Drain<br>to the center line of the hot leg vessel penetrations.<br>(10.2% on Reactor Level Indicator) |  |  |  |  |  |  |
| 5. Rx Vessel level change vs CVCS HUT level change:<br>Change in vessel from 20.6% to 16% = 5% change in HUT<br>Change in vessel from 16% to 12.5% = 5% change in HUT<br>Change in vessel from 12.5% to S/G tubes empty = 37.5% change in HUT                                                                             |                                                                                                                                                                                                                                                                             |  |  |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                | NO.N- | RĆ-36E         |             |              |  |  |  |  |  |
|-------------------------------------------------------------------------------------|-------|----------------|-------------|--------------|--|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                        | TITLE | Draining the R | eactor Cool | ant System   |  |  |  |  |  |
| OPERATING PROCEDURE                                                                 | DATE  | AUG 26 2004    | PAGE 20     | <b>of</b> 20 |  |  |  |  |  |
| FIGURE 1 - RX VESSEL LEVEL INDICATION DRAWING style="text-align: center;" IG1-C:89> |       |                |             |              |  |  |  |  |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NO. N-RHR-34C REV N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | TITLE RHR Operation At A Reduced<br>Inventory Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | DATE SEP 30 2004 PAGE 1 of 19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |
| REVIEWED BY James J Brown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | APPROVED BY Phillip A Short                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |
| NUCLEAR XES PORC REV<br>SAFETY RELATED REQUIRED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | W 🖾 YES SRO APPROVAL OF 🖾 YES<br>I NO REQUIRED I NO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |
| <ul> <li>1.0 INTRODUCTION <ol> <li>Procedure provides guidance for level is less than or equal to</li> <li>(CAS) indicates a "Continuous A of long duration and does <u>NOT</u> h <u>OR</u> the step requires a certain performed.</li> </ol> </li> <li>2.0 PRECAUTIONS AND LIMITATIONS <ol> <li>The following are applicable at</li> <li>RCS shall <u>NOT</u> be intentiona while in reduced inventory An adverse RCS configuratio opening(s) totaling greater adequate hot leg side vent</li> <li>Charging Pump C is sensitiv should be maintained in sta or equal to 17%.</li> <li>If seal injection is on dur Refueling Water Level A WR Refueling Water Level B WR</li> <li>An adequate hot leg vent pa maintained during reduced R</li> <li>An adequate hot leg vent pa leg side of RCS or reactor unobstructed vent area equa created by removal of PRZR If using PRZR safety valves drained. Coverings that do be installed for Foreign Ma</li> </ol> </li> </ul> | <pre>operation of RHR system when Rx Vessel<br/>7%.<br/>tion Statement". It signifies a step<br/>re to be completed before continuing.<br/>lant condition prior to being<br/>all times this procedure is in effect:<br/>ly placed in an adverse configuration<br/>ondition without prior PORC approval.<br/>is defined as cold leg side<br/>than one square inch without an<br/>ath.<br/>to power supply fluctuations and<br/>dby when Refueling Level is less than<br/>and the stablished prior to and<br/>Sinventory conditions.<br/>n is defined as opening(s) on the hot<br/>essel upper plenum with an<br/>to or totalling greater than that<br/>afety valves (approx. 0.295 sq. ft.).<br/>associated loop seal(s) shall be<br/><u>OUT</u> restrict potential vent flow may<br/>erial Exclusion requirements.</pre> |  |  |  |
| CONT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <u>IUED</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |

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|                   | KEWAUNEE NUCLEAR POWER PLANT<br>OPERATING PROCEDURE |                                                                                                           |                                     | TITLE RHR Operation At A Reduced Inventory Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                             |    |
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|                   |                                                     |                                                                                                           |                                     | SEP 30 2004                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PAGE 2                      | of |
|                   |                                                     |                                                                                                           |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                             |    |
| 2.1<br><u>CON</u> | <u>TINUED</u>                                       |                                                                                                           |                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                             |    |
|                   | 6.                                                  | If an adequate hot leg side ve<br>available. Narrow range level<br>precautionary measure.                 | nt does <u>N</u><br>should t        | <u>IOT</u> exist, one s<br>be established a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | S/G shall be<br>as a        |    |
|                   | 7.                                                  | Two independent Refueling Leve<br>(Refueling Water Level B WR (L<br>(L9055A) are <u>NOT</u> independent.) | l indicat<br>9054A) ar              | tions shall be o<br>Id Refueling Wat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | operable.<br>ter Level NR   |    |
|                   | 8.                                                  | When Refueling level is less t<br><u>NOT</u> exceed 3000 gpm.                                             | han 13%,                            | RHR system flow                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | w rate shall                |    |
|                   | 9.                                                  | The use of paper, plastic, or<br>basement or other areas, that<br>recirc sump strainers, shall b          | other mat<br>could res<br>e minimiz | cerials in the control of the contro | containment<br>ckage of the |    |
|                   | <u>NOTE</u>                                         | : Primary manway refers to all including diaphragms.                                                      | parts bl                            | ocking the ope                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ning,                       |    |
|                   | 10.                                                 | If S/G primary manways are to following applies:                                                          | be instal                           | led or removed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | , the                       |    |
|                   |                                                     | <ul> <li>One hot leg side S/G primary<br/>prior to removing either col</li> </ul>                         | manway s<br>d leg sic               | shall be removed<br>le S/G primary i                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | d<br>manway.                |    |
|                   |                                                     | <ul> <li>Both cold leg side S/G prima<br/>to installing final hot leg</li> </ul>                          | ry manway<br>side S/G               | vs shall be ins<br>primary manway                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | talled prior                |    |
|                   | 11.                                                 | If S/G nozzle dams are to be i applies:                                                                   | nstalled                            | or removed, the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | e following                 |    |
|                   |                                                     | <ul> <li>Both cold leg side S/G nozzl<br/>installing final hot leg sid</li> </ul>                         | e dams sł<br>e S/G noz              | all be installo<br>zle dam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ed prior to                 |    |
|                   |                                                     | <ul> <li>One hot leg side S/G nozzle<br/>to removing either cold leg</li> </ul>                           | dam shall<br>side S/G               | be removed pr<br>nozzle dam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ior                         |    |
|                   | 12.                                                 | The PPCS and one Control Room system monitoring. If inopera                                               | SAS unit<br>ble, <u>GO l</u>        | should remain (<br>[ <u>0</u> A-CP-46.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | operable for                |    |
|                   |                                                     | CONTINU                                                                                                   | <u>ED</u>                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                             |    |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                     | NO. N-RHR-34C                                                              |  |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|--|--|--|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                             | TITLE RHR Operation At A Reduced<br>Inventory Condition                    |  |  |  |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                      | DATE SEP 30 2004 PAGE 3 of 19                                              |  |  |  |  |  |  |  |
|                                                                                                                                                          |                                                                            |  |  |  |  |  |  |  |
|                                                                                                                                                          |                                                                            |  |  |  |  |  |  |  |
| 2.1<br><u>CONTINUED</u>                                                                                                                                  |                                                                            |  |  |  |  |  |  |  |
| 13. Related to RHR Pump motor star                                                                                                                       | ting restrictions: [CE009754]                                              |  |  |  |  |  |  |  |
| <ol> <li>If the motor is initially a following:</li> </ol>                                                                                               | at ambient temperature, observe the                                        |  |  |  |  |  |  |  |
| a. Do <u>NOT</u> attempt more that                                                                                                                       | an two consecutive starts.                                                 |  |  |  |  |  |  |  |
| b. Allow the motor to coas                                                                                                                               | st to rest between starts.                                                 |  |  |  |  |  |  |  |
| c. The criteria in Step 2.<br>subsequent starts.                                                                                                         | .1.13.2 shall apply for all                                                |  |  |  |  |  |  |  |
| 2. If the motor is <u>NOT</u> at amb<br>following:                                                                                                       | ient temperature, observe the                                              |  |  |  |  |  |  |  |
| a. Allow the motor to coas                                                                                                                               | st to rest between starts.                                                 |  |  |  |  |  |  |  |
| b. Allow greater than 60 m<br>previous start.                                                                                                            | minutes to elapse since                                                    |  |  |  |  |  |  |  |
| 2.2 The following are applicable when                                                                                                                    | fuel is in the reactor:                                                    |  |  |  |  |  |  |  |
| <ol> <li>Suction paths from both loops shall be maintained for two RHR Pump<br/>operation and should be maintained for single pump operation.</li> </ol> |                                                                            |  |  |  |  |  |  |  |
| <ol> <li>Only one RHR Pump should be operable.</li> </ol>                                                                                                | erating with the other pump                                                |  |  |  |  |  |  |  |
| 3. Time at reduced RCS inventory                                                                                                                         | condition shall be minimized.                                              |  |  |  |  |  |  |  |
| <ol> <li>At least one containment spray<br/>units should be operable.</li> </ol>                                                                         | pump and two containment fan coil                                          |  |  |  |  |  |  |  |
| 5. One SI pump and one other acti-<br>charging pump) shall be availa                                                                                     | ve means of adding inventory (e.g.,<br>ble.                                |  |  |  |  |  |  |  |
| <ol> <li>Reactor should be shut down for<br/>hot leg vent path created befor<br/>leg).</li> </ol>                                                        | r at least 60 hours and an adequate<br>re installing final nozzle dam (hot |  |  |  |  |  |  |  |
| 7. Two core exit thermocouples sha                                                                                                                       | all be operable.                                                           |  |  |  |  |  |  |  |
| CONTINU                                                                                                                                                  | ED                                                                         |  |  |  |  |  |  |  |
|                                                                                                                                                          | •                                                                          |  |  |  |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                  | NO. N-RHR-34C                                                                                                                             |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                          | TITLE RHR Operation At A Reduced<br>Inventory Condition                                                                                   |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                   | DATE SEP 30 2004 PAGE 4 of 19                                                                                                             |  |  |  |
|                                                                                                                                                                       |                                                                                                                                           |  |  |  |
| 2.2                                                                                                                                                                   |                                                                                                                                           |  |  |  |
| CONTINUED                                                                                                                                                             |                                                                                                                                           |  |  |  |
| <ol> <li>8. Work activities that may affect<br/>communicates with RCS or RHR at<br/>or RCS inventory, shall <u>NOT</u> be</li> </ol>                                  | t RCS. RHR, or any system that<br>nd could affect decay heat removal<br>performed.                                                        |  |  |  |
| 9. For the purpose of containment<br>mechanism for each containment<br>closed or operable. <u>OR</u> Reduce<br>shall be set prior to entering<br>Inventory condition. | closure, at least one closure<br>penetration shall be maintained<br>ed Inventory Containment Integrity<br>and during operation in reduced |  |  |  |
| 10. All open containment boundarie<br>Boundary Tracking Log (N-CCI-5                                                                                                  | s shall be recorded on Open<br>6A).                                                                                                       |  |  |  |
| 11. When the RCS is in reduced invoced complete containment closure w reaches 200°F.                                                                                  | entory condition, be able to<br>ithin 30 minutes <u>OR</u> before RCS                                                                     |  |  |  |
| 3.0 <u>INITIAL CONDITIONS</u>                                                                                                                                         | INITIALS                                                                                                                                  |  |  |  |
| 3.1 Refueling Level greater than 17%.                                                                                                                                 | > 17%                                                                                                                                     |  |  |  |
| 3.2 N-RC-36E being performed to drain                                                                                                                                 | RCS. SATISFIED                                                                                                                            |  |  |  |
| 3.3 RHR in cooldown mode of operation.                                                                                                                                | SATISFIED                                                                                                                                 |  |  |  |
| 3.4 RCS temperature is less than or eq                                                                                                                                | ual to 120°F. <u>≤</u> 120°F                                                                                                              |  |  |  |
| 3.5 <u>IF</u> fuel is in the reactor, <u>THEN</u> N-<br>N-CCI-56A-CLB is completed.                                                                                   | CCI-56A-CLA or COMPLETED/NA                                                                                                               |  |  |  |
| 3.6 <u>IF</u> fuel is in the reactor, <u>THEN</u> N-completed.                                                                                                        | RHR-34C-CL is COMPLETED/NA                                                                                                                |  |  |  |
|                                                                                                                                                                       |                                                                                                                                           |  |  |  |
|                                                                                                                                                                       |                                                                                                                                           |  |  |  |
|                                                                                                                                                                       |                                                                                                                                           |  |  |  |
|                                                                                                                                                                       |                                                                                                                                           |  |  |  |
|                                                                                                                                                                       |                                                                                                                                           |  |  |  |
|                                                                                                                                                                       |                                                                                                                                           |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                             | NO. N-RHR-34C                                                                                                |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                     | TITLE RHR Operation At A Reduced<br>Inventory Condition                                                      |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                              | DATE SEP 30 2004 PAGE 5 of 19                                                                                |  |  |  |
|                                                                                                                                                                                                  | INITIALS                                                                                                     |  |  |  |
| 4.0 <u>PROCEDURE</u>                                                                                                                                                                             |                                                                                                              |  |  |  |
| <u>NOTE</u> : Operations at reduced inventory<br>monitoring of the RHR system. The<br>frequent monitoring for abnormal<br>may be indicative of air entrain<br>shall verify adequate suction pro- | requires increased<br>his shall include<br>motor and pump noise which<br>ment. These local checks<br>essure. |  |  |  |
| NOTE: The following information should<br>cards: "RCS is at Reduced Inven-<br>RCS inventory. Notify C/R befor-<br>and notify C/R when operation is                                               | be placed on the tagout<br>tory. Sampling will affect<br>e operating this component,<br>complete."           |  |  |  |
| 4.1 TAG the following: Tagout #                                                                                                                                                                  | COMPLETED                                                                                                    |  |  |  |
| • LD-71/SV-33668 Mixed Bed Demi<br>Valve, control<br>(High Rad Samp                                                                                                                              | n Inlet Smpl Isol<br>switch<br>ling Room)                                                                    |  |  |  |
| • LD-81/SV-33667 Mixed Bed Demi<br>SV, control sw<br>(High Rad Samp                                                                                                                              | n Outlet Smpl Isol<br>itch<br>ling Room)                                                                     |  |  |  |
| <ul> <li>RHR-81A/SV-33673 RHR Sample Iso<br/>switch (High R</li> </ul>                                                                                                                           | l A SV, control<br>ad Sampling Room)                                                                         |  |  |  |
| <ul> <li>RHR-81B/SV-33672 RHR Sample Iso<br/>switch (High R</li> </ul>                                                                                                                           | l B SV, control<br>ad Sampling Room)                                                                         |  |  |  |
| <ul> <li>RHR-42 Residual Heat Exchanger</li> </ul>                                                                                                                                               | 1A Local Sample                                                                                              |  |  |  |
| • RHR-39 Residual Heat Exchanger                                                                                                                                                                 | 1B Local Sample                                                                                              |  |  |  |
| <ul> <li>RHR-603 Loop Isolation to RC Ho<br/>Exchanger (Sampling Room</li> </ul>                                                                                                                 | t Leg Heat<br>m)                                                                                             |  |  |  |
| 4.2 VERIFY Precautions and Limitations<br>to reducing Refueling level below :                                                                                                                    | are satisfied prior VERIFIED<br>17%.                                                                         |  |  |  |
|                                                                                                                                                                                                  |                                                                                                              |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                               | NO. N-RHR-34C<br>TITLE RHR Operation At A Reduced<br>Inventory Condition |                           |  |  |
|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                       |                                                                          |                           |  |  |
| OPERATING PROCEDURE                                                                                                                | <b>DATE</b> SEP 30 2004                                                  | PAGE 6 of 19              |  |  |
|                                                                                                                                    |                                                                          | INITIALS                  |  |  |
| <u>NOTE</u> : TLA-18 RHR SYSTEM MONITOR ABNORM/<br>while draining RCS to new steady                                                | AL, (47033-43), may a<br>state level.                                    | larm                      |  |  |
| 4.3 CONTINUE to drain RCS per N-RC-36E.                                                                                            |                                                                          | DRAINING                  |  |  |
| 4.4 At 17% Refueling Level, STOP drain<br>Refueling Level.                                                                         | ing and stabilize                                                        | STOPPED and<br>STABILIZED |  |  |
| 1. VERIFY the following:                                                                                                           |                                                                          |                           |  |  |
| a. Less than 3% deviation betw<br>indications                                                                                      | ween Refueling Level                                                     | < 3%<br>DEVIATION         |  |  |
| b. Proper level change in reco                                                                                                     | eiving tank                                                              | VERIFIED                  |  |  |
| 4.5 CONTINUE to drain RCS per N-RC-36E.                                                                                            |                                                                          | DRAINING                  |  |  |
| 4.6 <u>IF</u> fuel is in the reactor, <u>THEN</u> pribelow 13% Rx Vessel level, VERIFY I be maintained with less than or equiples. | ior to draining RCS<br>RCS temperature can<br>ual to 1800 gpm RHR        | VERIFIED/NA               |  |  |
| 4.7 At 12.5% Refueling Level, STOP dram<br>Refueling Level.                                                                        | ining and stabilize                                                      | STOPPED and<br>STABILIZED |  |  |
| 1. VERIFY the following:                                                                                                           |                                                                          |                           |  |  |
| a. Less than 3% deviation betw<br>indications                                                                                      | ween Refueling Level                                                     | < 3%<br>DEVIATION         |  |  |
| b. Proper level change in reco                                                                                                     | eiving tank                                                              | VERIFIED                  |  |  |
| 4.8 CONTINUE to drain RCS per N-RC-36E.                                                                                            |                                                                          | DRAINING                  |  |  |
| 4.9 <u>WHEN</u> Steam Generators tubes are dra<br>the following:                                                                   | ained, <u>THEN</u> PERFORM                                               |                           |  |  |
| 1. REDUCE drain rate to less than                                                                                                  | or equal to 20 gpm.                                                      | ≤ 20 GPM                  |  |  |
| <ol> <li>STATION an Operator at the RHR<br/>for cavitation until draining<br/>conditions stabilized.</li> </ol>                    | Pumps to monitor<br>is complete and                                      | STATIONED                 |  |  |

| Γ | WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                 |                                                                                                                                                                                      |                                                                                                  | NO. N-RHR-34C                                             |                       |  |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------------|--|
|   | KEWAUNEE NUCLEAR POWER PLANT                                                                                                                         |                                                                                                                                                                                      |                                                                                                  | TITLE RHR Operation At A Reduced<br>Inventory Condition   |                       |  |
|   | OPERATING PROCEDURE                                                                                                                                  |                                                                                                                                                                                      |                                                                                                  | DATE SEP 30 2004                                          | <b>PAGE</b> 7 of 19   |  |
|   |                                                                                                                                                      |                                                                                                                                                                                      |                                                                                                  |                                                           | INITIALS              |  |
|   | 4.10 <u>WHEN</u> required Refueling Level as directed by Shift APPLIES/NA<br>Manager is reached, <u>THEN</u> STOP draining and PERFORM<br>following: |                                                                                                                                                                                      |                                                                                                  |                                                           |                       |  |
|   |                                                                                                                                                      | 1.                                                                                                                                                                                   | STABILIZE Refueling Level.                                                                       |                                                           | STABILIZED            |  |
|   |                                                                                                                                                      | 2.                                                                                                                                                                                   | OPERATE RHR-101/CV-31116, RHR H<br>in MAN.                                                       | low Control Bypass,                                       | MAN                   |  |
|   |                                                                                                                                                      | 3. <u>IF</u> fuel is in the reactor, <u>THEN</u> MAINTAIN RHR flow MAINTAINING/<br>at approximately 1800 gpm for one pump operation NA<br><u>OR</u> 2800 gpm for two pump operation. |                                                                                                  |                                                           |                       |  |
|   | NOTE: Letdown will be lost when RHR Pump is stopped.                                                                                                 |                                                                                                                                                                                      |                                                                                                  |                                                           |                       |  |
|   |                                                                                                                                                      | 4.                                                                                                                                                                                   | <u>IF</u> fuel is removed from the rea<br>are <u>NOT</u> required, <u>THEN</u> STOP RHI<br>AUTO. | ictor <u>AND</u> RHR Pumps<br>R Pumps <u>AND</u> PLACE in | STOPPED in<br>AUTO/NA |  |
|   |                                                                                                                                                      | 5.                                                                                                                                                                                   | (CAS) <u>IF</u> required to reinitiato<br><u>THEN</u> PERFORM the following:                     | e RHR flow,                                               | APPLIES/NA            |  |
|   |                                                                                                                                                      |                                                                                                                                                                                      | a. STATION an operator at RHR<br>for cavitation while estab                                      | Pumps to monitor<br>ishing RHR flow.                      | STATIONED             |  |
|   |                                                                                                                                                      |                                                                                                                                                                                      | b. VERIFY the following CLOSE                                                                    | ):                                                        |                       |  |
|   |                                                                                                                                                      |                                                                                                                                                                                      | • RHR-8A/CV-31114, RHR Flow                                                                      | r Control Hx A Outl                                       | CLOSED                |  |
|   |                                                                                                                                                      |                                                                                                                                                                                      | • RHR-8B/CV-31115, RHR Flow                                                                      | r Control Hx A Outl                                       | CLOSED                |  |
|   |                                                                                                                                                      |                                                                                                                                                                                      | c. ADJUST RHR-101/CV-31116, R<br>Bypass, to 10%.                                                 | IR Flow Control                                           | 10%                   |  |
|   |                                                                                                                                                      |                                                                                                                                                                                      | d. START RHR Pump A(B). Obser<br>Step 2.1.8 and 2.0, Step 2<br>Step 2.2.2.                       | rve Precautions 2.0,<br>1.13 and 2.0,                     | STARTED               |  |
|   |                                                                                                                                                      |                                                                                                                                                                                      | e. ADJUST RHR-8A(B) and RHR-10<br>required RCS flow and temp                                     | )1 to establish<br>erature control.                       | ADJUSTED              |  |
|   |                                                                                                                                                      | 6.                                                                                                                                                                                   | <u>IF</u> RHR Pumps are OFF <u>AND</u> Charg<br>required, <u>THEN</u> STOP Charging P            | ing Pumps are <u>NOT</u><br>umps as follows:              | APPLIES/NA            |  |
|   |                                                                                                                                                      |                                                                                                                                                                                      | a. ADJUST Controller Out to O                                                                    | G .                                                       | 0%                    |  |
|   |                                                                                                                                                      |                                                                                                                                                                                      | CONTINU                                                                                          | <u>ED</u>                                                 |                       |  |
|   |                                                                                                                                                      |                                                                                                                                                                                      |                                                                                                  |                                                           |                       |  |

| WISCONSIN PUBLIC SERVICE CORPORATION |                   |                                                                                                             | <b>NO.</b> N-RHR-34C                                    |                     |  |
|--------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|---------------------|--|
| KEWAUNEE NUCLEAR POWER PLANT         |                   |                                                                                                             | TITLE RHR Operation At A Reduced<br>Inventory Condition |                     |  |
| OPERATING PROCEDURE                  |                   |                                                                                                             | DATE SEP 30 2004                                        | <b>PAGE</b> 8 of 19 |  |
|                                      |                   |                                                                                                             |                                                         | INITIALS            |  |
| 4.10.6<br><u>CONTINUED</u>           | <u>)</u>          |                                                                                                             |                                                         |                     |  |
|                                      | b                 | . STOP Charging Pump.                                                                                       |                                                         | STOPPED             |  |
| 7                                    | 7. ()<br>Ci<br>P: | CAS) <u>IF</u> refueling water level<br>harging Pump leak through, <u>THE</u><br>ump(s) suction as follows: | increases due to<br><u>EN</u> ISOLATE Charging          | APPLIES/NA          |  |
|                                      | а                 | . VERIFY all Charging Pumps s                                                                               | stopped.                                                | STOPPED             |  |
|                                      | b                 | . OPEN CVC-301/MV-32056, RWST<br>Pumps.                                                                     | 「Supply to Charging                                     | OPEN                |  |
|                                      | С                 | . CLOSE CVC-1/MV-32057, VCT S<br>Pumps.                                                                     | Supply to Charging                                      | CLOSED              |  |
|                                      | d                 | . CLOSE CVC-301.                                                                                            |                                                         | CLOSED              |  |
| 8                                    | B. (1<br><u>T</u> | CAS) <u>IF</u> required to reinitiate<br><u>HEN</u> PERFORM the following:                                  | e charging,                                             | APPLIES/NA          |  |
|                                      | a                 | . OPEN <u>ONE</u> of the following:                                                                         |                                                         |                     |  |
|                                      |                   | <ol> <li>CVC-1/MV-32057, VCT Sup<br/>Pumps</li> </ol>                                                       | oply to Charging                                        | OPEN/NA             |  |
|                                      |                   | <u>OR</u>                                                                                                   |                                                         |                     |  |
|                                      |                   | 2. CVC-301/MV-32056, RWST<br>Pumps.                                                                         | Supply to Charging                                      | OPEN/NA             |  |
|                                      | b                 | . START Charging Pump.                                                                                      |                                                         | STARTED             |  |
|                                      | С                 | . ADJUST Charging Pump speed required flow.                                                                 | to establish                                            | ADJUSTED            |  |
| 9                                    | ). M.<br>Cl       | AINTAIN constant Refueling Lev<br>harging and Letdown as follow:                                            | vel by balancing                                        | MAINTAINING         |  |
|                                      | a                 | . MAINTAIN constant Letdown f                                                                               | flow.                                                   |                     |  |
|                                      |                   | AND                                                                                                         |                                                         |                     |  |
|                                      | b                 | . MAINTAIN constant VCT Level<br><u>CONTINUE</u>                                                            | <u>ED</u>                                               |                     |  |
|                                      |                   |                                                                                                             |                                                         |                     |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                       | NO. N-RHR-34C                                                                                   |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--|--|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                               | TITLE RHR Operation At A Reduced<br>Inventory Condition                                         |  |  |  |  |  |  |
| OPERATING PROCEDURE                                                                                                        | DATE SEP 30 2004 PAGE 9 of 19                                                                   |  |  |  |  |  |  |
|                                                                                                                            | INITIALS                                                                                        |  |  |  |  |  |  |
| 4.10<br>CONTINUED                                                                                                          |                                                                                                 |  |  |  |  |  |  |
| 10. MAINTAIN RCS temperature at less than or equal to ≤ 120°F<br>120°F.                                                    |                                                                                                 |  |  |  |  |  |  |
| 4.11 ESTABLISH "New Setpoints" for parameters listed on ESTABLISHED<br>TLA-18 Log.                                         |                                                                                                 |  |  |  |  |  |  |
| 4.12 VERIFY "New Setpoints" including tolerances do <u>NOT</u> VERIFIED<br>exceed Acceptable Operating Region of FIGURE 1. |                                                                                                 |  |  |  |  |  |  |
| 4.13 <u>IF</u> shifting RHR Pumps is required, following:                                                                  | 4.13 <u>IF</u> shifting RHR Pumps is required, <u>THEN</u> PERFORM the APPLIES/NA<br>following: |  |  |  |  |  |  |
| <ol> <li>VERIFY RHR-101/CV-31116, RHR F<br/>in MAN.</li> </ol>                                                             | low Control Bypass MAN                                                                          |  |  |  |  |  |  |
| 2. <u>WHEN</u> starting standby pump, <u>TH</u><br>to minimize possibility of vor<br>increased flow. (Refer to FIG         | <u>EN</u> REDUCE RHR flow REDUCED<br>texing due to<br>URE 1).                                   |  |  |  |  |  |  |
| 3. START standby pump and VERIFY<br>Observe Precautions 2.0, Step<br>Step 2.1.13 and 2.0, Step 2.2.                        | operation. COMPLETED<br>2.1.8 and 2.0,<br>2.                                                    |  |  |  |  |  |  |
| 4. STOP operating pump.                                                                                                    | STOPPED                                                                                         |  |  |  |  |  |  |
| 5. POSITION the following as requ                                                                                          | ired: COMPLETED                                                                                 |  |  |  |  |  |  |
| • RHR-101/CV-31116 RHR Flow C<br>• RHR-8A/CV-31114 RHR Flow C<br>• RHR-8B/CV-31115 RHR Flow c                              | ontrol Bypass<br>ontrol Hx A Outl<br>ontrol Hx B Outl                                           |  |  |  |  |  |  |
|                                                                                                                            |                                                                                                 |  |  |  |  |  |  |
|                                                                                                                            |                                                                                                 |  |  |  |  |  |  |
|                                                                                                                            |                                                                                                 |  |  |  |  |  |  |
|                                                                                                                            |                                                                                                 |  |  |  |  |  |  |
|                                                                                                                            |                                                                                                 |  |  |  |  |  |  |
|                                                                                                                            |                                                                                                 |  |  |  |  |  |  |
|                                                                                                                            |                                                                                                 |  |  |  |  |  |  |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                            | NO. N-RHR-34C                                           |                      |  |
|-------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------------|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                    | TITLE RHR Operation At A Reduced<br>Inventory Condition |                      |  |
| OPERATING PROCEDURE                                                                             | DATE SEP 30 2004                                        | <b>PAGE</b> 10 of 19 |  |
|                                                                                                 |                                                         | <u>INITIALS</u>      |  |
| 4.14 Refilling RCS up to 6" below Vesse                                                         | l flange.                                               |                      |  |
| 1. RECORD required refueling leve                                                               | l hold point.                                           | %                    |  |
| 2. VERIFY RCS vent path establish                                                               | ed:                                                     |                      |  |
| a. EITHER of the following sa                                                                   | tisfied:                                                |                      |  |
| 1. At least one Pressuriz                                                                       | er Safety REMOVED                                       | REMOVED/NA           |  |
| <u>OR</u>                                                                                       |                                                         |                      |  |
| 2. BOTH of the following                                                                        | valves OPEN:                                            |                      |  |
| • PR33A/SV-33660, Przr                                                                          | Head Vent Train A                                       | OPEN/NA              |  |
| • PR33B/SV-33661, Przr                                                                          | Head Vent Train B                                       | OPEN/NA              |  |
| b. RC-45A/SV-33658, Reactor H<br>OPEN.                                                          | ead Vent Train A,                                       | OPEN                 |  |
| c. RC-45B/SV-33659, Reactor H<br>OPEN.                                                          | ead Vent Train B,                                       | OPEN                 |  |
| d. RC-49/SV-33662, Rx/Przr He<br>Containment, OPEN.                                             | ad Vent to                                              | OPEN                 |  |
| <u>NOTE</u> : High fill rates, (i.e. 60 g<br>amount of time to equalize<br>pressure.            | pm) may require an exte<br>head to atmosphere           | nded                 |  |
| <ol> <li>ADJUST LD-10/CV-31099, Letdown<br/>establish 5-10 gpm letdown flow</li> </ol>          | Cont Pressure, to<br>w.                                 | ADJUSTED             |  |
| <ol> <li>ADJUST Charging Pump speed to<br/>fill rate (charging flow great<br/>flow).</li> </ol> | achieve the required<br>er than letdown                 | ADJUSTED             |  |
| CONTINU                                                                                         | ED                                                      |                      |  |
|                                                                                                 |                                                         |                      |  |
| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                             | NO. N-RHR-34C                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                     | TITLE RHR Operation At A Reduced Inventory Condition                                                          |
| OPERATING PROCEDURE                                                                                                                                              | DATE SEP 30 2004 PAGE 11 of 19                                                                                |
|                                                                                                                                                                  | INITIALS                                                                                                      |
| 4.14<br>CONTINUED                                                                                                                                                |                                                                                                               |
| <u>NOTE</u> : Per Westinghouse letter, WPS<br>A&B RXCP seal injection flow<br>than or equal to 20 gpm per<br>(less than 72 hours) when p<br>80 gpm letdown flow. | S-98-043, dated 10-09-98,<br>w may be increased to less<br>pump for short duration<br>lant conditions require |
| 5. <u>IF</u> RXCP seal injection is requi<br>CVC-7/CV-31101, Charging Contro<br>maintain 6-13 gpm seal injectio<br>Reactor Coolant Pump.                         | ired, <u>THEN</u> ADJUST ADJUSTED/NA<br>ol Chg Line, to<br>on flow to each                                    |
| <u>NOTE</u> : Preferred make-up source to<br>This may help reduce overal <sup>1</sup>                                                                            | the VCT is the RWST.<br>I volume of liquid waste.                                                             |
| 6. (CAS) <u>WHEN</u> VCT level is less th<br>PERFORM one of the following:                                                                                       | nan 25%, <u>THEN</u>                                                                                          |
| a. ALIGN Charging Pump suction<br>follows:                                                                                                                       | n to the RWST as                                                                                              |
| <ol> <li>OPEN CVC-301/MV-32056,<br/>Charging Pumps.</li> </ol>                                                                                                   | RWST Supply to OPEN/NA                                                                                        |
| 2. CLOSE CVC–1/MV–32057, V<br>Charging Pumps.                                                                                                                    | /CT Supply to CLOSED/NA                                                                                       |
| 3. VERIFY charging flow.                                                                                                                                         | VERIFIED/NA                                                                                                   |
| <u>OR</u>                                                                                                                                                        |                                                                                                               |
| b. VERIFY Reactor Makeup Contr<br>to maintain VCT level 17-28                                                                                                    | rol System in AUTO AUTO/NA<br>3%.                                                                             |
| 7. <u>WHEN</u> required Refueling Level i<br>PERFORM the following:                                                                                              | s reached, <u>THEN</u>                                                                                        |
| a. BALANCE Charging and Letdow<br>Refueling and VCT levels co                                                                                                    | n flows to maintain BALANCED                                                                                  |
| b. ADJUST CVC-7 as necessary t<br>seal injection flow to each<br>Pump.<br><u>CONTINUE</u>                                                                        | co maintain 6-13 gpm ADJUSTED/NA<br>a Reactor Coolant<br><u>:D</u>                                            |
|                                                                                                                                                                  |                                                                                                               |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                        | NO. N-RHR-34C                                            |
|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                | TITLE RHR Operation At A Reduced<br>Inventory Condition  |
| OPERATING PROCEDURE                                                                                         | DATE SEP 30 2004 PAGE 12 of 19                           |
|                                                                                                             | INITIALS                                                 |
| 4.14.7                                                                                                      |                                                          |
| <u>CONTINUED</u>                                                                                            |                                                          |
| c. <u>IF</u> required to ALIGN Charge<br>VCT, <u>THEN</u> PERFORM the follo                                 | ing Pump suction to APPLIES/NA owing:                    |
| 1. OPEN CVC-1.                                                                                              | OPEN                                                     |
| 2. CLOSE CVC-301.                                                                                           | CLOSED                                                   |
| 3. VERIFY charging flow.                                                                                    | VERIFIED                                                 |
| 4.15 <u>WHEN</u> required to fill reactor cavit<br>N-FH-53D.                                                | ty. <u>THEN GO TO</u> TRANSITIONED/NA                    |
| 4.16 <u>WHEN</u> required to fill above the ver<br>after the Reactor Vessel Head has PERFORM the following: | ssel flange, <u>THEN</u> APPLIES/NA<br>been reinstalled, |
| 1. RECORD required Przr Cold Cal                                                                            | level hold point%                                        |
| 2. Locally, VERIFY the following:                                                                           |                                                          |
| a. Reactor Vessel Head Vent s<br>INSTALLED.                                                                 | pool piece INSTALLED                                     |
| b. RC-43, Reactor Vessel Head                                                                               | Vent valve, OPEN. OPEN                                   |
| c. RC-43-1, Reactor Vessel He<br>CLOSED and CAPPED.                                                         | ad Vent Drain valve, CLOSED and<br>CAPPED                |
| d. RC-43-2, Reactor Vessel He<br>Bypass valve, OPEN.                                                        | ad Vent Orifice OPEN                                     |
| e. RC-44, Rx Head Vent SV Iso                                                                               | lation valve, OPEN. OPEN                                 |
| f. RC-45-1, Rx Head/Przr Vent<br>CLOSED.                                                                    | Hdr Drain valve, CLOSED                                  |
| g. RC-49-1, Rx Head/Przr Vent<br>valve, CLOSED.                                                             | to Cntmt Drain CLOSED                                    |
| h. PR-32, Przr Vent SV Isolat                                                                               | ion valve, OPEN. OPEN                                    |
| CONTINU                                                                                                     | ED                                                       |
|                                                                                                             |                                                          |

| WIS                   | CONSIN      | PUBLIC SERVICE CORPORATION                                                                                                                         | NO. N-RHR-34C                                                                                      |                            |
|-----------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------|
| ]                     | KEWAI       | JNEE NUCLEAR POWER PLANT                                                                                                                           | TITLE RHR Operatio<br>Inventory Co                                                                 | n At A Reduced<br>Indition |
| •                     | OP          | ERATING PROCEDURE                                                                                                                                  | <b>DATE</b> SEP 30 2004                                                                            | <b>PAGE</b> 13 of 19       |
|                       |             |                                                                                                                                                    |                                                                                                    | INITIALS                   |
| 4.16<br><u>CONTIN</u> | <u>IUED</u> |                                                                                                                                                    |                                                                                                    |                            |
| 1                     | 3.          | VERIFY RCS vent path is establ                                                                                                                     | ished:                                                                                             |                            |
| ]                     |             | a. VERIFY at least ONE of the satisfied:                                                                                                           | following is                                                                                       |                            |
| 1                     |             | 1. Pressurizer Safeties R                                                                                                                          | EMOVED                                                                                             | REMOVED/NA                 |
|                       |             | <u>OR</u>                                                                                                                                          |                                                                                                    |                            |
| Ι                     |             | 2. BOTH Pressurizer Head                                                                                                                           | Vent valves OPEN: B                                                                                | OTH OPEN/NA                |
|                       |             | <ul> <li>PR33A/SV-33660, Przr</li> <li>PR33B/SV-33661, Przr</li> </ul>                                                                             | Head Vent Train A<br>Head Vent Train B                                                             |                            |
|                       |             | b. RC-45A/SV-33658, Reactor He<br>OPEN.                                                                                                            | ead Vent Train A,                                                                                  | OPEN                       |
|                       |             | c. RC-45B/SV-33659, Reactor He<br>OPEN.                                                                                                            | ead Vent Train B,                                                                                  | OPEN                       |
|                       | <u>NOTE</u> | : High fill rates, (i.e. 60 g<br>amount of time to equalize<br>pressure.                                                                           | pm) may require an ext<br>head to atmosphere                                                       | ended                      |
|                       | 4.          | ADJUST LD-10/CV-31099, Letdown<br>establish 5-10 gpm letdown flow                                                                                  | Cont Pressure, to<br>M.                                                                            | ADJUSTED                   |
|                       | 5.          | ADJUST Charging Pump speed to a fill rate (charging flow greate flow).                                                                             | achieve the required<br>er than letdown                                                            | ADJUSTED                   |
|                       | <u>NOTE</u> | E: Per Westinghouse letter, WPS<br>A&B RXCP seal injection flow<br>than or equal to 20 gpm per<br>(less than 72 hours) when p<br>gpm letdown flow. | S-98-043, dated 10-09-<br>w may be increased to<br>pump for short durati<br>lant conditions requir | 98,<br>less<br>on<br>e 80  |
|                       | 6.          | <u>IF</u> RXCP seal injection is required CVC-7/CV-31103, Charging Contromaintain 6-13 gpm seal injection Reactor Coolant Pump.                    | ired, <u>THEN</u> ADJUST<br>ol Chg Line, to<br>on flow to each                                     | ADJUSTED/NA                |
|                       |             | CONTINU                                                                                                                                            | ED                                                                                                 |                            |

| WISCONSI         | N PUBLIC SERVICE CORPORATION                                              | NO. N-RHR-34C                                         |
|------------------|---------------------------------------------------------------------------|-------------------------------------------------------|
| KEWA             | UNEE NUCLEAR POWER PLANT                                                  | TITLE RHR Operation At A Reduced Inventory Condition  |
| OF               | PERATING PROCEDURE                                                        | DATE SEP 30 2004 PAGE 14 of 19                        |
|                  |                                                                           | INITIALS                                              |
| 4.16             |                                                                           |                                                       |
| <u>CONTINUED</u> |                                                                           |                                                       |
| <u>NOT</u>       | <u>E</u> : Preferred make-up source to<br>may help reduce overall vol     | the VCT is the RWST. This ume of liquid waste.        |
| 7.               | (CAS) <u>WHEN</u> VCT level is less t<br>PERFORM one of the following:    | han 25%, <u>THEN</u>                                  |
|                  | a. VERIFY Reactor Makeup Cont<br>to maintain VCT level 17-2               | rol System in AUTO AUTO/NA<br>8%                      |
|                  | <u>OR</u>                                                                 |                                                       |
|                  | b. ALIGN Charging Pump suction<br>follows:                                | n to the RWST as APPLIES/NA                           |
|                  | <ol> <li>OPEN CVC-301/MV-32056,<br/>Charging Pumps.</li> </ol>            | RWST Supply to OPEN                                   |
|                  | 2. CLOSE CVC-1/MV-32057,<br>Charging Pumps.                               | VCT Supply to CLOSED                                  |
|                  | 3. VERIFY charging flow.                                                  | VERIFIED                                              |
| 8.               | <u>WHEN</u> required Przr Level Cold<br>PERFORM the following:            | Cal is reached, <u>THEN</u>                           |
|                  | a. BALANCE Charging and Letdo<br>Refueling and VCT levels o               | wn flows to maintain BALANCED<br>constant.            |
|                  | b. ADJUST CVC-7 as necessary<br>seal injection flow to eac<br>Pump.       | to maintain 6-13 gpm ADJUSTED/NA<br>h Reactor Coolant |
| 1                | c. <u>IF</u> required to ALIGN Charg<br>VCT, <u>THEN</u> PERFORM the foll | ing Pump suction to APPLIES/NA<br>owing:              |
|                  | 1. OPEN CVC-1.                                                            | OPEN                                                  |
|                  | 2. CLOSE CVC-301.                                                         | CLOSED                                                |
|                  | 3. VERIFY charging flow.                                                  | VERIFIED                                              |

|                                                                                          | NO. N-RHR-34C                         |                        |
|------------------------------------------------------------------------------------------|---------------------------------------|------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                             | TITLE RHR Operation<br>Inventory Cond | At A Reduced<br>lition |
| OPERATING PROCEDURE                                                                      | DATE SEP 30 2004                      | <b>PAGE</b> 15 of 19   |
|                                                                                          |                                       | INITIALS               |
| <u>NOTE</u> : Use of SOP-RC-36-4 may require PO                                          | RC approval.                          |                        |
| 4.17 <u>WHEN</u> required to fill and vent the condition, <u>THEN</u> PERFORM one of the | RCS from midloop<br>following:        |                        |
| 1. SOP-RC-36-4                                                                           | PEF                                   | RFORMED/NA             |
| <u>OR</u>                                                                                |                                       |                        |
| <pre>2. <u>IF</u> required to PERFORM N-RC-36 following:</pre>                           | D, <u>THEN</u> PERFORM the /          | APPLIES/NA             |
| a. FILL RCS per Step 4.14 to inventory.                                                  | exit reduced                          | FILLED                 |
| b. CLEAR Tags placed in Step                                                             | 4.1.                                  | CLEARED                |
| c. <u>GO</u> <u>TO</u> N-RC-36D.                                                         | TR/                                   | NSITIONED              |
|                                                                                          |                                       |                        |

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| WISCON                 | ISIN PUBLIC          | SERVICE COR            | RPORATION NO. N-RHR-34C                                                                                                                                                                                                                                                                 |
|------------------------|----------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KEV                    | VAUNEE NU            | CLEAR POWEF            | R PLANT RHR Operation At A Reduced<br>Inventory Condition                                                                                                                                                                                                                               |
|                        | OPERATIN             | G PROCEDU              | RE DATE SEP 30 2004 PAGE 16 of 19                                                                                                                                                                                                                                                       |
|                        | <u>LTA</u>           | ACHMENT A -            | REACTOR VESSEL LEVEL REFERENCE SHEET<br>(Page 1 of 2)                                                                                                                                                                                                                                   |
| <u>VESSEL</u><br>7.95% | <u>RVLIS</u><br>0.0% | <u>TYGON</u><br>(252") | <u>DESCRIPTION</u><br>Bottom of RVLIS instrument range.                                                                                                                                                                                                                                 |
| 9.0%                   | 4.1%                 | (259")                 | Inlet to RHR System from Hotleg                                                                                                                                                                                                                                                         |
| 10.2%                  | 8.8%                 | (266")                 | Centerline of hotleg: centerline of surge line at the<br>hotleg: centerline of RXCPs discharge pipe:centerline<br>of Rx Vessel safety injection nozzles: centerline of Rx<br>Vessel inlet and outlet nozzles. (PO420A will indicate<br>approx 11 psig with zero pressure on the system) |
| 12.38%                 | 17.3%                | (280.5")               | Top of hot leg nozzles - mid-loop condition                                                                                                                                                                                                                                             |
| 13.0%                  | 19.7%                | (284.5")               | Limit RHR flow to less than 3000 gpm. S/G Tubes remain filled.                                                                                                                                                                                                                          |
| 13.1%                  | 20.1%                | (285")                 | Bottom of manway opening                                                                                                                                                                                                                                                                |
| 15.0%                  | 27.5%                | (297.5")               | Level of RXCP seals                                                                                                                                                                                                                                                                     |
| 16.0%                  | 31.4%                | (304")                 | 36" below Rx Vessel flange - reduced inventory condition                                                                                                                                                                                                                                |
| 16.9%                  | 34.9%                | (310")                 | 30" below the Rx Vessel flange                                                                                                                                                                                                                                                          |
| 17.0%                  | 35.3%                | (311")                 | Entry Conditions for N-RHR-34C                                                                                                                                                                                                                                                          |
| 19.7%                  | 45.8%                | (328")                 | 12" below Rx Vessel flange. Containment Equipment Hatch<br>Shall be closed.                                                                                                                                                                                                             |
| 20.6%                  | 49.3%                | (334")                 | 6" below the Rx Vessel flange                                                                                                                                                                                                                                                           |
| 21.5%                  | 52.8%                | (340")                 | Rx Vessel flange                                                                                                                                                                                                                                                                        |
| 25.8%                  | 69.6%                | (368")                 | Przr surge nozzle                                                                                                                                                                                                                                                                       |
| 30.8%                  | 89.0%                | (400")                 | Highpoint of the Rx Vessel Head                                                                                                                                                                                                                                                         |
| 33.4%                  | 99.0%                | (417")                 | Rx Vessel vent RC-43                                                                                                                                                                                                                                                                    |
| 33.65%                 | 100.0%               | (419")                 | Top of RVLIS instrument range                                                                                                                                                                                                                                                           |
| 34.3%                  |                      | (423")                 | Przr lower instrument tap                                                                                                                                                                                                                                                               |
| 64.0%                  |                      | (616")                 | 23 feet above Rx Vessel flange                                                                                                                                                                                                                                                          |
| 66.3%                  |                      | (631")                 | Inlet to upender cable trough                                                                                                                                                                                                                                                           |
| 68.5%                  |                      | (645")                 | Reactor Building refueling floor                                                                                                                                                                                                                                                        |

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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                    | NO. N-RHR-34C                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                            | TITLE RHR Operation At A Reduced Inventory Condition                                                                                                                  |
| OPERATING PROCEDURE                                                                                                                                                     | DATE SEP 30 2004 PAGE 17 of 19                                                                                                                                        |
| <u>ATTACHMENT A - REACTOR VES</u><br>(Page 2                                                                                                                            | SEL LEVEL REFERENCE SHEET<br>of 2)                                                                                                                                    |
| Rx Level Transmitter (24068) at 595'<br>(200 INWC = 10 MV = 0% at                                                                                                       | -8" elevation, Range = 200-850 INWC<br>612'-4" elevation)                                                                                                             |
| $1\% = 6.5 \text{ INWC}$ % = $\frac{\text{INWC} - 20}{6.5}$                                                                                                             | $\underline{0}$ INWC = (%)(6.5) + 200                                                                                                                                 |
| (Inches of Water) x (0.03613) = psi                                                                                                                                     | (Feet of Water) x (0.4335) = psi                                                                                                                                      |
| With Pressurizer full and zero press                                                                                                                                    | ure (P0420A) will indicate 21.0 psi                                                                                                                                   |
| PRZR Level indications during draindown fr                                                                                                                              | om solid condition                                                                                                                                                    |
| <ol> <li>PRZR hot cal levels start decreasing from level reaches 60%.</li> </ol>                                                                                        | om 100% indicated level when PRZR cold cal                                                                                                                            |
| 2. Draindown from solid condition to 17% P                                                                                                                              | RZR level equals 18% level change in CVC HUT.                                                                                                                         |
| 3. 10% PRZR cold cal level equals 36.4% ve                                                                                                                              | ssel level.                                                                                                                                                           |
| Draining to the Center of the Hot Leg Pene                                                                                                                              | <u>trations Piping (past experience)</u>                                                                                                                              |
| <ol> <li>A substantial amount of water is trapped<br/>completely drained until the Przr surge<br/>RCS to the center line of the hot leg not</li> </ol>                  | d in the S/G tubes. This water can NOT be<br>line is uncovered. It is necessary to drain<br>ozzles to ensure that the S/G tubes are empty.                            |
| <ol> <li>Level will decrease at a steady rate.<br/>will occur as the surge line empties.</li> </ol>                                                                     | WHEN the Przr empties, a rapid drop in level                                                                                                                          |
| 3. Continue to drain. Level again will de<br>surge line penetration to B RCS loop is<br>almost constant. It will decrease and<br>tubes is drained. S/G Tubes contain ab | crease at a steady rate until the top of the<br>reached. At this point level will remain<br>increase slightly as the water in the S/G<br>out 12.342 gallons of water. |
| 4. Continue to drain. Level will indicate<br>empty. WHEN the tubes are empty, level<br>to the center line of the hot leg vesse<br>(10.2% on Reactor Level Indicator)    | a very slow downward trend as the S/G tubes<br>will again decrease at a steady rate. Drain<br>l penetrations.                                                         |
| 5. Rx Vessel level change vs CVCS HUT level<br>Change in vessel from 20.6% to 16% =<br>Change in vessel from 16% to 12.5% =<br>Change in vessel from 12.5% to S/G tube  | l change:<br>5% change in HUT<br>5% change in HUT<br>s empty = 37.5% change in HUT                                                                                    |
|                                                                                                                                                                         |                                                                                                                                                                       |





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|---------------|-------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------------------------|---------------------------------|---------------------------------------|
| الألوي وتسملة | KEWAUNEE NUCLEAR POWER PLANT                                                                                | TITLE                          | Requirements<br>Inventory Che       | For Entering<br>cklist          | Reduce                                |
|               | OPERATING PROCEDURE                                                                                         | DATE                           | APR 01 2003                         | PAGE 1 c                        | of 2                                  |
|               | REVIEWED BY Duill                                                                                           | APPR                           | oved by                             | $\mathcal{A}$                   |                                       |
|               | NUCLEAR SAFETY RELATED NO                                                                                   | YES                            | SRO APPROV<br>TEMPORARY<br>REQUIRED | \<br>AL OF<br>CHANGES □         | YES                                   |
| 1.0           | DATE                                                                                                        |                                |                                     | FIR<br><u>OPE</u>               | ST SEC<br>R <u>OPE</u>                |
| 1. ·          | 1.1 VERIFY plant is in one of the follow                                                                    | ing mode                       | es:                                 |                                 |                                       |
|               | 1. Cold Shutdown Mode                                                                                       |                                | S                                   | COLD<br>Hutdown/na              |                                       |
|               | <u>OR</u><br>2. Refueling Shutdown Mode                                                                     |                                | S                                   | REFUELI№G<br>HUTDOWN/NA         |                                       |
| 1             | 1.2 VERIFY RHR is in normal cooldown mode                                                                   | e of ope                       | eration.                            | VERIFIED                        |                                       |
| 1             | 1.3 VERIFY one of the following satisfier                                                                   | d:                             |                                     |                                 |                                       |
| <b>I</b> ., , | 1. Containment Integrity is set.                                                                            |                                | V                                   | ERIFIED/NA                      |                                       |
|               | <u>OR</u>                                                                                                   | 7 .<br>                        |                                     |                                 |                                       |
|               | 2. Reduced Inventory Containment In<br>AND all open containment boundar<br>in the Open Boundary Tracking Lo | tegrity<br>ies are<br>g (N-CCI | is set V<br>recorded<br>[-56A].     | ERIFIED/NA                      |                                       |
|               | 1.4 VERIFY both of the following are sat                                                                    | isfied:                        |                                     |                                 |                                       |
|               | 1. One SI Pump is available.                                                                                |                                | (c                                  | SI Pump<br>A or B<br>ircle one) |                                       |
|               | AND                                                                                                         |                                |                                     |                                 | •                                     |
|               | 2. One other active source is availant inventory addition. (list source                                     | able for                       | - RCS )                             | VERIFIED                        |                                       |
|               |                                                                                                             |                                |                                     |                                 | · · · · · · · · · · · · · · · · · · · |

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| KEWAUNEE NUCLEAR POWER FLANT                                                      | TITLE Requirements For Entering Reduct<br>Inventory Checklist |
| OPERATING PROCEDURE                                                               | DATE APR 01 2003 PAGE 2 of                                    |
| DATE                                                                              | FIRST SE<br>OPER OP                                           |
| 1. The reactor has been shut dow<br><u>AND</u> an adequate vent path exi          | n for >60 hours VERIFIED/NA                                   |
| <u>OR</u><br>2. One S/G is available includin<br><u>AND</u> a steam release path. | g AFW services S/G A or B<br>(circle one)<br>/NA              |
| 1.6 VERIFY two independent RCS level<br>operable:                                 | indications are<br>9053A) is operable                         |
| AND<br>2. Either of the following is op                                           | erable:                                                       |
| a. Refueling Water Level B W<br><u>OR</u>                                         | R (L9054A)                                                    |
| b. Refueling Water Level NR                                                       | (L9055A) OPÉRABLE/NA                                          |
| 1.7 VERIFY at least two CETs are oper                                             | able.                                                         |
| List CET train and number and Hon<br>point ID:                                    | eywell Computer                                               |
| 18 VERIFY vent rig installed on RHR-<br>Containment to RHR Pumps-Vent (Nc         | 47. HDR Thru<br>orth Pen Room).                               |
| PERFORMED                                                                         | DATE                                                          |
| PERFORMED                                                                         | DATE                                                          |
| SHIFT MANAGER                                                                     | DATE                                                          |

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CONTINUOUS USE

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| WISCONSIN PUBLIC SERVICE C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ORPORATION                                                                                                                                                                             | <b>NO.</b> N-S                                                                                                                        | ER-52                                                | <b>REV</b> D                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-----------------------------------|
| KEWAUNEE NUCLEAR POW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ER PLANT                                                                                                                                                                               | TITLE R                                                                                                                               | Control Room<br>Recorder                             | Sequential Event                  |
| OPERATING PROCED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | URE                                                                                                                                                                                    | date M                                                                                                                                | IAR 06 2003                                          | PAGE 1 of 5                       |
| REVIEWED BY APPROVED BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                        |                                                                                                                                       |                                                      |                                   |
| NUCLEAR I YES<br>SAFETY RELATED INO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PORC REVIEW<br>REQUIRED                                                                                                                                                                | □ YES<br>⊠ NO                                                                                                                         | SRO APPROV<br>TEMPORARY<br>REQUIRED                  | AL OF XES<br>CHANGES NO           |
| <pre>1.0 INTRODUCTION<br/>1.1 This procedure descr<br/>Sequential Event Reco<br/>2.0 PRECAUTIONS AND LIMITATION<br/>2.1 The Emergency Plan In<br/>evaluate any loss of<br/>3.0 INITIAL CONDITIONS<br/>3.1 The following power s<br/>BRA-113 EXT. Ckt 1<br/>BRA-113 EXT. Ckt 4<br/>BRB-113 EXT. Ckt 6<br/>3.2 SER Printer has paper<br/>SER Printer has pap</pre> | ibes the norma<br>order (SER) du<br><u>NS</u><br>nplementing Pro<br>the SER System<br>supply breaker:<br>Annunciator<br>RR-189 SER &<br>Annunciator<br>RR-151 SER &<br>r installed and | l operation<br>ring shutdo<br>ocedures sh<br>m.<br>s are ON:<br>Lights Trai<br>Annunciato<br>Lights Trai<br>Annunciato<br>d is On-Lin | n A<br>or Train A<br>n B<br>or Train B<br>or Train B | rol Room<br>operation.<br>ewed to |

| WISC            | ONSI       | N PUBLIC                  | C SERVICE CORPORATION                                                                                          | NO.                                             | N-SER-52                                                     |              |             |
|-----------------|------------|---------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------|--------------------------------------------------------------|--------------|-------------|
| к               | EWA        | UNEE NU                   | ICLEAR POWER PLANT                                                                                             | TITLE Control Room Sequential Event<br>Recorder |                                                              |              |             |
|                 | 0          | PERATI                    | NG PROCEDURE                                                                                                   | DATE                                            | MAR 06 2003                                                  | PAGE 2       | <b>of</b> 5 |
|                 |            |                           |                                                                                                                |                                                 |                                                              |              |             |
| 4.0 <u>PROC</u> | EDUR       | E                         |                                                                                                                |                                                 |                                                              |              |             |
| 4.1             | <u>Sta</u> | <u>rtup</u>               |                                                                                                                |                                                 |                                                              |              |             |
|                 | 1.         | CONTAC                    | T the Plant Computer Gro                                                                                       | up for s                                        | ystem startup.                                               |              |             |
| 4.2             | <u>Ste</u> | <u>ady Sta</u>            | <u>te</u>                                                                                                      |                                                 |                                                              |              |             |
|                 | 1.         | . <u>Functional_Test:</u> |                                                                                                                |                                                 |                                                              |              |             |
|                 |            | a. DE                     | PRESS Functional Test an                                                                                       | d Enter j                                       | pushbuttons.                                                 |              |             |
|                 |            | b. SE<br>cu               | R will print Kewaunee Nu<br>rrent date/time to verif                                                           | clear Pla<br>y system                           | ant, Station Num<br>operation.                               | ber 1, and   |             |
|                 | 2.         | <u>Alarm</u>              | <u>Summary:</u>                                                                                                |                                                 |                                                              |              |             |
|                 |            | a. DE                     | PRESS Alarm Summary and                                                                                        | Enter pu                                        | shbuttons.                                                   |              |             |
|                 |            | <u>NOTE</u> :             | The SER will automatica<br>alarms and clears numer<br>of time. <u>WHEN</u> the poin<br>will be automatically r | lly disal<br>ous time:<br>t status<br>e-enable  | ble any point th<br>s in a short per<br>stabilizes, it<br>d. | nat<br>riod  |             |
|                 |            | b. SE<br>po               | R will print all points<br>ints that are automatica                                                            | currently<br>lly disa                           | y in alarm condi<br>bled.                                    | tion and any |             |
|                 | 3.         | <u>Point</u>              | <u>Status:</u>                                                                                                 |                                                 |                                                              |              |             |
|                 |            | a. DE<br>nu               | PRESS Point Status pushb<br>mber.                                                                              | utton and                                       | d ENTER required                                             | l SER point  |             |
|                 |            | b. DE                     | PRESS Enter pushbutton.                                                                                        |                                                 |                                                              |              |             |
|                 |            | c.SE<br>co                | R will print current Ena<br>ndition of SER point tha                                                           | ble/Disa<br>t was en                            | ble status and N<br>tered.                                   | lormal/Alarm |             |
|                 | 4.         | <u>Disabl</u>             | <u>e_Report:</u>                                                                                               |                                                 |                                                              |              | ł           |
|                 |            | a. DE                     | PRESS Disable Report and                                                                                       | Enter p                                         | ushbuttons.                                                  |              |             |
|                 |            | b. SE                     | R will print all points                                                                                        | that are                                        | currently disab                                              | oled.        |             |
|                 |            |                           | <u>CONTINU</u>                                                                                                 | <u>ED</u>                                       |                                                              |              |             |
|                 |            |                           |                                                                                                                |                                                 |                                                              |              |             |

| KEWAUNEE NUCLEAR POWER PLANT  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | TITLE Control Room Sequential Event<br>Recorder                                                                                            |                                                                                                                                                                                           |                                                                                                                  | nt   |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------|
| O                             | PERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | DATE                                                                                                                                       | MAR 06 2003                                                                                                                                                                               | PAGE 3                                                                                                           | of 5 |
| 4.2<br><u>CONTINUED</u><br>5. | <ul> <li>IF it is necessary to disable<br/>[PCR009311]</li> <li>a. COMPLETE top portion of At<br/>Form, identifying the SER<br/>reason for disabling SER p</li> <li>b. COMPLETE Technical Review</li> <li>c. DOCUMENT 50.59 review as f</li> <li>1. PERFORM 50.59 Review p<br/>Review And Pre-Screeni</li> <li>2. IF applicable, PERFORM<br/>Evaluation.</li> <li>3. ATTACH completed forms</li> <li>d. IF SER point is associated<br/>authorization from Transco</li> <li>e. OBTAIN Shift Manager approx<br/>SER point on Attachment A.</li> </ul> | a SER poi<br>tachment<br>point, as<br>ooint.<br>section o<br>follows:<br>per GNP-04<br>ng.<br>GNP-04.0<br>to Attac<br>with Kew<br>to disab | nt, PERFORM the<br>A, SER Point Di<br>sociated Alarm<br>of Attachment A.<br>4.04.01, 50.59 A<br>4.02, 50.59 Sci<br>chment A.<br>Yaunee substation<br>of affected point<br>ture to disable | e following:<br>sable/Enable<br>window, and<br>Applicability<br>reening And<br>on, REQUEST<br>int.<br>e affected |      |
|                               | <ul> <li><u>NOTE</u>: Key switch will spring</li> <li>f. INSERT key #206 into key s<br/>Enable/Disable.</li> <li>g. ENTER applicable SER point<br/>to complete the disable pr</li> <li>h. Individual disabling the S<br/>the time in the "Completed</li> </ul>                                                                                                                                                                                                                                                                                      | return to<br>witch and<br>number a<br>ocess.<br>ER point<br>I By" sect                                                                     | Normal.<br>I momentarily P(<br>and DEPRESS Ente<br>shall sign, dat<br>tion of Attachme                                                                                                    | DSITION to<br>er pushbutton<br>te and enter<br>ent A.                                                            |      |
|                               | i. PLACE Attachment A and ass<br>Point file in the Control<br><u>CONTIN</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ociated 5<br>Room.<br><u>IED</u>                                                                                                           | 0.59 forms in 1                                                                                                                                                                           | Disabled SER                                                                                                     |      |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NO. N-SER-52                                                                                                                                                                                                                                                                      |  |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>TITLE</b> Control Room Sequential Event<br>Recorder                                                                                                                                                                                                                            |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | DATE MAR 06 2003 PAGE 4 of 5                                                                                                                                                                                                                                                      |  |  |  |  |
| <ul> <li>4.2.5<br/><u>CONTINUED</u> <ol> <li><u>WHEN</u> reason for disabling reback in service as follows:</li> <li>OBTAIN Shift Manager apsend SER point on Attachment</li> <li>INSERT key #206 into keet to Enable/Disable.</li> <li>ENTER applicable SER perpenditude of the second se</li></ol></li></ul> | no longer applies, PLACE SER point<br>oproval signature to enable affected<br>t A.<br>ey switch and momentarily POSITION<br>oint number and DEPRESS Enter<br>enabling process.<br>e SER point shall sign, date and<br>'Completed By" section of<br>ated with Kewaunee substation, |  |  |  |  |
| 6. FORWARD completed Attac<br>to the Records Vault fo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | chment A and associated 50.59 forms or retention.                                                                                                                                                                                                                                 |  |  |  |  |
| 6. <u>Historical Report:</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                   |  |  |  |  |
| <u>NOTE</u> : Long term Historical dat<br>onto a hard copy by the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ta can be retrieved and put<br>Plant Computer Group.                                                                                                                                                                                                                              |  |  |  |  |
| a. DEPRESS Historical Report and ENTER the number of alarms to be reviewed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                   |  |  |  |  |
| b. DEPRESS Enter pushbutton.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                   |  |  |  |  |
| c. SER will print the previously received alarms up to the number<br>entered in step 4.2.6.a.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                   |  |  |  |  |
| 4.3 <u>Shutdown</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                   |  |  |  |  |
| <ol> <li>CONTACT the Plant Computer Grou<br/>components.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | up to shut down individual system                                                                                                                                                                                                                                                 |  |  |  |  |

| WISCONSIN PUBLIC SEF                                                                                                                                                                                                | <b>VICE CORPORATION</b>                                                                                                                                    | NO.                                                     | N-SER-52                                                 |           |       |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------|-----------|-------|------|
| KEWAUNEE NUCLE                                                                                                                                                                                                      | AR POWER PLANT                                                                                                                                             | TITLE                                                   | Control Room :<br>Recorder                               | Sequentia | al Ev | ent  |
| <b>OPERATING P</b>                                                                                                                                                                                                  | ROCEDURE                                                                                                                                                   | DATE                                                    | MAR 06 2003                                              | PAGE      | 5     | of 5 |
|                                                                                                                                                                                                                     | ATTACHMENT A - SE                                                                                                                                          | R POINT                                                 | DISABLE/ENABLE                                           | FORM      |       |      |
| SER Point:                                                                                                                                                                                                          |                                                                                                                                                            | Alarm                                                   | Window:                                                  |           |       |      |
| Reason for disablin                                                                                                                                                                                                 | g SER point:                                                                                                                                               |                                                         |                                                          |           |       |      |
| <u></u>                                                                                                                                                                                                             | Technica                                                                                                                                                   | 1 Review                                                |                                                          |           |       |      |
| Purpose of SER poin                                                                                                                                                                                                 | t:                                                                                                                                                         | <u> </u>                                                |                                                          |           |       |      |
|                                                                                                                                                                                                                     | F                                                                                                                                                          |                                                         |                                                          |           |       |      |
| Automatic Functions<br>Compensatory Action                                                                                                                                                                          | associated with SER<br>s required while SER                                                                                                                | point:<br>point i                                       | s disabled:                                              |           |       |      |
| Automatic Functions<br>Compensatory Action                                                                                                                                                                          | associated with SER<br>s required while SER                                                                                                                | point:                                                  | s disabled:                                              |           |       |      |
| Automatic Functions<br>Compensatory Action                                                                                                                                                                          | associated with SER<br>s required while SER<br>50.59                                                                                                       | point:<br>point i<br>Review                             | s disabled:                                              |           |       |      |
| Automatic Functions<br>Compensatory Action<br>50.59 Applicability<br>50.59 Pre-Screen For<br>50.59 Screen Form A<br>50.59 Evaluation Fo                                                                             | associated with SER<br>s required while SER<br>50.59<br>Form Attached? X<br>rm Attached?<br>rm Attached?<br>rm Attached?                                   | point:<br>point i<br>Review<br>Yes<br>Yes<br>Yes<br>Yes | s disabled:<br>No<br>No<br>No                            |           |       |      |
| Automatic Functions<br>Compensatory Action<br>50.59 Applicability<br>50.59 Pre-Screen For<br>50.59 Screen Form A<br>50.59 Evaluation Fo<br>Disable SER Point:                                                       | associated with SER<br>s required while SER<br>50.59<br>Form Attached? X<br>rm Attached?<br>ttached?<br>rm Attached?                                       | point:<br>point i<br>Review<br>Yes<br>Yes<br>Yes<br>Yes | s disabled:<br>No<br>No<br>No                            |           |       |      |
| Automatic Functions<br>Compensatory Action<br>50.59 Applicability<br>50.59 Pre-Screen For<br>50.59 Screen Form A<br>50.59 Evaluation Fo<br>Disable SER Point:<br>Approved By:                                       | associated with SER<br>s required while SER<br>50.59<br>Form Attached? X<br>rm Attached?                                                                   | point:<br>point i<br>Review<br>Yes<br>Yes<br>Yes<br>Yes | s disabled:<br>No<br>No<br>No<br>Date:                   |           |       |      |
| Automatic Functions<br>Compensatory Action<br>50.59 Applicability<br>50.59 Pre-Screen For<br>50.59 Screen Form A<br>50.59 Evaluation Fo<br>Disable SER Point:<br>Approved By:<br>Completed By:                      | associated with SER<br>s required while SER<br>50.59<br>Form Attached? X<br>rm Attached?<br>rm Attached?<br>rm Attached?<br>(Shift Manager)<br>(Signature) | point:<br>point i<br>Review<br>Yes<br>Yes<br>Yes        | s disabled:<br>No<br>No<br>No<br>Date: .<br>Date/Time: . |           |       |      |
| Automatic Functions<br>Compensatory Action<br>50.59 Applicability<br>50.59 Pre-Screen For<br>50.59 Screen Form A<br>50.59 Evaluation Fo<br>Disable SER Point:<br>Approved By:<br>Completed By:<br>Enable SER Point: | associated with SER<br>s required while SER<br>50.59<br>Form Attached? X<br>rm Attached?<br>ttached?<br>(Shift Manager)<br>(Signature)                     | point:<br>point i<br>Review<br>Yes<br>Yes<br>Yes        | s disabled:<br>No<br>No<br>No<br>Date:<br>Date:          |           |       |      |
| Automatic Functions<br>Compensatory Action<br>50.59 Applicability<br>50.59 Pre-Screen For<br>50.59 Screen Form A<br>50.59 Evaluation Fo<br>Disable SER Point:<br>Approved By:<br>Enable SER Point:<br>Approved By:  | associated with SER<br>s required while SER<br>50.59<br>Form Attached? X<br>rm Attached?                                                                   | point:<br>point i<br>Review<br>Yes<br>Yes<br>Yes        | s disabled:<br>No<br>No<br>Date:<br>Date/Time:           |           |       |      |

Complete Referenced Object Report

EOP Setpoints

RCS CORE EXIT TEMPERATURE

Setpoint ID: E.2

Setpoint Value: 700°F

Associated System/Component: RCS

WOG Footnote ID: G.03

**Revision:** 08/31/90

#### Short Description:

Temperature indicative of superheated conditions in the RCS

### Description:

Temperature indicative that superheated conditions exist in the RCS. This setpoint is used as a indication that the core cooling critical safety function may be in jeopardy.

### Display Data:

| INSTRUMENT | UNITS | RANGE | DIVISION | TYPE    | LOCATION |
|------------|-------|-------|----------|---------|----------|
|            |       |       |          |         |          |
| ICCM       | F     |       | 1        | DIGITAL |          |

#### Basis:

A series of generic analyses were performed to investigate recovery from inadequate core cooling conditions for Westinghouse PWR'S. A core exit temperature of 700°F was selected as an indication of superheat conditions in the RCS and was determined to be an appropriate symptom for initiation of certain recovery actions for all Westinghouse PWR's. The Kewaunee Nuclear Plant is similar to the generic plant design with respect to parameters which may significantly affect the symptoms of inadequate core cooling including thermocouple location, core design and safety valve pressure. Therefore, the generic setpoint value is applicable.

Rev. 1A of the Emergency Response Guidelines has modified this setpoint slightly. The setpoint is now 670°F plus instrument uncertainties or 700°F, whichever is higher. From Reference 2, the channel accuracy of the core exit T/Cs is +/- 3.1°F for normal containment conditions, and +/- 27.5°F for adverse containment conditions. Since the maximum error is less than 30°F, a value of 700°F is still appropriate for use in the IPEOPs.

Page 1

Complete Referenced Object Report

Page 2

### EOP Setpoints

RCS CORE EXIT TEMPERATURE (continued) Basis (continued)

#### References:

- Westinghouse Owners Group Emergency Response Guidelines Background Document F-0.2, CORE COOLING, Revision 1A, July 1987.
- 2) Instrument Uncertainty Analysis of Selected Channels Used in the Kewaunee IPEOPs, Page 64, Volian Enterprises, August 1989.

| WISCONSIN PUBLIC SERVICE C                                                                                                                                                                                                                                                                                        | NO. SP-                                                                                                                        | 36-082                                  | REV AE (FREQ W)                            |                                              |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|--------------------------------------------|----------------------------------------------|--|--|
| KEWAUNEE NUCLEAR POWER PLANT TITLE Reactor Coolant System Leak Ra<br>Check                                                                                                                                                                                                                                        |                                                                                                                                |                                         |                                            |                                              |  |  |
| SURVEILLANCE PROC                                                                                                                                                                                                                                                                                                 | EDURE                                                                                                                          | DATE 0                                  | CT 05 2004                                 | PAGE 1 of 14                                 |  |  |
| REVIEWED BY James J                                                                                                                                                                                                                                                                                               | James J Brown                                                                                                                  |                                         | VED BY                                     | Phillip A Short                              |  |  |
| NUCLEAR XES<br>SAFETY RELATED NO                                                                                                                                                                                                                                                                                  | PORC REVIEW<br>REQUIRED                                                                                                        | REVIEW SPROVAL<br>IRED INO REQUIRED     |                                            | AL OF YES<br>CHANGES NO                      |  |  |
|                                                                                                                                                                                                                                                                                                                   | DATE                                                                                                                           |                                         |                                            |                                              |  |  |
| 1.0 PLANT INITIAL CONDITIONS                                                                                                                                                                                                                                                                                      |                                                                                                                                |                                         |                                            |                                              |  |  |
| 1.1 Mass Balance Leakrat<br>whenever the Reactor<br>requirement can <u>NOT</u>                                                                                                                                                                                                                                    | e Calculation :<br>is at power o<br>be waived. [PC                                                                             | shall be pe<br>r in a Hot<br>R016655]   | rformed at 1<br>Shutdown con               | east weekly<br>dition. This                  |  |  |
| 1.2 Mass Balance Leakrat<br>the Reactor is at po<br>Manager may waive th<br>daily performance. [                                                                                                                                                                                                                  | e Calculation<br>wer or in a Ho<br>is requirement<br>PCR016655]                                                                | should be p<br>t Shutdown<br>if plant c | erformed dai<br>condition.<br>onditions do | ly whenever<br>The Shift<br><u>NOT</u> allow |  |  |
| 1.3 Reactor power and xe<br>Holdup Tanks will <u>NO</u>                                                                                                                                                                                                                                                           | non are stable<br><u>T</u> occur during                                                                                        | , such that<br>the test.                | letdown div                                | ersion to the                                |  |  |
| 2.0 PRECAUTIONS                                                                                                                                                                                                                                                                                                   |                                                                                                                                |                                         |                                            |                                              |  |  |
| 2.1 If one or more of th<br>must be repeated:                                                                                                                                                                                                                                                                     | e following ev                                                                                                                 | ents occur,                             | the test is                                | void and                                     |  |  |
| <ul> <li>Emergency boration</li> <li>Diversion of letdown to the Holdup Tanks</li> <li>Makeup from any source which does not go through the Boric Acid or<br/>Makeup Water totalizers</li> <li>Diversion of Excess Letdown to the RCDT</li> </ul>                                                                 |                                                                                                                                |                                         |                                            |                                              |  |  |
| <ul> <li>A Reactor Coolant<br/>sampling valves or</li> </ul>                                                                                                                                                                                                                                                      | <ul> <li>A Reactor Coolant System sample is taken via the C/R primary<br/>sampling valves or the HRSR manual valves</li> </ul> |                                         |                                            |                                              |  |  |
| 2.2 An increase in containment humidity is indicative of an external leak<br>from the Reactor Coolant System. However, since this is less<br>sensitive (2 gpm to 10 gpm) an increase in humidity due to a leak in<br>the Reactor Coolant System should also show a significant increase in<br>the other monitors. |                                                                                                                                |                                         |                                            |                                              |  |  |
| 2.3 If either the Contai<br>become inoperable, r                                                                                                                                                                                                                                                                  | nment Sump A L<br>efer to Sectio                                                                                               | evel Detect<br>n 6.0, Step              | ion System <u>O</u><br>6.4.                | I <u>R</u> Sump Pumps                        |  |  |
| 1                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |                                         |                                            |                                              |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | NO. SP-36-082                                                                                                            |  |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | TITLE Reactor Coolant System Leak Rate<br>Check                                                                          |  |  |  |  |  |  |  |
| SURVEILLANCE PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DATE OCT 05 2004 PAGE 2 of 14                                                                                            |  |  |  |  |  |  |  |
| DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                          |  |  |  |  |  |  |  |
| 3.0 LIMITING_CONDITIONS_FOR_OPERATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                          |  |  |  |  |  |  |  |
| 3.1 The following Limiting Conditions Specifications TS 3.1.d.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | are based on Technical                                                                                                   |  |  |  |  |  |  |  |
| 1. Any Reactor Coolant System leakage indication in excess of 1 gpm<br>shall be the subject of an investigation and evaluation initiated<br>within 4 hours of the indication. Any indicated leak shall be<br>considered to be a real leak until it is determined that no unsafe<br>condition exists. If the Reactor Coolant System leakage exceeds<br>1 gpm <u>AND</u> the source of leakage is <u>NOT</u> identified within 12 hours,<br>then the Reactor shall be placed in the Hot Shutdown condition<br>utilizing normal operating procedures.             |                                                                                                                          |  |  |  |  |  |  |  |
| If the source of leakage excee<br>within 48 hours, then the Reac<br>Shutdown condition utilizing n                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ds 1 gpm <u>AND</u> is <u>NOT</u> identified<br>tor shall be placed in the Cold<br>ormal operating procedures.           |  |  |  |  |  |  |  |
| 2. If the sources of leakage have been identified <u>AND</u> it is evaluated<br>that continued operation is safe, then operation of the Reactor<br>with a total Reactor Coolant System leakage rate not exceeding<br>10 gpm shall be permitted. If leakage exceeds 10 gpm, then the<br>Reactor shall be placed in the Hot Shutdown condition within<br>12 hours utilizing normal operating procedures. If the leakage<br>exceeds 10 gpm for 24 hours, then the Reactor shall be placed in<br>the Cold Shutdown condition utilizing normal operating procedures |                                                                                                                          |  |  |  |  |  |  |  |
| 3. Primary to secondary leakage i<br>through any one steam generato<br>the above limit, reduce the le<br>Cold Shutdown within the next                                                                                                                                                                                                                                                                                                                                                                                                                         | s limited to 150 gallons per day<br>r. With tube leakage greater than<br>akage rate within 4 hours or be in<br>36 hours. |  |  |  |  |  |  |  |
| 4. If any Reactor Coolant leakage exists through a non-isolable fault<br>in a Reactor Coolant System component (exterior wall of the<br>Reactor Vessel, piping, valve body, Relief Valve leaks,<br>Pressurizer, Steam Generator Head, or Pump Seal leakoff), then the<br>Reactor shall be shut down <u>AND</u> a cooldown to the Cold Shutdown<br>condition shall be initiated within 24 hours of detection.                                                                                                                                                   |                                                                                                                          |  |  |  |  |  |  |  |
| 4.0 GENERAL INSTRUCTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                          |  |  |  |  |  |  |  |
| 4.1 None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                          |  |  |  |  |  |  |  |
| 5.0 EQUIPMENT REQUIRED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                          |  |  |  |  |  |  |  |
| 5.1 None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                          |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                          |  |  |  |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                            | NO. SP                                | -36-082                                            |                                      |        |  |  |  |
|-------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------|--------------------------------------|--------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                    | TITLE                                 | Reactor Coolan<br>Check                            | it System Lea                        | k Rate |  |  |  |
| SURVEILLANCE PROCEDURE DATE OCT 05 2004 PAGE 3 of 14                                            |                                       |                                                    |                                      |        |  |  |  |
| DATE                                                                                            |                                       |                                                    |                                      |        |  |  |  |
| 6.0 <u>PROCEDURE</u>                                                                            |                                       |                                                    |                                      |        |  |  |  |
| <u>NOTE</u> : This calculation is performed at PPCS is in service, use Step 6.1                 | least onc<br>1.1; otherw              | e each week.<br>Tise use Step 6                    | If the<br>5.1.2.                     |        |  |  |  |
| <u>NOTE</u> : Containment Sump A leakrate can determination.                                    | <u>NOT</u> be use                     | d for Mass Bal                                     | ance                                 |        |  |  |  |
| 6.1 Mass Balance Leakrate Calculation                                                           |                                       |                                                    |                                      |        |  |  |  |
| 6.1.1 <u>Computer Calculation</u>                                                               |                                       |                                                    |                                      |        |  |  |  |
| a. Using PPCS Group Output<br>on Data Sheet 1.                                                  | : Block #4,                           | RECORD requir                                      | ed readings                          |        |  |  |  |
| <ol> <li>To increase the accuracy of the test, USE an interval<br/>of about 5 hours.</li> </ol> |                                       |                                                    |                                      |        |  |  |  |
| <u>NOTE</u> : PPCS values for BA a at 0100 Hours.                                               | and RMW DAI                           | LY FLOW reset                                      | to zero                              |        |  |  |  |
| b. The data to be entered<br>RMW(Gal), is the total<br>Makeup Water, that were<br>interval.     | on Data Sh<br>number of<br>e added to | eet 1 for BA(G<br>gallons of Bor<br>the RCS during | Gal) and<br>ric Acid, or<br>the test |        |  |  |  |
| c. RUN the Reactor Coolant<br>"RCS LEAKS" Nuclear Cal<br>instructions.                          | t System Le<br>Iculation a            | akage Program,<br>nd applicable                    | using PPCS                           |        |  |  |  |
| d. RECORD calculated RCS<br>RCS leakage calculation                                             | leak rate o<br>n printout             | n Data Sheet 1<br>to Data Sheet                    | and ATTACH                           |        |  |  |  |
| e. <u>IF</u> Mass Balance leakrat<br>PERFORM one of the foll                                    | te calculat<br>lowing:                | ion is negativ                                     | ve, <u>THEN</u>                      |        |  |  |  |
| 1. <u>GO</u> <u>TO</u> Step 6.1.1 an                                                            | nd REPEAT C                           | Computer Calcul                                    | ation.                               |        |  |  |  |
| <u>01</u>                                                                                       | <u>R</u>                              |                                                    |                                      |        |  |  |  |
| 2. <u>GO</u> <u>TO</u> Step 6.1.2 a                                                             | nd PERFORM                            | Manual Calcula                                     | ition.                               |        |  |  |  |
| <u>01</u>                                                                                       | <u>R</u>                              |                                                    |                                      |        |  |  |  |
| 3. <u>GO</u> <u>TO</u> Step 6.1.1.f<br>results.                                                 | and ACCEPT                            | negative leak                                      | krate                                |        |  |  |  |
| CONTINU                                                                                         | JED                                   |                                                    |                                      |        |  |  |  |

| WISCONSIN PUBL            | LIC SERVICE CORPORATION                                                                                                                                                                                                            | NO. SP-36-082                                                                            |                                       |  |  |  |  |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------|--|--|--|--|
| KEWAUNEE I                | NUCLEAR POWER PLANT                                                                                                                                                                                                                | TITLE Reactor Coolar<br>Check                                                            | it System Leak Rate                   |  |  |  |  |
| SURVEILL                  | ANCE PROCEDURE                                                                                                                                                                                                                     | <b>DATE</b> OCT 05 2004                                                                  | PAGE 4 of 14                          |  |  |  |  |
| DATE                      |                                                                                                                                                                                                                                    |                                                                                          |                                       |  |  |  |  |
| 6.1.1<br><u>CONTINUED</u> |                                                                                                                                                                                                                                    |                                                                                          |                                       |  |  |  |  |
| f.                        | . RECORD leak rate in the<br>Manager's status board.                                                                                                                                                                               | Control Room Log and or                                                                  | n Shift                               |  |  |  |  |
| g.                        | . <u>IF</u> Mass Balance leakrat<br>from Reactor Coolant Sy<br>greater than 0.2 gpm, <u>T</u>                                                                                                                                      | e calculation indicates<br>stem is negative <u>OR</u> leak<br><u>HEN GO TO</u> Step 6.3. | that leakage<br>age is                |  |  |  |  |
| 6.1.2 <u>Ma</u>           | anual Calculation                                                                                                                                                                                                                  |                                                                                          |                                       |  |  |  |  |
| a.                        | . Special Precautions                                                                                                                                                                                                              |                                                                                          |                                       |  |  |  |  |
|                           | <ol> <li>Reactor Coolant System temperature should be stabilized<br/>and held constant for approximately one hour before<br/>starting the test.</li> </ol>                                                                         |                                                                                          |                                       |  |  |  |  |
|                           | 2. Reactor Makeup Syst<br>go through the Bori                                                                                                                                                                                      | em is in automatic. All<br>c Acid Blender.                                               | Makeup must                           |  |  |  |  |
|                           | <ol> <li>Reactor power should be stabilized and held constant<br/>(plus or minus 5%) for approximately one hour before<br/>starting the test and for the duration of the test.</li> </ol>                                          |                                                                                          |                                       |  |  |  |  |
|                           | 4. Pressurizer temperature and pressure and Reactor<br>Coolant System temperature final values shall equal<br>initial pre-test values. A change in RCS temperature<br>of 1°F will vary pressurizer level by approximately<br>1.5%. |                                                                                          |                                       |  |  |  |  |
| b.                        | b. RECORD initial readings on Data Sheet 2.                                                                                                                                                                                        |                                                                                          |                                       |  |  |  |  |
| c.                        | c. After at least 5 hours, VERIFY Reactor Coolant temperature<br>and Pressurizer temperature and pressure are the same value<br>as recorded initially.                                                                             |                                                                                          |                                       |  |  |  |  |
|                           | <ol> <li><u>IF</u> Reactor Coolant<br/>temperature and pre<br/>Step 6.1.2.b, <u>THEN</u><br/>Step 6.1.2.d.</li> </ol>                                                                                                              | temperature and Pressuri<br>ssure are the same as re<br>RECORD on Data Sheet 2 a         | zer<br>ecorded in<br>and <u>GO TO</u> |  |  |  |  |
|                           | <u>CONTINU</u>                                                                                                                                                                                                                     | <u>ED</u>                                                                                |                                       |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                       | NO. SP-36                    | -082                             |                  |              |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|----------------------------------|------------------|--------------|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                               | TITLE Rea<br>Che             | ctor Coolan<br>ck                | t System Leal    | < Rate       |  |
| SURVEILLANCE PROCEDURE                                                                                                                                                                     | DATE OCT                     | 05 2004                          | PAGE 5           | <b>of</b> 14 |  |
| DATE                                                                                                                                                                                       |                              |                                  |                  |              |  |
| 6.1.2.c<br><u>CONTINUED</u>                                                                                                                                                                |                              |                                  |                  |              |  |
| 2. <u>IF</u> Reactor Coolant te<br>temperature or pressu<br>follows:                                                                                                                       | emperature o<br>ire have cha | r Pressuriz<br>nged, <u>THEN</u> | er<br>PROCEED as |              |  |
| A. ADJUST parameters<br>Step 6.1.2.b.                                                                                                                                                      | ; to value r                 | ecorded in                       |                  |              |  |
| B. ALLOW conditions                                                                                                                                                                        | to stabiliz                  | e (approx 1                      | 5 minutes).      |              |  |
| C. RECORD final read                                                                                                                                                                       | lings on Dat                 | a Sheet 2.                       |                  |              |  |
| d. CALCULATE Reactor Coolant information recorded and                                                                                                                                      | : System lea<br>the formula  | k rate usin<br>on Data Sh        | g<br>eet 2.      |              |  |
| e. <u>IF</u> Mass Balance leakrate<br>PERFORM one of the follow                                                                                                                            | calculation                  | is negativ                       | e, <u>THEN</u>   |              |  |
| 1. <u>GO</u> <u>TO</u> Step 6.1.2 and                                                                                                                                                      | REPEAT Manu                  | al Calculat                      | ion.             |              |  |
| <u>OR</u>                                                                                                                                                                                  |                              |                                  |                  |              |  |
| 2. <u>GO</u> TO Step 6.1.1 and PERFORM Computer Calculation.                                                                                                                               |                              |                                  |                  |              |  |
| <u>OR</u>                                                                                                                                                                                  |                              |                                  |                  |              |  |
| 3. <u>GO TO</u> Step 6.1.2.f an results.                                                                                                                                                   | nd ACCEPT ne                 | gative leak                      | rate             |              |  |
| f. RECORD leak rate in the Control Room Log and on Shift<br>Manager's status board.                                                                                                        |                              |                                  |                  |              |  |
| g. <u>IF</u> Mass Balance leakrate calculation indicates that leakage<br>from Reactor Coolant System is negative <u>OR</u> leakage is<br>greater than 0.2 gpm, <u>THEN GO TO</u> Step 6.3. |                              |                                  |                  |              |  |
|                                                                                                                                                                                            |                              |                                  |                  |              |  |
|                                                                                                                                                                                            |                              |                                  |                  |              |  |
|                                                                                                                                                                                            |                              |                                  |                  |              |  |

| WISCON       | NSIN PL                                                                                                                                                                                                         | JBLIC SERVICE CORPORATION                                                                | NO. SP-36-082                                                           |                                       |  |  |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|---------------------------------------|--|--|
| KE           | WAUNE                                                                                                                                                                                                           | E NUCLEAR POWER PLANT                                                                    | TITLE Reactor Coo<br>Check                                              | lant System Leak Rate                 |  |  |
| . S          | URVE                                                                                                                                                                                                            | ILLANCE PROCEDURE                                                                        | <b>DATE</b> 0CT 05 2004                                                 | <b>PAGE</b> 6 of 14                   |  |  |
|              |                                                                                                                                                                                                                 | DATE                                                                                     |                                                                         |                                       |  |  |
| 6.2 <u>(</u> | Contai                                                                                                                                                                                                          | nment_Sump_Pump_Run_(A-MDS-3                                                             | <u>))</u>                                                               |                                       |  |  |
|              | 6.2.1                                                                                                                                                                                                           | Each time a CONTAINMENT SUM<br>received, CALCULATE the cor<br>containment from sump pump | P A LEVEL HIGH (47031<br>responding leakrate w<br>run history as follow | -Q) alarm is<br>ithin<br>s:           |  |  |
|              |                                                                                                                                                                                                                 | a. RECORD date, time, and<br>Sump A Pump run on Data                                     | oump A or B for each<br>Sheet 3.                                        | Containment                           |  |  |
|              |                                                                                                                                                                                                                 | b. The volume of Containmen<br>alarm and the automatic<br>(Hi-Hi Alarm is 412.5 g        | nt Sump A between the<br>pump shutoff is 339.<br>allons).               | high level<br>O gallons               |  |  |
|              |                                                                                                                                                                                                                 | c. CALCULATE leakage to Con<br>and the time between pur<br>minute).                      | ntainment Sump A usin<br>np actuations (to nea                          | g 339.0 gallons<br>rest 1/10 of a     |  |  |
| ſ            |                                                                                                                                                                                                                 | d. RECORD leakage on Data                                                                | Sheet 3.                                                                |                                       |  |  |
|              |                                                                                                                                                                                                                 | e. RECORD pump run time to                                                               | detect pump degradat                                                    | ion.                                  |  |  |
|              |                                                                                                                                                                                                                 | f. Upon completion of week<br>Test (Step 6.1), ATTACH<br>test.                           | ly Reactor Coolant Sy<br>Data Sheet 3 to the                            | stem Leak Rate<br>results of the      |  |  |
|              |                                                                                                                                                                                                                 | g. <u>IF</u> indicated leakage is<br>Reactor Coolant System 1<br>per Step 6.1.           | greater than 1 gpm,<br>Mass Balance leakrate                            | THEN PERFORM a calculation            |  |  |
|              | 6.2.2 <u>IF</u> a sump pump has <u>NOT</u> run within the past 23 days, <u>THEN</u> VERIFY<br>CONTAINMENT SUMP A LEVEL HIGH (47031-Q) alarm operable by<br>performing one or more of the following: [PCR015851] |                                                                                          |                                                                         |                                       |  |  |
|              | a. DRAIN PRT to Sump A using alternate method per N-RC-36B.                                                                                                                                                     |                                                                                          |                                                                         |                                       |  |  |
|              |                                                                                                                                                                                                                 | <u>OR</u>                                                                                |                                                                         |                                       |  |  |
|              |                                                                                                                                                                                                                 | b. DRAIN RCDT to Sump A as                                                               | follows:                                                                |                                       |  |  |
|              |                                                                                                                                                                                                                 | 1. OPEN RC-534/CV-3121<br>Sump A.                                                        | B, Rx Clnt Drain Tank                                                   | To Cntmt                              |  |  |
|              |                                                                                                                                                                                                                 | 2. <u>WHEN</u> RCDT lowers to<br>LEVEL HIGH (47031-Q                                     | 12% level <u>OR</u> CONTAIN<br>) alarm actuates, <u>THE</u>             | MENT SUMP A<br><u>N</u> CLOSE RC-534. |  |  |
|              |                                                                                                                                                                                                                 |                                                                                          |                                                                         |                                       |  |  |

| WISCONSIN PI      | UBLIC SERVICE CORPOR                                                                                                                                                                                                                                                                           | NO.                                  | SP-36-082                          |              |              |  |  |  |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------|--------------|--------------|--|--|--|
| KEWAUNI           | KEWAUNEE NUCLEAR POWER PLANT TITLE Reactor Coolant System Leak Rat<br>Check                                                                                                                                                                                                                    |                                      |                                    |              |              |  |  |  |
| SURVE             | ILLANCE PROCEDURE                                                                                                                                                                                                                                                                              | E <b>date</b>                        | OCT 05 2004                        | PAGE 7       | <b>of</b> 14 |  |  |  |
|                   | DATE                                                                                                                                                                                                                                                                                           |                                      |                                    |              |              |  |  |  |
| 6.3 <u>Invest</u> | igation_and_Evaluati                                                                                                                                                                                                                                                                           | <u>on</u>                            |                                    |              |              |  |  |  |
| 6.3.1             | <u>IF</u> Reactor Coolant<br>negative, <u>THEN</u> PERF                                                                                                                                                                                                                                        | System leakrate<br>ORM the followin  | is determined to<br>g: [PCR007782] | o be         |              |  |  |  |
|                   | <u>NOTE</u> : A-RC-36F may                                                                                                                                                                                                                                                                     | be used for ref                      | erence.                            |              |              |  |  |  |
|                   | a. INVESTIGATE sou                                                                                                                                                                                                                                                                             | irce of inleakage                    | •                                  |              |              |  |  |  |
|                   | b. INITIATE an Act<br>this investigat                                                                                                                                                                                                                                                          | tion Request (AR)                    | documenting the                    | e results of |              |  |  |  |
| 6.3.2             | <u>IF</u> Reactor Coolant System leakrate is determined to be greater<br>than 0.2 gpm, <u>THEN</u> an investigation and evaluation shall be<br>started within 4 hours of the indication. Document this<br>investigation using Data Sheet 4. The following leak paths<br>shall be investigated: |                                      |                                    |              |              |  |  |  |
|                   | a. RCS Leak to Con                                                                                                                                                                                                                                                                             | itainment                            |                                    |              |              |  |  |  |
|                   | 1. Containment<br>Sheet 3 per                                                                                                                                                                                                                                                                  | : Sump A Run Hist<br>Step 6.2.1.     | ory, recorded or                   | n Data       |              |  |  |  |
|                   | 2. Containment<br>trending.                                                                                                                                                                                                                                                                    | . Particulate Mon                    | itor, R-11 or R-                   | -21.         |              |  |  |  |
|                   | 3. Containment                                                                                                                                                                                                                                                                                 | Gas Monitor, R-                      | 12, trending.                      |              |              |  |  |  |
|                   | 4. Containment                                                                                                                                                                                                                                                                                 | : Humidity Detect                    | or trending.                       |              |              |  |  |  |
|                   | b. RCS Leak to Com                                                                                                                                                                                                                                                                             | ponent Cooling S                     | ystem                              |              |              |  |  |  |
|                   | 1. Comp Coolin                                                                                                                                                                                                                                                                                 | ıg Liquid Monitor                    | , R-17, trending                   | ].           |              |  |  |  |
|                   | 2. Component C<br>Level Book.                                                                                                                                                                                                                                                                  | Cooling Surge Tan                    | k level trending                   | g using Tank |              |  |  |  |
|                   | c. RCS Leak to Ste                                                                                                                                                                                                                                                                             | eam Generators                       |                                    |              |              |  |  |  |
|                   | 1. Air Ejector                                                                                                                                                                                                                                                                                 | • Exhaust Monitor                    | , R-15, trending                   | ].           |              |  |  |  |
|                   | 2. S/G Blowdow                                                                                                                                                                                                                                                                                 | n Liquid Monitor                     | , R-19, trending                   | J.           |              |  |  |  |
|                   | d. RCS Leak to Was                                                                                                                                                                                                                                                                             | te Disposal Syst                     | em                                 |              |              |  |  |  |
|                   | 1. PRT level t                                                                                                                                                                                                                                                                                 | rending using Ta<br><u>CONTINUED</u> | nk Level Book.                     |              |              |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                        | NO. SP-36-082                                                                                                                                                                   |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                | TITLE Reactor Coolant System Leak Rate Check                                                                                                                                    |  |  |  |
| SURVEILLANCE PROCEDURE DATE OCT 05 2004 PAGE                                                                                                                                |                                                                                                                                                                                 |  |  |  |
| DATE                                                                                                                                                                        |                                                                                                                                                                                 |  |  |  |
| 6.3.2.d<br>CONTINUED                                                                                                                                                        |                                                                                                                                                                                 |  |  |  |
| 2. RCDT level trending                                                                                                                                                      | using Tank Level Book.                                                                                                                                                          |  |  |  |
| 6.3.3 <u>IF</u> NONE of the leak paths l<br>Reactor Coolant System, <u>THE</u><br>satisfied; however, an inve<br>identify the source of this<br>Coolant System (e.g. chargi | isted above indicate leakage from<br><u>N</u> the Technical Specifications are<br>stigation should be performed to<br>leakage external to the Reactor<br>ng pump seal leakage). |  |  |  |
| 6.3.4 The following items are ind external to the Reactor Coo                                                                                                               | licators of potential leakage sources<br>lant System:                                                                                                                           |  |  |  |
| a. Charging Pump Leak-off                                                                                                                                                   |                                                                                                                                                                                 |  |  |  |
| b. Changes in Tank Levels                                                                                                                                                   |                                                                                                                                                                                 |  |  |  |
| • RCDT<br>• CVC HUT<br>• Waste HUT<br>• Deaerated Drain Tank                                                                                                                |                                                                                                                                                                                 |  |  |  |
| • PRT                                                                                                                                                                       |                                                                                                                                                                                 |  |  |  |
| c. Sump Pump Run Times                                                                                                                                                      |                                                                                                                                                                                 |  |  |  |
| • Rx Cavity<br>• Cntmt Sump A<br>• RHR Pump Pit Sump Pum<br>• Waste Area Sump                                                                                               | ıp                                                                                                                                                                              |  |  |  |
| d. Excessive Makeup to VCT                                                                                                                                                  |                                                                                                                                                                                 |  |  |  |
| e. Valve Stem Leakoff Line                                                                                                                                                  | !S                                                                                                                                                                              |  |  |  |
| f. Filter Vent and Drain L                                                                                                                                                  | .ines                                                                                                                                                                           |  |  |  |
| g. Demineralizer Vent and                                                                                                                                                   | Drain Lines                                                                                                                                                                     |  |  |  |
| h. Visual Inspection of Au                                                                                                                                                  | x Building                                                                                                                                                                      |  |  |  |
| i. Visual Inspection of Co                                                                                                                                                  | ntainment                                                                                                                                                                       |  |  |  |
| j. LD-13 Bellows Failure<br><u>CONTINU</u>                                                                                                                                  | IED                                                                                                                                                                             |  |  |  |

| · · · · · · · · · · · · · · · · · · ·                                                         |                       |                                           | <u> </u>                        |  |  |  |  |
|-----------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------|---------------------------------|--|--|--|--|
| WISCONSIN PUBLIC SERVICE CORPORATION                                                          |                       |                                           |                                 |  |  |  |  |
| KEWAUNEE NUCLEAR POWER PLANT                                                                  | TITLE                 | Reactor Coolar<br>Check                   | nt System Leak Rate             |  |  |  |  |
| SURVEILLANCE PROCEDURE                                                                        | DATE                  | OCT 05 2004                               | PAGE 9 of 14                    |  |  |  |  |
| DATE                                                                                          |                       |                                           |                                 |  |  |  |  |
| 6.3.4<br><u>CONTINUED</u>                                                                     |                       |                                           |                                 |  |  |  |  |
| k. HRSR Drains to:                                                                            |                       |                                           |                                 |  |  |  |  |
| • RHR Pump Pit Sump<br>• DDT<br>• Sump Tank                                                   |                       |                                           |                                 |  |  |  |  |
| 6.4 <u>Containment Basement (592' O" EL)</u>                                                  | <u>Inspectio</u>      | <u>n</u>                                  |                                 |  |  |  |  |
| 6.4.1 <u>IF</u> conditions of Precaution<br>weekly visual inspection fo<br>Sump A and Sump B. | 2.0, Ste<br>r water i | p 2.3 exist, <u>TH</u><br>n the general a | <u>IEN</u> PERFORM a<br>area of |  |  |  |  |
| 6.4.2 COMPLETE an Action Request of the inspection.                                           | for each              | inspection noti                           | ing results                     |  |  |  |  |
|                                                                                               |                       |                                           |                                 |  |  |  |  |
|                                                                                               |                       |                                           |                                 |  |  |  |  |
|                                                                                               |                       |                                           |                                 |  |  |  |  |
|                                                                                               |                       |                                           |                                 |  |  |  |  |
|                                                                                               |                       |                                           |                                 |  |  |  |  |
|                                                                                               |                       |                                           |                                 |  |  |  |  |
|                                                                                               |                       |                                           |                                 |  |  |  |  |
|                                                                                               |                       |                                           |                                 |  |  |  |  |
|                                                                                               |                       |                                           |                                 |  |  |  |  |
|                                                                                               |                       |                                           |                                 |  |  |  |  |
|                                                                                               |                       |                                           |                                 |  |  |  |  |
|                                                                                               |                       |                                           |                                 |  |  |  |  |
|                                                                                               |                       |                                           |                                 |  |  |  |  |
|                                                                                               |                       |                                           |                                 |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                              | NO. SP-36-082                                        |                      |  |  |  |
|---------------------------------------------------------------------------------------------------|------------------------------------------------------|----------------------|--|--|--|
| KEWAUNEE NUCLEAR POWER PLANT                                                                      | TITLE Reactor Coolant System Leak Rate Check         |                      |  |  |  |
| SURVEILLANCE PROCEDURE                                                                            | DATE OCT 05 2004                                     | <b>PAGE</b> 10 of 14 |  |  |  |
| DATE                                                                                              |                                                      | INITIALS             |  |  |  |
| 7.0 <u>PROBLEMS</u>                                                                               |                                                      |                      |  |  |  |
| 7.1 Any problems encountered during te                                                            | st?                                                  | YES/NO               |  |  |  |
| 7.2 <u>IF</u> yes, <u>THEN</u> INITIATE an Action Re<br>GNP-11.08.01, Action Request Proce<br>AR# | quest (AR) per INI<br>ss.                            | TIATED/NA            |  |  |  |
| 8.0 ACCEPTANCE CRITERIA                                                                           |                                                      |                      |  |  |  |
| 8.1 Any Reactor Coolant System leakrat<br>minute has been investigated as re                      | e of less than zero gall<br>quired by this procedure | ons per<br>e.        |  |  |  |
| 8.2 Any Reactor Coolant System leakrat<br>minute has been investigated as re                      | e of greater than 0.2 ga<br>quired by this procedure | llons per            |  |  |  |
| 8.3 Reactor Coolant System leakage mee<br>Operation per Technical Specificat                      | ts the Limiting Conditic<br>ion 3.1.d.               | ons for              |  |  |  |
| 9.0 <u>REFERENCES</u>                                                                             |                                                      |                      |  |  |  |
| 9.1 Technical Specifications 3.1.d                                                                |                                                      |                      |  |  |  |
| 9.2 Honeywell PPCS Operators Manual                                                               |                                                      |                      |  |  |  |
| 9.3 KAP 00-003466                                                                                 |                                                      |                      |  |  |  |
| 9.4 PCR007782                                                                                     |                                                      |                      |  |  |  |
| 9.5 KNPP Pumps And Valves IST Plan                                                                |                                                      |                      |  |  |  |
|                                                                                                   |                                                      |                      |  |  |  |
|                                                                                                   |                                                      |                      |  |  |  |
|                                                                                                   |                                                      |                      |  |  |  |
|                                                                                                   |                                                      |                      |  |  |  |
|                                                                                                   |                                                      |                      |  |  |  |
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|           |        |         |       |        |

NO. SP-36-082

KEWAUNEE NUCLEAR POWER PLANT

| TITLE | Reactor<br>Check | Coolant | System | Leak | Rate |  |
|-------|------------------|---------|--------|------|------|--|
|       |                  |         |        |      |      |  |

SURVEILLANCE PROCEDURE

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### DATA SHEET 1

## REACTOR COOLANT LEAKAGE CALCULATION BY COMPUTER

| Parameter                                                      | Data at Start of<br>Calculation                               | Data at End of<br>Calculation        | Difference       |
|----------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------|------------------|
| Time                                                           |                                                               |                                      | in time:         |
| VCT Temp (T0140A)                                              |                                                               |                                      | msm              |
| VCT Press (P0139A)                                             |                                                               |                                      | ]                |
| VCT Level (L0112A)                                             |                                                               |                                      | ]                |
| PRZR Temp<br>(Liquid-TO480A) -OR-<br>(Steam-TO481A)            |                                                               |                                      |                  |
| PRZR Press (P8023G)                                            |                                                               |                                      | ]                |
| PRZR Level (L8015G)                                            |                                                               |                                      | (                |
| TAVG (TO444G)                                                  |                                                               |                                      |                  |
| RMW (Gal)                                                      |                                                               |                                      | ]                |
| BA (Gal)                                                       |                                                               |                                      | ]                |
| Cont. El. 626' Amb.<br>Air Temp (15187)                        |                                                               |                                      | -                |
| Containment<br>Humidity (%)(41517)                             |                                                               |                                      |                  |
| Reactor Coolant System                                         | n Leakagegp                                                   | m                                    |                  |
| <u>IF</u> leakage is negative<br>during test, <u>THEN</u> DESC | e <u>OR</u> leakage is greater t<br>CRIBE on an Action Reques | han 0.2 gpm <u>OR</u> problems<br>t. | were encountered |
| <u>IF</u> leakage is negative                                  | e <u>OR</u> leakage is greater t                              | han 0.2 gpm, <u>THEN</u> REFER       | to Step 6.3.     |
| <u>NOTE</u> : Attach Containm                                  | nent Sump Pump Data Sheet                                     | •                                    |                  |
| Comments:                                                      |                                                               |                                      |                  |
| PERFORMED BY                                                   |                                                               | DATE                                 |                  |
| SHIFT MANAGER                                                  |                                                               | DATE                                 | <u> </u>         |
| ASSISTANT MANAGER OPER                                         | RATIONS                                                       | DATE                                 |                  |
|                                                                |                                                               |                                      |                  |
|                                                                |                                                               |                                      |                  |

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|------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------|-------------------------------------------------|------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POWER PLANT                               |                                                 |                                               | TITLE Reactor (<br>Check                        | Coolant System Leak Rate                                         |
| SURVEIL                                                    | LANCE PROCE                                     | EDURE                                         | DATE 0CT 05 20                                  | 004 <b>PAGE 12 of 14</b>                                         |
|                                                            | MANUAL REAG                                     | DATA SH<br>CTOR COOLANT SYS                   | IEET 2<br>STEM LEAKAGE_CALCI                    | JLATION                                                          |
| Instrument                                                 | Name                                            | (Step 6.1.2-b)<br>Initial Reading             | (Step 6.1.2-cl<br>or 6.1.2-c2)<br>Final Reading | Final Initial<br>Reading - Reading                               |
| 44560/<br>YIC-111                                          | RMW Batch<br>Integrator                         | ga]                                           | gal                                             | B =gal                                                           |
| 44559/<br>YIC-110                                          | BA Batch<br>Integrator                          | ga]                                           | gal                                             | C =gal                                                           |
| LIT-141<br>LIT-112                                         | VCT Level                                       | %(1)                                          | %(1)                                            | D =%                                                             |
| LI-426<br>LI-427<br>LI-428                                 | Pressurizer<br>Level                            | %(1)                                          | %(1)                                            | F =%                                                             |
| T0400A, T0401A<br>T0420A, T0421A<br>(Computer<br>printout) | Reactor<br>Coolant<br>Temperature<br>(Tavg) (2) | °F(1)                                         | °F(1)                                           | Required: No change                                              |
| P0429A, P0430A<br>P0431A, P0449A<br>(Computer<br>printout) | Pressurizer<br>Pressure (2)                     | psig(1)                                       | )psig(1)                                        | Required: No change                                              |
| TI-425<br>-0R-<br>TI-424                                   | Pressurizer<br>Temperature                      | °F                                            | °F                                              | Required: No change                                              |
| 15187                                                      | Cont El 626'<br>Amb Air Temp                    | °F                                            | N/A                                             | N/A                                                              |
| 41517                                                      | Containment<br>Humidity                         | (%)                                           | N/A                                             | N/A                                                              |
|                                                            | Time of test                                    | ·                                             |                                                 | Aminutes (3)                                                     |
| (1) Avg of inst                                            | rument reading                                  | gs (2) May be ta<br>panel if<br>not opera     | aken at control (<br>computer is<br>ating       | 3) Shall be greater than<br>or equal to 300 minutes<br>(5 hours) |
| Leak Rate (gpm)                                            | = <u>1.379B + 1</u>                             | <u>.41C - 17.39D -</u>                        | <u>43.29F</u> =                                 | gpm                                                              |
| <u>IF</u> leakage is n<br>during test, <u>TH</u>           | egative <u>OR</u> lea<br><u>EN</u> DESCRIBE of  | akage is greate<br>n an Action Requ           | r than 0.2 gpm <u>OR</u><br>Jest.               | problems were encountered                                        |
| <u>IF</u> leakage is n                                     | egative <u>OR</u> lea                           | akage is greate                               | r than 0.2 gpm, <u>T</u>                        | <u>HEN</u> REFER to Step 6.3.                                    |
| <u>NOTE</u> : Attach C<br>Comments:                        | ontainment Su                                   | mp A Pump Data S                              | Sheet.                                          |                                                                  |
| PERFORMED BY                                               |                                                 |                                               |                                                 | DATE                                                             |
| SHIFT MANAGER                                              | . <u> </u>                                      |                                               |                                                 | DATE                                                             |
| ASSISTANT MANAG                                            | ER OPERATIONS                                   | • <u>•••••••••••••••••••••</u> •••••••••••••• |                                                 | DATE                                                             |

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**NO.** SP-36-082

OCT 05 2004

**KEWAUNEE NUCLEAR POWER PLANT** 

| TITLE | Reactor<br>Check | Coolant | System | Leak | Rate |  |
|-------|------------------|---------|--------|------|------|--|
|       |                  |         |        |      |      |  |

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SURVEILLANCE PROCEDURE

# DATA SHEET 3

DATE

CONTAINMENT SUMP A PUMP RUN HISTORY

|      |          | Gallons Time Since Last GF<br>Pumped Pump Actuation ≤1<br>ate Time Hi Alarm (min) |                   | Gallons Time Since<br>Rumped Rump Actu | Since Last | GPM      | GPM Pump  | CHITNT | INITIALS |   |  |
|------|----------|-----------------------------------------------------------------------------------|-------------------|----------------------------------------|------------|----------|-----------|--------|----------|---|--|
| Pump | Date     |                                                                                   | 21                | (min)                                  | HUM %      | Operator | Shift Mgr |        |          |   |  |
|      |          |                                                                                   | 339.0             |                                        |            |          |           |        |          |   |  |
|      |          |                                                                                   | 339.0             |                                        |            |          |           |        |          |   |  |
|      |          |                                                                                   | 339.0             |                                        |            |          |           |        |          |   |  |
|      |          |                                                                                   | 339.0             |                                        |            |          |           |        |          |   |  |
|      |          |                                                                                   | 339.0             |                                        |            |          |           |        |          |   |  |
|      |          |                                                                                   | 339.0             |                                        |            |          |           |        |          |   |  |
|      |          |                                                                                   | 339.0             |                                        |            |          |           |        |          |   |  |
|      | <b>-</b> | i                                                                                 | 339.0             |                                        |            |          | · · · · · |        |          |   |  |
|      |          |                                                                                   | 339.0             |                                        | ·          |          |           |        |          |   |  |
|      |          |                                                                                   | 339.0             |                                        |            |          |           |        |          |   |  |
|      |          |                                                                                   | 339.0             |                                        |            |          |           |        |          |   |  |
|      |          |                                                                                   | 339.0             |                                        |            |          |           |        |          |   |  |
|      |          |                                                                                   | 339.0             |                                        |            |          |           |        |          |   |  |
|      |          | ·                                                                                 | Hi-Hi <b>-</b> 4: | 12.5 (                                 | Gal        | L        | L,        |        | <b>1</b> | · |  |

 $\underline{IF}$  level detection system or sump pumps for Containment Sump A are inoperable,  $\underline{THEN}$  REFER to Step 6.4.

Has either sump pump run within the past 23 days? Yes No <u>IF</u> neither sump pump has run within the past 23 days, <u>THEN</u> REFER to Step 6.2.2.

Sump leakage less than or equal to 1 gpm? Yes No <u>IF</u> sump leakage is greater than 1 gpm <u>AND</u> Technical Specification 3.1.d is applicable, <u>THEN</u> DESCRIBE on an Action Request <u>AND</u> REFER to Step 6.2.1.g. [PCR000350]

Upon completion of the weekly leak rate test, ATTACH this Data Sheet to the results. Carry over last pump run to the new Data Sheet 3.

ASSISTANT MANAGER OPERATIONS \_\_\_\_\_ DATE \_\_\_\_\_

| WISCONSIN PUBL                                             | IC SERVICE CORPORATION                                                                         | NO. SP-36-082                                |                                |  |  |  |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------|--|--|--|
| KEWAUNEE N                                                 | NUCLEAR POWER PLANT                                                                            | TITLE Reactor Coolant System Leak Rate Check |                                |  |  |  |
| SURVEILL                                                   | ANCE PROCEDURE                                                                                 | DATE 0CT 05 2004                             | PAGE 14 of 1                   |  |  |  |
|                                                            | DATA SHE                                                                                       | ET 4                                         |                                |  |  |  |
|                                                            | INVESTIGATION AN                                                                               | D_EVALUATION                                 |                                |  |  |  |
| INITIAL INDICATIO                                          | <u>)N_OF_LEAKRATE &gt;0.2_GPM</u>                                                              |                                              |                                |  |  |  |
| DATE                                                       | TIME                                                                                           | LEAKRATE                                     | gpm                            |  |  |  |
| INVESTIGATION ST                                           | <u>ARTED:</u>                                                                                  |                                              |                                |  |  |  |
| DATE                                                       |                                                                                                |                                              |                                |  |  |  |
| INVESTIGATION_OF                                           | LEAKAGE:                                                                                       |                                              |                                |  |  |  |
| LOCATION                                                   | INDICATION                                                                                     | VALUE                                        | NORMAL                         |  |  |  |
| To Containment                                             | Leakage to sump<br>R-11<br>R-12<br>Humidity (41517)<br>Cont. El. 626' Amb.<br>Air Temp (15187) | gpm<br>cpm<br>%<br>%F                        | gpm<br>cpm<br>cpm<br>%F        |  |  |  |
| To Component<br>Cooling                                    | R-17<br>Surge Tank Level Change                                                                | Cpm<br>gpm                                   | cpm<br>NA                      |  |  |  |
| To Steam<br>Generator                                      | R-15<br>R-19                                                                                   | Cpm<br>cpm                                   | cpm<br>cpm                     |  |  |  |
| To Waste<br>Disposal                                       | PRT Level Change<br>RCDT Level Change                                                          | gpm<br>gpm                                   | NA<br>NA                       |  |  |  |
| DESCRIPTION OF LI<br>SOURCE:<br><br>EFFECT OI              | EAK:                                                                                           |                                              |                                |  |  |  |
| PLANT OPI                                                  | ERATION MAY SAFELY CONTINUE                                                                    | : YESNO                                      |                                |  |  |  |
|                                                            | אין אין <u>אין אין אין אין אין א</u>                                                           | ·····                                        |                                |  |  |  |
| PLANT OP<br>PERFORME<br>APPROVED<br>* Plant Ma<br>Shift Ma | BY<br>BY<br>BY *<br>anager, Operations Manager,<br>anager                                      | : YESNONO                                    | DATE<br>DATE<br>Operations, or |  |  |  |

| WISCONSIN PUBLIC SERVICE O                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | NO. UG-0 REV D                                                                                                                                                                                                          |                                                                                                                    |                                                                                                                    |                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| KEWAUNEE NUCLEAR POV                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | VER PLANT                                                                                                                                                                                                               | TITLE U                                                                                                            | lser's Guide<br>bnormal Proc                                                                                       | For Emergency And<br>edures                                                       |
| OPERATING PROCEI                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | DURE                                                                                                                                                                                                                    | <b>DATE</b>                                                                                                        | DEC 02 2003                                                                                                        | <b>PAGE</b> 1 of 28                                                               |
| REVIEWED BY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                         | APPRO                                                                                                              | VED BY                                                                                                             |                                                                                   |
| NUCLEAR I YES<br>SAFETY, RELATED INO                                                                                                                                                                                                                                                                                                                                                                                                                                                          | PORC REVIEW<br>REQUIRED                                                                                                                                                                                                 | 🗌 YES<br>🖾 NO                                                                                                      | SRO APPROV<br>TEMPORARY<br>REQUIRED                                                                                | AL OF XES<br>CHANGES NO                                                           |
| <ul> <li>1.0 <u>Purpose</u> <ol> <li>This procedure estab</li> <li>Operations procedure situations. [PCR0083</li> </ol> </li> <li>2.0 <u>General Notes</u> <ol> <li>This procedure appli</li> <li>operating procedures</li> <li>Alarm Response Pro</li> <li>Abnormal Operating</li> <li>Emergency Operatin</li> <li>Integrated Plant E</li> </ol> </li> <li>2.2 This procedure also procedures when used operating procedures</li> <li>2.3 The requirements of in operation of the</li> </ul> | lishes the use<br>s used to resp<br>41]<br>es to use of t<br>:<br>cedures (ARPs)<br>Procedures (A<br>g Procedures (A<br>g Procedures (<br>mergency Opera<br>provides guida<br>to support th<br>this procedure<br>plant. | and adhere<br>ond to abno<br>he followin<br>OPs)<br>EOPs)<br>ting Proced<br>nce for the<br>above abn<br>apply at a | ence requirem<br>ormal and eme<br>og abnormal a<br>lures (IPEOPs<br>e use of othe<br>ormal and em<br>all times whi | ents for<br>rgency<br>nd emergency<br>)<br>r Operations<br>ergency<br>le involved |

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|-----------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------|-------------|--------------|
| к               | EWA         | UNEE NUCLEAR POWER PLANT                                                                                                              | TITLE User's Guide For Emergency And<br>Abnormal Procedures |                                                                           |                                         |             |              |
|                 | 0           | PERATING PROCEDURE                                                                                                                    | DATE                                                        | DEC 02 2003                                                               | PAGE                                    | 2           | <b>of</b> 28 |
|                 |             |                                                                                                                                       |                                                             |                                                                           |                                         |             |              |
| 3.0 <u>Defi</u> | <u>niti</u> | <u>ons</u>                                                                                                                            |                                                             |                                                                           |                                         |             |              |
| 3.1             | Abr         | ormal Operating Procedures (AOP:                                                                                                      | s)                                                          |                                                                           |                                         |             |              |
|                 | 1.          | Plant procedures which provide consequences of off-normal even IPEOPs.                                                                | guidanc<br>nts whic                                         | e to mitigate th<br>h do not require                                      | ie<br>e use of                          | the         |              |
|                 | 2.          | AOPs in dual-column format are optimal recovery procedures.                                                                           | written                                                     | in a manner sin                                                           | nilar to                                |             |              |
|                 | 3.          | AOPs in single-column format a                                                                                                        | re writt                                                    | en in an event l                                                          | based man                               | ner.        |              |
|                 | 4.          | In general, AOPs are written to<br>than EOPs, however as these pro<br>dual-column format, there is l<br>AOPs and EOPs. Priority is de | o cover<br>ocedures<br>ittle di<br>termined                 | events that are<br>are converted 1<br>fference in pric<br>by events in pr | less sev<br>to<br>prity bet<br>rogress. | ere<br>ween |              |
|                 | 5.          | AOPs are identified by the pro                                                                                                        | cedure i                                                    | dentifier A.                                                              |                                         |             |              |
| 3.2             | Ala         | arm Response Procedures (ARPs)                                                                                                        |                                                             |                                                                           |                                         |             |              |
|                 | 1.          | Plant procedures that specify respond to an annunciator.                                                                              | the oper                                                    | ator actions neo                                                          | cessary t                               | .0          |              |
|                 | 2.          | In general, ARPs are written to abnormal and emergency operation                                                                      | o direct<br>ng proce                                        | the operator to<br>dures.                                                 | o appropr                               | iate        |              |
|                 | 3.          | ARPs may contain actions that a                                                                                                       | are spec                                                    | ific to that ann                                                          | nunciator                               | •           |              |
| 3.3             | Bra         | inching                                                                                                                               |                                                             |                                                                           |                                         |             |              |
|                 | 1.          | The concurrent performance of                                                                                                         | two or m                                                    | ore procedures.                                                           |                                         |             |              |
| 3.4             | Che         | eck                                                                                                                                   |                                                             |                                                                           |                                         |             |              |
|                 | 1.          | To determine if the specified to ESTABLISH that condition.                                                                            | conditio                                                    | n exists, but ta                                                          | ake no ac                               | tion:       |              |
|                 |             |                                                                                                                                       |                                                             |                                                                           |                                         |             |              |
|                 |             |                                                                                                                                       |                                                             |                                                                           |                                         |             |              |
|                 |             |                                                                                                                                       |                                                             |                                                                           |                                         |             |              |

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|------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------------------|-----------------------------------------|--------------|
| к    | KEWAUNEE NUCLEAR POWER PLANT |                                                                                                                                    |                                           | User's Guide I<br>Abnormal Proce                      | For Emergency<br>edures                 | And          |
|      | O                            | PERATING PROCEDURE                                                                                                                 | DATE                                      | DEC 02 2003                                           | PAGE 3                                  | <b>of</b> 28 |
|      |                              |                                                                                                                                    |                                           |                                                       |                                         |              |
| 3.5  | Con                          | ntinuous Action Statement (CAS)                                                                                                    |                                           |                                                       |                                         |              |
|      | 1.                           | (CAS) indicates a "Continuous a<br>step of long duration and does<br>continuing, <u>OR</u> the step require<br>to being performed. | Action St<br><u>NOT</u> have<br>es a cert | atement." It s<br>to be complete<br>ain plant cond    | signifies a<br>ed before<br>ition prior |              |
|      | 2.                           | A step identified as (CAS) is a it is first encountered until s stated to be inapplicable.                                         | applicabl<br>supersede                    | e from the poin<br>d by alternate                     | nt at which<br>guidance or              |              |
| 3.6  | Cri                          | itical Safety Function                                                                                                             |                                           |                                                       |                                         |              |
|      | 1.                           | An activity which serves to proof the physical barriers again                                                                      | otect the<br>st radiat                    | e integrity of (<br>cion release.                     | one or more                             |              |
| 3.7  | Eme                          | ergency Operating Procedures (EO                                                                                                   | Ps)                                       |                                                       |                                         |              |
|      | 1.                           | Plant procedures which provide consequences of off-normal even IPEOPs.                                                             | guidance<br>nts which                     | e to mitigate tl<br>n do not require                  | he<br>e use of the                      |              |
|      | 2.                           | EOPs in dual-column format are optimal recovery procedures.                                                                        | written                                   | in a manner sin                                       | nilar to                                |              |
|      | 3.                           | EOPs in single-column format a                                                                                                     | re writte                                 | en in an event l                                      | based manner.                           |              |
|      | 4.                           | In general, EOPs are written to<br>than AOPs, however as these pro<br>dual-column format, there is l<br>EOPs and AOPs.             | o cover e<br>ocedures<br>ittle dif        | events that are<br>are converted f<br>ference in prio | more severe<br>to<br>prity between      |              |
|      | 5.                           | EOPs are identified by the pro                                                                                                     | cedure ic                                 | lentifier E.                                          |                                         |              |
| 3.8  | Fau                          | ilted Steam Generator                                                                                                              |                                           |                                                       |                                         |              |
|      | 1.                           | Refers to any steam generator<br>secondary pressure boundary.                                                                      | with an u                                 | inisolable leak                                       | in its                                  |              |
| 3.9  | Fur                          | actional Restoration Procedures                                                                                                    | (FRPs)                                    |                                                       |                                         |              |
|      | 1.                           | Those procedures which respond challenges.                                                                                         | to criti                                  | cal safety fun                                        | ction                                   |              |
|      | 2.                           | Guidance is provided to RESTOR satisfied condition.                                                                                | E the cri<br>ED                           | tical safety f                                        | unction to a                            |              |

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**KEWAUNEE NUCLEAR POWER PLANT** 

**OPERATING PROCEDURE** 

TITLE User's Guide For Emergency And Abnormal Procedures

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|      |             |        |              |

### 3.9 <u>CONTINUED</u>

3. These procedures are identified by the procedure identifier FR.

### 3.10 Integrated Plant Emergency Operating Procedures (IPEOPs)

- 1. Plant procedures that specify the operator actions required to mitigate the consequences of transients and accidents that cause plant parameters to exceed reactor protection system setpoints, engineered safety features setpoints, or other appropriate technical limits.
- 2. The IPEOP network consists of all optimal recovery procedures and functional restoration procedures.
- 3.11 Leaking Steam Generator
  - 1. Any steam generator with demonstrated primary-to-secondary leakage which is less than or equal to charging system capacity.
- 3.12 Local (Locally)
  - 1. An action performed by an operator outside the Control Room.
- 3.13 Manual (Manually)
  - 1. An action performed by an operator in the Control Room. This does not include automatic actions which take place without operator intervention.
- 3.14 Optimal Recovery Procedures (ORPs)
  - 1. Those IPEOPs which provide guidance to recover the plant in the most efficient manner to a safe and stable end state.
  - 2. These procedures are organized to provide the best sequence of actions to address all possible entry conditions.
  - 3. These procedures are identified by the procedure identifiers E, ES, and ECA.
| WISC            | WISCONSIN PUBLIC SERVICE CORPORATION<br>KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                        |                                                                                                                                    | <b>NO.</b> (                                                | IG-0                                             |                              |              |
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| К               |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                    | TITLE User's Guide For Emergency And<br>Abnormal Procedures |                                                  |                              |              |
|                 | <b>OPERATING PROCEDURE</b>                                                                                                                                                                                                                                                                                                  |                                                                                                                                    |                                                             | DEC 02 2003                                      | PAGE 5                       | <b>of</b> 28 |
|                 |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                    |                                                             |                                                  |                              |              |
| 3.15            | Pla                                                                                                                                                                                                                                                                                                                         | acekeeping Aids                                                                                                                    |                                                             |                                                  |                              |              |
|                 | 1.                                                                                                                                                                                                                                                                                                                          | Methods used to help an individe performed and which steps are g                                                                   | dual ider<br>yet to be                                      | ntify which step<br>e performed in a             | os have been<br>a procedure. |              |
| 3.16            | Qui                                                                                                                                                                                                                                                                                                                         | ick Reference Foldout (QRF)                                                                                                        |                                                             |                                                  |                              |              |
|                 | 1.                                                                                                                                                                                                                                                                                                                          | A single page document related<br>IPEOPs                                                                                           | to a sir                                                    | ngle IPEOP or g                                  | roup of                      |              |
|                 | 2. Although QRFs contain information or actions that are applicable<br>at any step in the related procedure(s) unless stated otherwise,<br>it is emphasized that the actions in the QRF for E-O shall <u>NOT</u> be<br>implemented in a manner that would interfere with the timely<br>completion of E-O immediate actions. |                                                                                                                                    |                                                             |                                                  |                              |              |
| 3.17            | Ret                                                                                                                                                                                                                                                                                                                         | Referencing                                                                                                                        |                                                             |                                                  |                              |              |
|                 | 1.                                                                                                                                                                                                                                                                                                                          | 1. The use of other information to PERFORM the current step.                                                                       |                                                             |                                                  |                              |              |
| 3.18            | Rup                                                                                                                                                                                                                                                                                                                         | ptured Steam Generator                                                                                                             |                                                             |                                                  |                              |              |
|                 | 1.                                                                                                                                                                                                                                                                                                                          | Refers to any steam generator a<br>primary-to-secondary leakage in<br>such that safety injection is (<br>coolant system inventory. | with demo<br>n excess<br>or was re                          | onstrated<br>of charging sys<br>equired to maint | stem capacit<br>tain reactor | y            |
| 3.19            | Tra                                                                                                                                                                                                                                                                                                                         | ansitioning                                                                                                                        |                                                             |                                                  |                              |              |
|                 | 1.                                                                                                                                                                                                                                                                                                                          | Stopping the procedure at the mitigation strategy at a new p                                                                       | current s<br>bint.                                          | step and resumin                                 | ng the event                 |              |
| 3.20            | Vei                                                                                                                                                                                                                                                                                                                         | rify                                                                                                                               |                                                             |                                                  |                              |              |
|                 | <ol> <li>To determine if the specified condition exists and if necessary<br/>take action to ESTABLISH that condition.</li> </ol>                                                                                                                                                                                            |                                                                                                                                    |                                                             |                                                  |                              |              |
| 4.0 <u>Prec</u> | auti                                                                                                                                                                                                                                                                                                                        | ions_And_Limitations                                                                                                               |                                                             |                                                  |                              |              |
| 4.1             | Nor                                                                                                                                                                                                                                                                                                                         | ne                                                                                                                                 |                                                             |                                                  |                              |              |
| 5.0 <u>Init</u> | <u>ia</u> ]                                                                                                                                                                                                                                                                                                                 | Conditions                                                                                                                         |                                                             |                                                  |                              |              |
| 5.1             | Nor                                                                                                                                                                                                                                                                                                                         | ne                                                                                                                                 |                                                             |                                                  |                              |              |
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|                                                                                       | N PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | NO. U                                                                                                                                                                                                                                                                                                                                                   | G~0                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                        |              |
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| KEWA                                                                                  | UNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | TITLE                                                                                                                                                                                                                                                                                                                                                   | User's Guide F<br>Abnormal Proce                                                                                                                                                                                                                                                                                                                                                                                                                                    | for Emergency<br>edures                                                                                                                                                                                                                                                                | And          |
| OF                                                                                    | PERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | DATE                                                                                                                                                                                                                                                                                                                                                    | DEC 02 2003                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PAGE 6                                                                                                                                                                                                                                                                                 | <b>of</b> 28 |
| OF<br>6.0 <u>Procedur</u><br>6.1 <u>Gen</u><br>1.<br>2.<br>3.<br>4.<br>5.<br>6.<br>7. | <ul> <li>PERATING PROCEDURE</li> <li>eral Operating Guidelines For Al<br/>When the need for a turbine TR<br/>injection is imminent or unavo<br/>these signals manually wheneve</li> <li>a. If a manual turbine trip,<br/>deemed necessary, the crew<br/>action should state the re<br/>allow the remaining crew m<br/>current plant conditions warran<br/>automatic actuation of the</li> <li>During abnormal and emergency<br/>authority to take action that<br/>plant conditions before being<br/>such action is not contrary to<br/>and does not hamper the comple</li> <li>Automatic controls not perform<br/>be manually controlled.</li> <li>Components which require manua<br/>procedure reader when the appl</li> <li>All failures of plant componen<br/>and/or SM.</li> <li>Annunciators shall be promptly<br/>against plant conditions per F</li> <li>Concerns or objections to the<br/>along with the basis for these<br/>made known as soon as possible</li> <li>a. If time permits, the state<br/>discussed with and resolve</li> </ul> | DATE<br>bnormal C<br>IP, react<br>idable, t<br>r possibl<br>reactor t<br>member r<br>ason for<br>embers to<br>nd valida<br>tion.<br>t, the SM<br>se protec<br>condition<br>is clearl<br>directed<br>the proc<br>tion of t<br>ing their<br>l control<br>icable st<br>ts shall<br>noted, a<br>P-OP-COO-<br>stated or<br>concerns<br>d concern<br>d by the | DEC 02 2003<br>onditions<br>or TRIP, or safe<br>he operator sho<br>e.<br>rip or safety i<br>ecommending or<br>the action. The<br>independently<br>te or refute, and<br>or CRS may cho<br>tive features.<br>s, an operator<br>y needed based<br>by procedures,<br>edure currently<br>he procedure st<br>intended funct<br>shall be report<br>ep is read.<br>be reported to<br>cknowledged, ar<br>01, CONDUCT OF<br>intended cours<br>or objections<br>SM and/or CRS. | PAGE 6<br>ety<br>puld INITIATE<br>njection is<br>ordering the<br>is will<br>evaluate the<br>s necessary.<br>pose to allow<br>has the<br>on observed<br>provided<br>in effect<br>eps.<br>tion should<br>ted to the<br>the CRS<br>id verified<br>OPERATIONS.<br>se of action<br>shall be | of 28        |

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| к                                                                                                                                                                                                   | KEWAUNEE NUCLEAR POWER PLANT |                                                                                                   | TITLE                 | User's Guide f<br>Abnormal Proce  | For Emergenc<br>edures | y And        |
|                                                                                                                                                                                                     | O                            | PERATING PROCEDURE                                                                                | DATE                  | DEC 02 2003                       | PAGE 7                 | <b>of</b> 28 |
|                                                                                                                                                                                                     |                              |                                                                                                   |                       |                                   |                        |              |
| 6.2                                                                                                                                                                                                 | <u>Pri</u>                   | ority Of Procedures                                                                               |                       |                                   |                        |              |
|                                                                                                                                                                                                     | 1.                           | In general, plant operating pro<br>consequences of abnormal or em<br>following order of priority: | ocedures<br>ergency ( | which mitigate<br>conditions have | the<br>the             |              |
|                                                                                                                                                                                                     |                              | a. Functional Restoration Pro                                                                     | cedures (             | (FRPs)                            |                        |              |
|                                                                                                                                                                                                     |                              | b. Optimal Recovery Procedure                                                                     | s(ORPs)               |                                   |                        |              |
|                                                                                                                                                                                                     |                              | c. Emergency Operating Proced                                                                     | ures (EOI             | Ps)                               |                        |              |
|                                                                                                                                                                                                     |                              | d. Abnormal Operating Procedu                                                                     | res (AOPs             | 5)                                |                        |              |
| <ol> <li>Alarm Response Procedures (ARPs) are used at any time to determine<br/>which procedures should be used and to provide additional guidance<br/>for specific abnormal conditions.</li> </ol> |                              |                                                                                                   |                       |                                   | ie<br>ce               |              |
|                                                                                                                                                                                                     |                              |                                                                                                   |                       |                                   |                        |              |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                               | NO. UG-Ó                                                                                                                                                                                                                                                                                                                             |  |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                       | TITLE User's Guide For Emergency And<br>Abnormal Procedures                                                                                                                                                                                                                                                                          |  |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                | DATE DEC 02 2003 PAGE 8 of 28                                                                                                                                                                                                                                                                                                        |  |  |  |  |  |
| <ul> <li>6.2<br/><u>CONTINUED</u></li> <li>3. Under certain plant conditions, procedures of "lower priority" may take precedence over procedures of "higher priority".</li> </ul>                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |  |
| EXAMP                                                                                                                                                                                                                                                                                                                                                              | LES                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |  |
| o The IPEOP network consists of ORPs an<br>assuming there is power available to<br>equipment. If busses 5 and 6 are bo<br>to the "lower priority" ECA-0.0, LOS<br>"higher priority" FRP may be in effe                                                                                                                                                             | nd FRPs. These procedures are written<br>at least one train of safeguards<br>th deenergized, the operator must go<br>S OF ALL AC POWER, even though a<br>ct.                                                                                                                                                                         |  |  |  |  |  |
| o In procedures ECA-2.1, UNCONTROLLED<br>GENERATORS, and FR-P.1, RESPONSE TO<br>it is possible that steam generator<br>total feed flow is throttled to less<br>maintain a heat sink. These actions<br>therefore, do not represent a true 1<br>this reason, the "higher priority" p<br>SECONDARY HEAT SINK, contains guidan<br>feed flow has been reduced due to op | DEPRESSURIZATION OF ALL STEAM<br>IMMINENT PRESSURIZED THERMAL SHOCK,<br>levels are below the narrow range and<br>than the minimum flow required to<br>are taken to limit RCS cooldown and,<br>oss of heat removal capability. For<br>rocedure FR-H.1, RESPONSE TO LOSS OF<br>ce that it should not be performed if<br>erator action. |  |  |  |  |  |
| o While performing procedure ES-1.3,TR<br>RECIRCULATION, it may be necessary to<br>lead to indications of degraded core<br>The actions to realign the safety in<br>maintaining core cooling, therefore,<br>"higher priority" core cooling FRPs<br>completed.                                                                                                       | ANSFER TO CONTAINMENT SUMP<br>o REDUCE flow to the core. This may<br>cooling or inadequate core cooling.<br>jection system are related to<br>it is not desirable to implement the<br>until the realignment has been                                                                                                                  |  |  |  |  |  |
| CONTINUED                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                            | <b>NO.</b> UG-0                                                                                                                                                                  |                                          |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                    | TITLE User's Guide<br>Abnormal Proc                                                                                                                                              | For Emergency And<br>edures              |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                             | DATE DEC 02 2003                                                                                                                                                                 | PAGE 9 of 2                              |  |  |  |
|                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                  |                                          |  |  |  |
| ,<br>2                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                  |                                          |  |  |  |
| <u>NTINUED</u>                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                  |                                          |  |  |  |
| 4. While performing IPEOPs, plant conditions may indicate the need to<br>correct problems not directly related to the event mitigation<br>strategy. The operator may perform EOPs, AOPs, and ARPs which<br>address these problems as long as the actions do not interfere<br>with performance of the IPEOPs.                    |                                                                                                                                                                                  |                                          |  |  |  |
| EXAMP                                                                                                                                                                                                                                                                                                                           | <br>?LE                                                                                                                                                                          |                                          |  |  |  |
| While performing ES-1.2, POST LOCA COOLDOWN AND DEPRESSURIZATION, a high<br>temperature alarm is received on the spent fuel pool. The appropriate<br>spent fuel pool cooling EOPs. AOPs, and ARPs may be performed<br>concurrently with the IPEOPs as long as these actions do not interfere<br>with performance of the IPEOPs. |                                                                                                                                                                                  |                                          |  |  |  |
| 5. Response to events not addresse<br>either ARPs, AOPs or EOPs.                                                                                                                                                                                                                                                                | ed by the IPEOPs may st                                                                                                                                                          | art by using                             |  |  |  |
| a. The operator may use ARPs to diagnose the event and determine the appropriate procedure.                                                                                                                                                                                                                                     |                                                                                                                                                                                  |                                          |  |  |  |
| b. If the event is readily identified, the operator may go<br>directly to the appropriate AOP or EOP. ARPs may then be used<br>to verify completion of event mitigation actions.                                                                                                                                                |                                                                                                                                                                                  |                                          |  |  |  |
| EXAMPLES                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                  |                                          |  |  |  |
| o If a control rod drops while the rea<br>start the event mitigation by perfor<br>After the plant is stable, all appli<br>ensure all important actions have be                                                                                                                                                                  | actor is at power, the<br>ming the appropriate A<br>cable ARPs should be r<br>een taken.                                                                                         | operator may<br>OP or EOP.<br>eviewed to |  |  |  |
|                                                                                                                                                                                                                                                                                                                                 | o If a group of related annunciators actuate, but the cause is not readily apparent, the operator may perform the associated ARPs to diagnose the event and stabilize the plant. |                                          |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                         | <b>NO.</b> UG-0                                                                                                                                                                                                                                 |                           |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                 | <b>TITLE</b> User's Guide F<br>Abnormal Proce                                                                                                                                                                                                   | or Emergency And<br>dures |  |  |  |  |
| OPERATING PROCEDURE                                                                                                          | <b>DATE</b> DEC 02 2003                                                                                                                                                                                                                         | <b>PAGE</b> 10 of 28      |  |  |  |  |
| 6.3 <u>Procedure Entry</u>                                                                                                   | 6.3 <u>Procedure Entry</u>                                                                                                                                                                                                                      |                           |  |  |  |  |
| <ol> <li>Performance of all dual-column<br/>Section 4.0, Detailed Procedur</li> </ol>                                        | format procedure shall<br>e, Step 1.                                                                                                                                                                                                            | start at                  |  |  |  |  |
| a. Section 1.0, Introduction,<br>used as necessary to deter                                                                  | and Section 2.0, Sympto<br>mine if the procedure is                                                                                                                                                                                             | ms, may be<br>applicable. |  |  |  |  |
| b. Section 3.0, Automatic Act<br>system response is consist                                                                  | ions, may be used to det<br>ent with current plant c                                                                                                                                                                                            | ermine if<br>onditions.   |  |  |  |  |
| <ol><li>Entry into the IPEOP network s<br/>conditions:</li></ol>                                                             | hall be limited to the f                                                                                                                                                                                                                        | ollowing                  |  |  |  |  |
| a. If all of the following co<br>entered at E-O, REACTOR TR                                                                  | a. If all of the following conditions exist, the IPEOP network is entered at E-O, REACTOR TRIP OR SAFETY INJECTION, Step 1:                                                                                                                     |                           |  |  |  |  |
| <ol> <li>Safety injection syste<br/>required by Technical</li> </ol>                                                         | m has not been locked ou<br>Specifications.                                                                                                                                                                                                     | t as                      |  |  |  |  |
| AND                                                                                                                          |                                                                                                                                                                                                                                                 |                           |  |  |  |  |
| 2. A reactor trip or safe required.                                                                                          | ty injection has occurre                                                                                                                                                                                                                        | d or is                   |  |  |  |  |
| b. <u>IF</u> a loss of all AC power<br>be entered at ECA-0.0, LOS<br>entry condition is also a<br>whenever the operator is i | b. <u>IF</u> a loss of all AC power is observed, the IPEOP network may<br>be entered at ECA-0.0, LOSS OF ALL AC POWER, Step 1. This<br>entry condition is also a continuous action applicable<br>whenever the operator is in the IPEOP network. |                           |  |  |  |  |
| c. If all of the following co<br>to ES-0.0, REDIAGNOSIS, St                                                                  | c. If all of the following conditions exist, the operator may go to ES-0.0, REDIAGNOSIS, Step 1:                                                                                                                                                |                           |  |  |  |  |
| 1. SI is in service or is required.                                                                                          |                                                                                                                                                                                                                                                 |                           |  |  |  |  |
| AND                                                                                                                          | AND                                                                                                                                                                                                                                             |                           |  |  |  |  |
| 2. A transition is made from E-O, REACTOR TRIP OR SAFETY INJECTION.                                                          |                                                                                                                                                                                                                                                 |                           |  |  |  |  |
|                                                                                                                              |                                                                                                                                                                                                                                                 |                           |  |  |  |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>NO.</b> UG-0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | TITLE User's Guide For Emergency And<br>Abnormal Procedures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | DATE DEC 02 2003 PAGE 11 of 28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |
| <ul> <li>6.4 <u>Immediate Action Steps</u> <ol> <li>Immediate action steps are eit designated as Immediate Action around the step number.</li> <li>Operators shall be capable of identified as immediate action</li> <li>Performance of immediate action acknowledgement is requested b</li> <li>In accordance with current pol performed without verbalization been completed, the performing procedure reader/CRS.</li> <li>The order of immediate action is the optimal sequence assumi a time.</li> </ol> </li> </ul> | <ul> <li>OPERATING PROCEDURE DATE DEC 02 2003 PAGE 11 of 28</li> <li>6.4 Immediate Action Steps</li> <li>1. Immediate action steps are either contained in a section designated as Immediate Actions or each step is flagged by a box around the step number.</li> <li>2. Operators shall be capable of performing procedure steps identified as immediate action steps from memory.</li> <li>3. Performance of immediate action steps need not be verbalized until acknowledgement is requested by the procedure reader.</li> <li>4. In accordance with current policy, E-0 immediate actions should be performed without verbalization. When E-0 immediate actions have been completed, the performing operator(s) shall inform the procedure reader/CRS.</li> <li>5. The order of immediate action step presentation in the procedure is the optimal sequence assuming only one action will be taken at a time.</li> </ul> |  |  |  |  |  |  |
| stated sequence as long as the maintained.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | event mitigation strategy is                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |  |  |
| EXAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | IPLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |  |
| <ul> <li>Procedure FR-S.1, RESPONSE TO NUCLEA actions to trip the reactor and trip of feedwater ATWS event requires the reactor status. The operators need perform these actions in the sequence</li> <li>7. Several FRP procedures direct perform actions in E-0, REACTO continuing with the FRP. In t E-0 actions shall not interfer FRP.</li> </ul>                                                                                                                                                                    | <ul> <li>Procedure FR-S.1. RESPONSE TO NUCLEAR POWER GENERATION/ATWS, has immediate actions to trip the reactor and trip the turbine. The analysis for loss of feedwater ATWS event requires the turbine to be tripped regardless of reactor status. The operators need not coordinate their efforts to perform these actions in the sequence presented in the procedure.</li> <li>7. Several FRP procedures direct the operator to verify and/or perform actions in E-O, REACTOR TRIP OR SAFETY INJECTION, while continuing with the FRP. In this situation, the verification of E-O actions shall not interfere with the timely completion of the FRP.</li> </ul>                                                                                                                                                                                                                                                           |  |  |  |  |  |  |
| 8. If the entry conditions for EC<br>FR-S.1, RESPONSE TO NUCLEAR PO<br>performing the immediate actio<br>INJECTION, then the procedure<br>into these procedures.                                                                                                                                                                                                                                                                                                                                                          | FRP. 8. If the entry conditions for ECA-0.0, LOSS OF ALL AC POWER, or FR-S.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS, are met while performing the immediate actions of E-0, REACTOR TRIP OR SAFETY INJECTION, then the procedure reader will immediately direct entry into these procedures.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |  |  |

| WISCO                                                                                                                                                                           | NSI                                                                                                                   | N PUBLIC SERVICE CORPORATION                                                                          | NO.                              | UG-0                                                     |                           |       |
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| KI                                                                                                                                                                              | KEWAUNEE NUCLEAR POWER PLANT                                                                                          |                                                                                                       |                                  | TITLE User's Guide For Emergency And Abnormal Procedures |                           |       |
|                                                                                                                                                                                 | OPERATING PROCEDURE DAT                                                                                               |                                                                                                       |                                  | DEC 02 2003                                              | PAGE 12                   | of 28 |
|                                                                                                                                                                                 |                                                                                                                       |                                                                                                       |                                  |                                                          |                           |       |
| 6.5                                                                                                                                                                             | <u>Gui</u>                                                                                                            | delines_For_Reading_Procedures                                                                        |                                  |                                                          |                           |       |
|                                                                                                                                                                                 | <ol> <li>Procedures being performed by two or more persons should be read<br/>aloud by a procedure reader.</li> </ol> |                                                                                                       |                                  |                                                          |                           |       |
|                                                                                                                                                                                 | 2.                                                                                                                    | The procedure reader shall use specified in FP-OP-COO-O1, CON                                         | the com<br>DUCT OF               | munications tech<br>OPERATIONS.                          | niques                    |       |
|                                                                                                                                                                                 | 3.                                                                                                                    | When a note or caution is being abnormal event, it should be re                                       | g read f<br>ead vert             | or the first tin<br>atim.                                | e during an               |       |
|                                                                                                                                                                                 | 4.                                                                                                                    | If a note or caution is repeate<br>it may be paraphrased.                                             | ed durir                         | ig the same abnor                                        | mal event,                |       |
|                                                                                                                                                                                 | <ol><li>All high level and lower level steps required for step completion<br/>should be read verbatim.</li></ol>      |                                                                                                       |                                  |                                                          |                           |       |
| 6. Equipment lists of component identifiers, provided as substeps to<br>procedure steps, need not be read unless needed to clarify the<br>intent of the step.                   |                                                                                                                       |                                                                                                       |                                  |                                                          |                           |       |
| 6.6                                                                                                                                                                             | <u>Ste</u>                                                                                                            | <u>p Performance</u>                                                                                  |                                  |                                                          |                           |       |
|                                                                                                                                                                                 | 1.                                                                                                                    | ARPs, AOPs, EOPs, and IPEOP pro<br>lineups are as required by play<br>operating procedures.           | ocedure<br>nt checl              | steps are writte<br>lists and other                      | en assuming<br>normal     |       |
|                                                                                                                                                                                 | 2.                                                                                                                    | Unless specifically directed to<br>additional guidance, the applic<br>written in the ARPs, AOPs, EOPs | o "branc<br>cable st<br>s, or If | ch" to another pr<br>cep should be per<br>EOP.           | rocedure for<br>formed as |       |
| EXAMPLE                                                                                                                                                                         |                                                                                                                       |                                                                                                       |                                  |                                                          |                           |       |
| A step states "Start one charging pump and ALIGN normal charging". It is acceptable for the operator to perform these actions without referring to the normal system procedure. |                                                                                                                       |                                                                                                       |                                  |                                                          |                           |       |
|                                                                                                                                                                                 | 3.                                                                                                                    | For dual-column procedures, eachigh level action statement in                                         | ch step<br>the lei               | shall be started<br>t hand column.                       | l with the                | -     |
| CONTINUED                                                                                                                                                                       |                                                                                                                       |                                                                                                       |                                  |                                                          |                           |       |

| WISCONSI                | N PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                     | NO.                  | UG-0                                 |                          |              |  |
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| KEWA                    | UNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                         | TITLE                | User's Guide F<br>Abnormal Proce     | For Emergency<br>edures  | And          |  |
| O                       | PERATING PROCEDURE                                                                                                                                                                                                                                                                                               | DATE                 | DEC 02 2003                          | PAGE 13                  | <b>of</b> 28 |  |
| 6.6<br><u>CONTINUED</u> |                                                                                                                                                                                                                                                                                                                  |                      |                                      |                          |              |  |
| 4.                      | If multiple tasks are required statement describes the purpos presented as substeps.                                                                                                                                                                                                                             | to comp<br>e of the  | lete a step, the<br>step and the ta  | e step<br>Isks are       |              |  |
|                         | <ul> <li>a. Unless a step states other<br/>satisfactorily completed t</li> </ul>                                                                                                                                                                                                                                 | wise, al<br>o satisf | l subordinate ta<br>y the step. [PCF | isks must be<br>ROO2857] |              |  |
|                         | b. Substeps indexed with lett<br>sequential order.                                                                                                                                                                                                                                                               | ers or n             | umbers shall be                      | performed in             |              |  |
|                         | c. Substeps indexed with bullets (•) may be performed in any order.                                                                                                                                                                                                                                              |                      |                                      |                          |              |  |
| 5.                      | . Dual-column procedures are written so that the operator will<br>normally proceed down the left-hand Operator Actions column. This<br>column contains all the expected conditions, actions, and checks<br>required to accomplish the stated purpose of the procedure.                                           |                      |                                      |                          |              |  |
| 6.                      | For dual-column procedures, if a left-hand Operator Action column<br>step has been satisfactorily performed, the operator shall proceed<br>to the next step or substep in the left-hand Operator Action<br>column.                                                                                               |                      |                                      |                          |              |  |
| 7.                      | For dual-column procedures, if the expected conditions, actions,<br>or checks in a left-hand Operator Action column step cannot be<br>satisfied, the operator shall move to the right-hand Contingency<br>Action column for additional guidance.                                                                 |                      |                                      |                          |              |  |
|                         | a. Right-hand Contingency Action column steps are numbered<br>consistent with the left-hand Operator Action column step to<br>which they apply. A right-hand Contingency Action column step<br>which applies to a high level step is not numbered and starts<br>on the same line as the related high level step. |                      |                                      |                          |              |  |
|                         |                                                                                                                                                                                                                                                                                                                  |                      |                                      |                          |              |  |
|                         | CONTINUED                                                                                                                                                                                                                                                                                                        |                      |                                      |                          |              |  |
|                         |                                                                                                                                                                                                                                                                                                                  |                      |                                      |                          |              |  |
|                         |                                                                                                                                                                                                                                                                                                                  |                      |                                      |                          |              |  |

|                                                                                                                                                                                                                                                                                                 | NO. U                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <br>IG-0                                               |                                           |              |  |  |
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| WISCONSIN I OBLIC SERVICE CORFORATION                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | lleonte Cuide l                                        |                                           | y And        |  |  |
| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                    | TITLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Abnormal Proce                                         | edures                                    | y Ana        |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                             | DATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DEC 02 2003                                            | <b>PAGE</b> 14                            | <b>of</b> 28 |  |  |
|                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                        |                                           |              |  |  |
| 6.6.7<br><u>CONTINUED</u>                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                        |                                           |              |  |  |
| b. When a right-hand Continge<br>for a step having subordin<br>shall apply if any left-ha<br>can not be satisfied.                                                                                                                                                                              | ncy Actic<br>ate subst<br>nd Operat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | on column step<br>ceps, the Contin<br>cor Action colum | is provided<br>ngency Actio<br>mn substep | n            |  |  |
| EXAM                                                                                                                                                                                                                                                                                            | PLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                        |                                           |              |  |  |
| A left-hand Operator Action column h<br>has six substeps indexed as a throug<br>Action column contains a correspondi<br>excess letdown with seven substeps i<br>six substeps in the left-hand Operat<br>accomplished, the operator proceeds<br>column and performs all seven action<br>letdown. | A left-hand Operator Action column high level step to establish letdown<br>has six substeps indexed as a through f. The right-hand Contingency<br>Action column contains a corresponding high level step to establish<br>excess letdown with seven substeps indexed as 1 through 7. If any of the<br>six substeps in the left-hand Operator Action column can not be<br>accomplished, the operator proceeds to the right-hand Contingency Action<br>column and performs all seven actions necessary to establish excess<br>letdown. |                                                        |                                           |              |  |  |
| c. After initiating applicabl<br>Contingency Action column,<br>next step or substep in th                                                                                                                                                                                                       | e actions<br>the oper<br>e left-ha                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | s in the right-<br>rator shall pro-<br>and Operator Ac | hand<br>ceed to the<br>tion column.       |              |  |  |
| d. If a right-hand Contingenc<br>provided, the operator sha<br>substep in the left-hand O                                                                                                                                                                                                       | y Action<br>11 procee<br>perator A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | column step is<br>ed to the next s<br>Action column.   | not<br>step or                            |              |  |  |
| e. If a right-hand Contingency Action column step contains<br>sequential substeps, the operator shall perform or attempt to<br>perform all sequential substeps in order prior to proceeding<br>to the next step or substep in the left-hand Operator Action<br>column.                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                        |                                           |              |  |  |
| f. If a right-hand Contingency Action column step cannot be<br>performed and the right-hand Contingency Action column step<br>does not contain sequential substeps, the operator shall<br>proceed to the next step or substep in the left-hand Operator<br>Action column.                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                        |                                           |              |  |  |
| <u>CONTINUED</u>                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                        |                                           |              |  |  |
|                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                        |                                           |              |  |  |

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| WISCONSIN PUBLIC                                                                                                                                                                                            | WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                | G-0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                            |              |
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| KEWAUNEE NU                                                                                                                                                                                                 | KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | For Emergency<br>edures                                                                                                                                                                    | And          |
| OPERATIN                                                                                                                                                                                                    | IG PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | DATE                                                                                                                                                                                                                           | DEC 02 2003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PAGE 15                                                                                                                                                                                    | <b>of</b> 28 |
| 6.6<br><u>CONTINUED</u><br>8. All properform<br>situati<br>a. If<br>may<br>in<br>b. Bul<br>c. If<br>in<br>1.<br>2.<br>Feed flow to<br>secondary heat<br>9. A step<br>step un<br>a. It<br>pro-<br>act<br>the | cedure steps, except imm<br>med in a step by step mar<br>ions:<br>the procedure contains a<br>y be performed out of sec<br>any order.<br>lleted substeps may be per<br>early performance of a s<br>a safer condition, it may<br>Performance of the step<br>with other actions requ<br>All required actions of<br>applicable step is read<br>EXAMP<br>the S/Gs may be reduced<br>at sink requirements are<br>need not be fully complete<br>nless otherwise stated in<br>is sufficient to begin a<br>ogressing satisfactorily.<br>tions do not delay perfor<br>e event mitigation strate | ediate a<br>mer exce<br>note wh<br>uence, t<br>erformed<br>step is n<br>by be per<br>o does no<br>uired by<br>the ste<br>ched.<br>PLE<br>to limit<br>satisfie<br>eted befo<br>the pro<br>task an<br>This e<br>mance of<br>egy. | ction steps, shopt during the finance of the steps may in any order.<br>eccessary to play formed early provide the procedure.<br>a RCS cooldown a state of the proceeding to be a sure of the second state of the | hall be<br>following<br>steps that<br>be performed<br>ace the plant<br>rovided that:<br>interfere<br>when the<br>as long as<br>to the next<br>ce that it is<br>ne consuming<br>at steps in |              |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                | <b>NO.</b> UG-0                                                                                                                                                                                                                                                                                                 |  |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                        | TITLE User's Guide For Emergency And<br>Abnormal Procedures                                                                                                                                                                                                                                                     |  |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                 | DATE DEC 02 2003 PAGE 16 of 28                                                                                                                                                                                                                                                                                  |  |  |  |  |  |
| <ul> <li>6.6.9<br/><u>CONTINUED</u></li> <li>b. Any task still in progress need not be completed prior to<br/>making a transition to a new procedure. However, the<br/>requirement to complete the tasks is still present and must<br/>not be neglected.</li> </ul> |                                                                                                                                                                                                                                                                                                                 |  |  |  |  |  |
| EXAM                                                                                                                                                                                                                                                                | PLE                                                                                                                                                                                                                                                                                                             |  |  |  |  |  |
| While performing E-2, FAULTED STEAM<br>directs an operator to locally CLOSE<br>remain in E-2 while waiting to verif                                                                                                                                                 | GENERATOR ISOLATION, the Control Room<br>a valve. It is not necessary to<br>y completion of this local action.                                                                                                                                                                                                  |  |  |  |  |  |
| c. In steps where radiation so<br>the step where the results<br>when the survey or sampling<br>it is permissible to contin<br>required data is being col                                                                                                            | c. In steps where radiation surveys or sampling are initiated,<br>the step where the results are evaluated must be re-performed<br>when the survey or sampling results are available. However,<br>it is permissible to continue in the procedure while the<br>required data is being collected and/or analyzed. |  |  |  |  |  |
| 6.7 <u>Continuous Action Statement (CAS)</u>                                                                                                                                                                                                                        | na identified by the decignator                                                                                                                                                                                                                                                                                 |  |  |  |  |  |
| (CAS) at the beginning of the                                                                                                                                                                                                                                       | step text.                                                                                                                                                                                                                                                                                                      |  |  |  |  |  |
| <ol> <li>Continuous action statements a<br/>statements.</li> </ol>                                                                                                                                                                                                  | re also created by <u>WHEN, THEN</u> logic                                                                                                                                                                                                                                                                      |  |  |  |  |  |
| <ol> <li>Whenever possible, the procedu<br/>responsibility for a continuou<br/>at the controls.</li> </ol>                                                                                                                                                          | re reader should assign<br>s action to the appropriate Operator                                                                                                                                                                                                                                                 |  |  |  |  |  |
| 4. Once a continuous action step is encountered, it applies throughout the remainder of that procedure.                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                 |  |  |  |  |  |
| 5. After transitioning to another procedure, continuous action steps<br>are applicable unless superseded by alternate guidance in the new<br>procedure or stated to be inapplicable.                                                                                |                                                                                                                                                                                                                                                                                                                 |  |  |  |  |  |
| CONTINU                                                                                                                                                                                                                                                             | CONTINUED                                                                                                                                                                                                                                                                                                       |  |  |  |  |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>NO.</b> UG-0                                                                                                                         |                                                                         |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT User's Guide For Emergency And<br>Abnormal Procedures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                         |                                                                         |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DATE DEC 02 2003                                                                                                                        | <b>PAGE</b> 17 of 28                                                    |  |  |
| <ul> <li>6.7<br/><u>CONTINUED</u></li> <li>6. If a Red or Orange path FRP is<br/>steps from the previous procedu<br/>into a Red or Orange path FRP i<br/>severely degraded and the strat<br/>not effective.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | entered, any continuous<br>ures should <u>NOT</u> be perfo<br>indicates that plant cor<br>tegy of the suspended pr                      | s action<br>Drmed. Entry<br>Iditions have<br>Pocedures is               |  |  |
| EXAMI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PLES                                                                                                                                    |                                                                         |  |  |
| <ul> <li>o Following a reactor trip and loss of off site power, the operator encounters a continuous action statement in ES-0.1, REACTOR TRIP RESPONSE, to maintain stable plant conditions. Due to the loss of off site power, the operator transitions to ES-0.2, NATURAL CIRCULATION COOLDOWN. The guidance to maintain stable plant conditions remains in effect until the operator encounters a step in ES-0.2 to start a controlled cooldown.</li> <li>o Following a large break LOCA, the operator enters E-1, LOSS OF REACTOR OR SECONDARY COOLANT, where a step checks to see if containment spray numbers should be stopped. If containment pressure is still high the</li> </ul> |                                                                                                                                         |                                                                         |  |  |
| step directs the operator to continu<br>containment spray pumps when contain<br>pressure setpoint. The substeps to<br>continuous action steps until they h<br>to STOP containment spray pumps shal<br>operator transitions from E-1.                                                                                                                                                                                                                                                                                                                                                                                                                                                        | The with the procedure an<br>iment pressure goes belo<br>STOP containment spray<br>have been completed. The<br>Il remain in effect even | nd STOP<br>ow a specific<br>pumps are now<br>ne requirement<br>n if the |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                         |                                                                         |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                         |                                                                         |  |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION                        |                                                                                                                                                                                                                                                                               | NO.                                                                     | UG-0.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                             |             |
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| KEWAUNEE NUCLEAR POWER PLANT TITLE                          |                                                                                                                                                                                                                                                                               |                                                                         | User's Guide For Emergency And<br>Abnormal Procedures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                             |             |
| 0                                                           | PERATING PROCEDURE                                                                                                                                                                                                                                                            | DATE                                                                    | DEC 02 2003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PAGE 18                                                                                                     | <b>of</b> 2 |
|                                                             |                                                                                                                                                                                                                                                                               |                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                             |             |
| 6.8 <u>No</u>                                               | tes And Cautions                                                                                                                                                                                                                                                              |                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                             |             |
| 1.                                                          | Notes and cautions are considen precede and shall be reviewed p                                                                                                                                                                                                               | red part<br>prior to                                                    | of the step wh<br>performance of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ich they<br>that step.                                                                                      |             |
| 2.                                                          | Unless stated otherwise in the to the step which they precede that procedure.                                                                                                                                                                                                 | procedu<br>and thr                                                      | re, notes and construction of the second constru | autions apply<br>ainder of                                                                                  |             |
| 3.                                                          | 3. Unless stated otherwise in the procedure, applicability of notes<br>and cautions terminates when transitioning from a procedure. If<br>the operator returns to a procedure in effect, any applicable<br>notes and cautions within that procedure are once again in effect. |                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                             |             |
|                                                             | EXAMI                                                                                                                                                                                                                                                                         | PLE                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                             | 7           |
| loca<br>thro<br>E-1,<br>SECO<br>E-1<br>step<br>requ<br>agai | ted prior to the first procedure<br>ughout the procedure. If a loss<br>the operator would transition to<br>NDARY HEAT SINK. This transition<br>QRF. After completing FR-H.1, th<br>in effect. Upon returning to E-<br>irement to monitor E-1 QRF stated<br>n in effect.       | step, C<br>of heat<br>FR-H.1<br>remove<br>ne opera<br>1 at th<br>in the | RF monitoring i<br>sink is identi<br>RESPONSE TO L<br>tor returns to<br>last step in<br>note prior to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | s applicable<br>fied while in<br>DSS OF<br>nt to monitor<br>procedure and<br>progress, the<br>E-1 Step 1 is |             |
| 6.9 <u>Qu</u>                                               | ick_Reference_Foldout_(QRF)                                                                                                                                                                                                                                                   |                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                             |             |
| 1.                                                          | QRFs contain information or ac                                                                                                                                                                                                                                                | tion ste                                                                | eps.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                             |             |
| 2.                                                          | The QRF page shall be OPEN when<br>are in use.                                                                                                                                                                                                                                | n any of                                                                | its referenced                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | procedures                                                                                                  |             |
| 3.                                                          | Although QRFs contain informate<br>at any step in the related pro-<br>it is emphasized that the action<br>implemented in a manner that we<br>completion of E-0 immediate action                                                                                               | ion or a<br>cedure(s<br>ons in t<br>ould int<br>tions.                  | ictions that are<br>) unless stated<br>he QRF for E-O<br>cerfere with the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | applicable<br>otherwise.<br>shall <u>NOT</u> be<br>timely                                                   |             |
| 4.                                                          |                                                                                                                                                                                                                                                                               |                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                             |             |

| WISCONSIN P                                                                      | UBLIC SERVICE CORPORATION                                                                                                                                                                                                                       | NO.                                                 | UG-0                                                                         |                                                        |
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| KEWAUNEE NUCLEAR POWER PLANT User's Guide For Emergency A<br>Abnormal Procedures |                                                                                                                                                                                                                                                 |                                                     |                                                                              |                                                        |
| OPEI                                                                             | RATING PROCEDURE                                                                                                                                                                                                                                | DATE                                                | DEC 02 2003                                                                  | PAGE 19 of 2                                           |
|                                                                                  |                                                                                                                                                                                                                                                 |                                                     |                                                                              |                                                        |
| 6.10 <u>Setpo</u>                                                                | ints                                                                                                                                                                                                                                            |                                                     |                                                                              |                                                        |
| 1. Wi<br>ad<br>g                                                                 | nen the accuracy of an instrum<br>dverse containment conditions<br>iven parameter will be provide                                                                                                                                               | nent is<br>, a seco<br>ed in br                     | significantly ch<br>nd setpoint valu<br>ackets [].                           | nanged by<br>ue for the                                |
| [                                                                                | EXA                                                                                                                                                                                                                                             | MPLE                                                |                                                                              |                                                        |
| 4% [155<br>contain<br>For ad<br>15% and                                          | FOR ADVERSE CONTAINMENT] and<br>nment conditions, maintain na<br>verse containment conditions,<br>i 50%.                                                                                                                                        | d 50%" m<br>rrow ran<br>maintai                     | eans the followi<br>ge level betweer<br>n narrow range l                     | ing: For normal<br>4% and 50%.<br>level between        |
| 2. Uj<br>u:<br>e:                                                                | <ol> <li>Upon entry into the IPEOPs, normal containment setpoints will be<br/>used until either of the adverse containment conditions are<br/>exceeded.</li> </ol>                                                                              |                                                     |                                                                              |                                                        |
| 3. Wi<br>si<br>di<br>ag                                                          | <ol> <li>Whenever containment pressure exceeds 4 psig, adverse containment<br/>setpoints shall be used. If containment pressure subsequently<br/>drops to 4 psig or less, then normal containment setpoints shall<br/>again be used.</li> </ol> |                                                     |                                                                              |                                                        |
| 4. I<br>si<br>di<br>vi<br>si                                                     | f containment radiation exceed<br>etpoints shall be used. If co<br>rops to 10 <sup>+05</sup> R/hr or less <u>ANI</u><br>erified to be less than 10 <sup>6</sup> R<br>hall again be used.                                                        | ds 10+05<br>ontainme<br><u>D</u> integr<br>, then n | R/hr, adverse on<br>nt radiation sub<br>ated containment<br>ormal containmer | containment<br>osequently<br>t dose is<br>it setpoints |
| 5. V(<br>p(                                                                      | erification of integrated con<br>erformed by plant staff in the                                                                                                                                                                                 | tainment<br>e Techni                                | dose will norma<br>cal Support Cent                                          | ally be<br>ter (TSC).                                  |
|                                                                                  |                                                                                                                                                                                                                                                 |                                                     |                                                                              |                                                        |
|                                                                                  |                                                                                                                                                                                                                                                 |                                                     |                                                                              |                                                        |
|                                                                                  |                                                                                                                                                                                                                                                 |                                                     |                                                                              |                                                        |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                          | <b>NO.</b> UG-0                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT TITLE User's Guide For Emergency An<br>Abnormal Procedures                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                           | DATE DEC 02 2003 PAGE 20 of 2                                                                                                                                                                                                                                                                                                                            |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |
| 6.11 <u>Transitions, Branching, And Referer</u>                                                                                                                                                                                                                                                                                                                               | lcing                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |
| <ol> <li>Transitioning is defined as sto<br/>step and resuming the event mit</li> </ol>                                                                                                                                                                                                                                                                                       | opping the procedure at the current<br>rigation strategy at a new point.                                                                                                                                                                                                                                                                                 |  |  |  |  |
| a. Transitions are identified                                                                                                                                                                                                                                                                                                                                                 | by the term "GO TO".                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |
| b. Transitions are created by<br>items.                                                                                                                                                                                                                                                                                                                                       | steps, notes, cautions, or QRF                                                                                                                                                                                                                                                                                                                           |  |  |  |  |
| c. When a transition is made t<br>procedure reader shall ensu<br>the transition.                                                                                                                                                                                                                                                                                              | c. When a transition is made to a different procedure, the procedure reader shall ensure Control Room staff is aware of the transition.                                                                                                                                                                                                                  |  |  |  |  |
| d. When a transition is made t<br>shall note the procedure an<br>transition occurred.                                                                                                                                                                                                                                                                                         | d. When a transition is made to a different procedure, the reader shall note the procedure and step in effect when this transition occurred.                                                                                                                                                                                                             |  |  |  |  |
| e. Step in effect is defined a following the last complete                                                                                                                                                                                                                                                                                                                    | e. Step in effect is defined as the procedure step or substep following the last completed task.                                                                                                                                                                                                                                                         |  |  |  |  |
| EXA                                                                                                                                                                                                                                                                                                                                                                           | 1PLE                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |
| Assume the operator is performing pu<br>Step 10 of procedure A directs a tra<br>completing Step 13 of procedure B, a<br>procedure C. After completing proce<br>return to procedure and step in effe<br>returns to procedure B, Step 13. An<br>operator is again directed to return<br>which is procedure A. Assuming that<br>by transitioning to procedure B, the<br>Step 11. | Procedure A. Based on plant conditions,<br>ansition to procedure B. Prior to<br>a QRF item requires a transition to<br>edure C, the operator is directed to<br>ect. In this case, the operator<br>fiter completing procedure B, the<br>a to procedure and step in effect,<br>t Step 10 of procedure A was completed<br>e operator resumes procedure A at |  |  |  |  |
| f. Tasks in progress need not<br>transition. However, the<br>remains in effect.                                                                                                                                                                                                                                                                                               | be completed prior to the<br>requirement to complete the tasks                                                                                                                                                                                                                                                                                           |  |  |  |  |
| 2. Branching is defined as the comprocedures.                                                                                                                                                                                                                                                                                                                                 | current performance of two or more                                                                                                                                                                                                                                                                                                                       |  |  |  |  |
| a. Branching is identified by accordance with".                                                                                                                                                                                                                                                                                                                               | the terms "per", "perform", or "in                                                                                                                                                                                                                                                                                                                       |  |  |  |  |
| CONTINUI                                                                                                                                                                                                                                                                                                                                                                      | ED                                                                                                                                                                                                                                                                                                                                                       |  |  |  |  |

| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>NO.</b> UG-0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>KEWAUNEE NUCLEAR POWER PLANT TITLE</b> User's Guide For Emergency And Abnormal Procedures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | DATE DEC 02 2003 PAGE 21 of 28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |
| 6.11.2<br>CONTINUED<br>b. If a conflict in guidance of procedures, it shall be<br>Description of procedures, it shall be<br>EXAM<br>While performing procedure A, the of procedure B, the operator is directed lineup using checklist procedure C. subordinate to procedure B while proto procedure A. The operator is on of procedure A. The operator is on of procedure B which restore cooling of procedure C which verify system at the current step.<br>3. Referencing is defined as the of the current step.<br>3. Referencing is identified the directed by".<br>b. Any operator actions specifishall become part of the standard become part of th | DATE       DEC 02 2003       PAGE 21 of 28         exists during concurrent performance resolved by the SM/CRS.         PLE         perator is directed to restore cooling cedure B. During performance of ed to verify cooling water system         In this situation, procedure C is breedures B and C are both subordinate ly required to perform those portions grater flow and only those portions alignment.         use of other information to perform         by the terms "refer to" or "as         fied in the referenced document(s) tep in progress.         4PLE         the operator is referred to an |  |  |  |
| attachment which provides a list of<br>note that valve positions can not be<br>This note becomes part of the proced                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | valves. This attachment contains a<br>e checked until power is available.<br>dure step in progress.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |

| WISCO | ONSI                                                                                                                       | N PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                    | <b>NO.</b> UG-0                                                                                     |  |  |
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| К     | EWA                                                                                                                        | UNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                        | TITLE User's Guide For Emergency And<br>Abnormal Procedures                                         |  |  |
|       | O                                                                                                                          | PERATING PROCEDURE                                                                                                                                                                                                                                                                              | DATE DEC 02 2003 PAGE 22 of 28                                                                      |  |  |
|       |                                                                                                                            |                                                                                                                                                                                                                                                                                                 |                                                                                                     |  |  |
| 6.12  | <u>P1a</u>                                                                                                                 | cekeeping                                                                                                                                                                                                                                                                                       |                                                                                                     |  |  |
|       | 1.                                                                                                                         | The operator may wish to write separate log. This does not m                                                                                                                                                                                                                                    | in the procedure instead of in a ake the procedure a QA record.                                     |  |  |
|       | 2.                                                                                                                         | Lines and arrows indicative of                                                                                                                                                                                                                                                                  | the flowpath taken may be used.                                                                     |  |  |
|       | 3.                                                                                                                         | Additional information such as or conditions can be written n                                                                                                                                                                                                                                   | parameter values and trends, times,<br>ear the steps or flowpath taken.                             |  |  |
|       | 4.                                                                                                                         | Completion of a step can be re<br>to the step number.                                                                                                                                                                                                                                           | corded by placing a check mark next                                                                 |  |  |
|       | 5.                                                                                                                         | Steps which are in progress and continuous action steps can be<br>identified by placing a circle next to the step number. Once the<br>step has been completed, a check mark can be placed in the circle.                                                                                        |                                                                                                     |  |  |
|       | 6.                                                                                                                         | When transitioning to a new procedure, the appropriate symptoms in<br>the new procedure can be marked to identify the procedure and step<br>in effect prior to entering the new procedure. An alternative<br>would be to write this information next to the first step in the<br>new procedure. |                                                                                                     |  |  |
|       | 7.                                                                                                                         | When the marked up procedure i replaced with a clean copy.                                                                                                                                                                                                                                      | s no longer required, it shall be                                                                   |  |  |
| 6.13  | <u>Cri</u>                                                                                                                 | tical Safety Functions                                                                                                                                                                                                                                                                          |                                                                                                     |  |  |
|       | 1.                                                                                                                         | Critical safety functions are product barriers are maintaine                                                                                                                                                                                                                                    | monitored to ensure that fission<br>d.                                                              |  |  |
|       | 2.                                                                                                                         | Challenges to these barriers a diagrams called status trees.                                                                                                                                                                                                                                    | re evaluated using special logic                                                                    |  |  |
|       | a. Status trees may be monitored automatically using the plant computer or manually using hard copies of the status trees. |                                                                                                                                                                                                                                                                                                 |                                                                                                     |  |  |
|       |                                                                                                                            | b. The official status trees are located in controlled copies of<br>IPEOPs.                                                                                                                                                                                                                     |                                                                                                     |  |  |
|       |                                                                                                                            | c. If any parameter on a plan<br>as "Invalid parameter", th<br>manually monitored using h                                                                                                                                                                                                       | t computer status tree is identified<br>e associated status tree shall be<br>ard copy status trees. |  |  |
|       |                                                                                                                            | <u>CONTINU</u>                                                                                                                                                                                                                                                                                  | ED                                                                                                  |  |  |
|       |                                                                                                                            |                                                                                                                                                                                                                                                                                                 |                                                                                                     |  |  |

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| KEWAUNEE NUCLEAR POWER PLANT |                                                                                        | TITLE User's Guide For Emergency And<br>Abnormal Procedures                              |  |  |
| <b>O</b> ]                   | PERATING PROCEDURE                                                                     | DATE DEC 02 2003 PAGE 23 of 28                                                           |  |  |
|                              |                                                                                        |                                                                                          |  |  |
|                              |                                                                                        |                                                                                          |  |  |
| 6.13.2<br><u>CONTINUED</u>   |                                                                                        |                                                                                          |  |  |
|                              | d. When conflicts exist, the<br>copy status trees shall b<br>associated critical safet | results of manually monitored hard<br>e used to determined the status of<br>y functions. |  |  |
| 3.                           | The six critical safety funct order of priority:                                       | ions are evaluated in the following                                                      |  |  |
|                              | a. Subcriticality (S)                                                                  |                                                                                          |  |  |
|                              | b. Core Cooling (C)                                                                    |                                                                                          |  |  |
|                              | c. Heat Sink (H)                                                                       | Heat Sink (H)                                                                            |  |  |
|                              | d. Integrity (P)                                                                       | Integrity (P)                                                                            |  |  |
|                              | e. Containment (Z)                                                                     |                                                                                          |  |  |
|                              | f. Inventory (I)                                                                       |                                                                                          |  |  |
| 4.                           | The severity of the challenge color coded in the following                             | to each critical safety function is order of priority:                                   |  |  |
|                              | a. Red Path - represents an fission product barriers.                                  | extreme challenge to one or more                                                         |  |  |
|                              | <ul> <li>b. Orange path - represents<br/>fission product barriers.</li> </ul>          | a severe challenge to one or more                                                        |  |  |
|                              | c. Yellow Path - represents<br>fission product barriers.                               | a potential challenge to one or more                                                     |  |  |
|                              | d. Green path - no challenge                                                           | to fission product barriers exists.                                                      |  |  |
| 5.                           | Any status tree evaluated as<br>any status tree evaluated as                           | a Red Path is higher priority than<br>an Orange, Yellow, or Green Path.                  |  |  |
| 6.                           | Any status tree evaluated as<br>than any status tree evaluate                          | an Orange path is higher priority<br>d as a Yellow or Green Path.                        |  |  |
|                              | CONTINUED                                                                              |                                                                                          |  |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION NO. UG-0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |
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| <b>KEWAUNEE NUCLEAR POWER PLANT TITLE</b> User's Guide For Emergency And Abnormal Procedures                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | DATE DEC 02 2003 PAGE 24 of 28                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |
| 6.13<br>CONTINUED<br>7. If identical color coded challed<br>trees, the action required by<br>function shall be taken.<br>EXAN<br>0 A Red Path on containment is higher<br>core cooling.<br>0 A Red Path on core cooling is higher<br>containment.<br>8. Status trees are evaluated as<br>a. Entry to each status tree<br>left-hand side of the tree<br>b. Questions are answered base<br>and the appropriate branch<br>question.<br>c. Each status tree evaluation<br>terminus is reached. The<br>noted for future reference<br>d. If a Red Path terminus is | DATE DEC 02 2003 PAGE 24 of 28<br>enges are found on different status<br>the higher priority critical safety<br>MPLES<br>r priority than an Orange Path on<br>er priority than a Red Path on<br>follows:<br>is at the arrow located on the<br>ed on plant conditions at the time<br>line is followed to the next<br>n is complete when a color coded<br>results of this evaluation shall be<br>reached, the operator shall |  |  |  |
| immediately STOP any ORPs or lower priority FRPs in progress<br>and transition to the FRP listed next to the Red Path<br>terminus. The remaining status trees shall be monitored for<br>information at least every 5 minutes.                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |
| EXA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | MPLE                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  |
| If during performance of a Red Path FRP, a Red Path of higher priority occurs, the operator shall immediately transition to the higher priority Red Path FRP.                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |
| CONTINUED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |
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| WISCONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>NO.</b> UG-0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| KEWAUNEE NUCLEAR POWER PLANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | TITLE User's Guide For Emergency And<br>Abnormal Procedures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | DATE DEC 02 2003 PAGE 25 of 28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <ul> <li>6.13.8<br/><u>CONTINUED</u></li> <li>e. After completing each state<br/>continues to the next state<br/>trees have been evaluated.</li> <li>f. If any status tree has been<br/>evaluation of all status tr<br/>exist, the operator shall in<br/>priority FRPs in progress a<br/>next to the Orange Path ter<br/>Orange path of highest prior</li> <li>g. If during the performance of<br/>a different tree or higher<br/>the operator shall transiti<br/>Red Path or higher priority</li> <li>h. FR-S.1, FR-P.1 and FR-Z.1 at<br/>Orange Path conditions. If<br/>an Orange condition and the<br/>should continue in the proor<br/>complete the procedure vice</li> <li>i. If any status tree has been<br/>evaluation of all status tr<br/>paths exist, the SM/CRS shi<br/>the associated FRP.</li> </ul> | us tree evaluation, the evaluator<br>us tree in sequence until all status<br>in evaluated as an Orange Path and<br>rees has shown that no Red Paths<br>immediately STOP any ORPs or lower<br>and transition to the FRP listed<br>rminus associated with the active<br>ority.<br>of an Orange Path FRP, a Red Path on<br>priority Orange path is discovered,<br>ion to the FRP associated with the<br>y Orange Path.<br>are used to address both Red and<br>f one of these FRPs are entered on<br>en that condition goes Red, the crew<br>cedure from where they are and<br>e returning to Step 1.<br>n evaluated as a Yellow path and<br>rees has shown that no Red or Orange<br>all determine whether to implement |
| 9. Once an FRP is entered due to a FRP shall be performed to comp<br>a. The FRP is completed when a transition to a specific performed of the procedure and step in effect FRP. <u>CONTINUE</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | a Red or Orange Path condition, that<br>letion.<br>the operator is directed to<br>rocedure or to return to the<br>ct prior to implementation of the<br><u>ED</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

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|                                              | WISCONSIN PUBLIC SERVICE CORPORATION NO. UG-0                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| ency And                                     | <b>KEWAUNEE NUCLEAR POWER PLANT</b> TITLE User's Guide For Emergency And Abnormal Procedures                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| 26 <b>of</b> 28                              | ATE DEC 02 2003 PAGE 26                                                                                                                                                                                                                                                                                                                                                                                              | OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |
| to a<br>a Red<br>S.1.<br>E.<br>are<br>not    | De suspended if a transition to a<br>ed.<br>E<br>DEPRESSURIZATION OF ALL STEAM<br>ty is diagnosed. After<br>UCLEAR POWER GENERATION/ATWS, a Red<br>operator should complete FR-S.1,<br>E TO HIGH CONTAINMENT PRESSURE.<br>no other Red or Orange Paths are<br>A-2.1 at the step in effect.<br>or an ORP which prevents<br>rity Red or Orange Path<br>to completion of the higher<br>of the lower priority FRP is not | <ul> <li>.13.9 <u>ONTINUED</u> b. Performance of the FRP shan higher priority FRP is required. EXA While performing ECA-2.1,UNCONTROLL GENERATORS, a Red Path on subcrition transitioning to FR-S.1, RESPONSE TO Path on containment is diagnosed. and then transition to FR-Z.1, RESP After completing FR-Z.1, and assuming discovered, the operator returns to the performance of FRPs, a lower priority FRP or ORP, performance of the performance of th</li></ul> |  |  |  |
|                                              | ES                                                                                                                                                                                                                                                                                                                                                                                                                   | EXA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |
| d Path<br>-C.1.<br>inment<br>, an<br>ath FRP | INADEQUATE CORE COOLING, a Red Path<br>clears prior to completing FR-C.1.<br>Red Path procedure for containment<br>ONTAINMENT SUMP RECIRCULATION, an<br>g arises, but clears prior to<br>, performance of the Orange Path FR                                                                                                                                                                                         | <ul> <li>o While performing FR-C.1, RESPONSE condition for containment arises be In this situation, performance of is not required.</li> <li>o While performing ES-1.3,TRANSFER TOrange Path condition for core concompleting ES-1.3. In this situat</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |
| d  <br>-C<br>inn<br>ati                      | ES<br>INADEQUATE CORE COOLING, a Red<br>clears prior to completing FR-C<br>Red Path procedure for contain<br>DNTAINMENT SUMP RECIRCULATION, a<br>g arises, but clears prior to<br>, performance of the Orange Pat                                                                                                                                                                                                    | EXA<br>o While performing FR-C.1, RESPONSE<br>condition for containment arises b<br>In this situation, performance of<br>is not required.<br>o While performing ES-1.3,TRANSFER T<br>Orange Path condition for core coo<br>completing ES-1.3. In this situat<br>for core cooling is not required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |

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| WISCONSI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | N PUBLIC SERVICE CORPORATION                                                                                                                                                                                       | <b>NO.</b> UG-0                                                 | · · · · · · · · · · · · · · · · · · · |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------|--|
| KEWA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>KEWAUNEE NUCLEAR POWER PLANT TITLE</b> User's Guide For Emergency And Abnormal Procedures                                                                                                                       |                                                                 |                                       |  |
| OI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | PERATING PROCEDURE                                                                                                                                                                                                 | DATE DEC 02 2003                                                | <b>PAGE</b> 27 of 28                  |  |
| 6.13<br><u>CONTINUED</u> 11. If a Red, Orange, or Yellow Path condition does not clear<br>following completion of the associated FRP, the FRP need not be<br>performed again unless the Red, Orange, or Yellow Path condition<br>clears and then returns. EXAMPLE After completing FR-Z.1, RESPONSE TO HIGH CONTAINMENT PRESSURE, due to an<br>Orange path condition, the operator notes that containment pressure is<br>still above the Orange Path high pressure setpoint. FR-Z.1 need not be<br>performed again until containment pressure exceeds the Red Path setpoint<br>or until containment pressure decreases to below the Orange Path setpoint<br>and then increases again to greater than the Orange Path setpoint. |                                                                                                                                                                                                                    |                                                                 |                                       |  |
| 12.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 12. Critical safety function monitoring shall be started whenever a<br>transition from E-O, REACTOR TRIP OR SAFETY INJECTION, is made or<br>when directed to start monitoring critical safety functions in<br>E-O. |                                                                 |                                       |  |
| 13.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Once started, critical safety performed at the following fre                                                                                                                                                       | function monitoring shal<br>quency:                             | l be                                  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | a. If any Red or Orange Paths exist, or plant conditions are<br>changing rapidly, critical safety functions shall be<br>monitored every 3 to 5 minutes.                                                            |                                                                 |                                       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | b. If only yellow and Green p<br>are not changing rapidly,<br>monitored every 10 to 20 m                                                                                                                           | aths exist, and plant co<br>critical safety function<br>inutes. | onditions<br>as shall be              |  |
| 14.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Critical safety function monit<br>following conditions are satis                                                                                                                                                   | oring may be stopped if<br>fied:                                | any of the                            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | a. The emergency condition has been corrected and a transition to the appropriate plant procedure has been performed.                                                                                              |                                                                 |                                       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | b. The plant is stable in cole<br>established.                                                                                                                                                                     | d shutdown with RHR cool                                        | ing                                   |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | c. Plant staff has determined that critical safety function<br>monitoring is no longer required.                                                                                                                   |                                                                 |                                       |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                    |                                                                 |                                       |  |

| WISC                                                                        | ONSIN PUBLIC SERVICE CORPORATION                                                                                                                                                                                                        | <b>NO.</b> UG-0  |                           |  |  |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------|--|--|
| KEWAUNEE NUCLEAR POWER PLANT User's Guide For Emerge<br>Abnormal Procedures |                                                                                                                                                                                                                                         |                  | or Emergency And<br>dures |  |  |
|                                                                             | OPERATING PROCEDURE                                                                                                                                                                                                                     | DATE DEC 02 2003 | <b>PAGE</b> 28 of 28      |  |  |
|                                                                             |                                                                                                                                                                                                                                         |                  |                           |  |  |
| 6.14                                                                        | Safeguards Actuation Signals                                                                                                                                                                                                            |                  |                           |  |  |
|                                                                             | <ol> <li>Components which receive safeguards actuation signals, such as<br/>safety injection and containment isolation, are designed to remain<br/>in their required position after the actuation signal has<br/>been reset.</li> </ol> |                  |                           |  |  |
|                                                                             | <ol> <li>If it is necessary to RESET a safeguards actuation signal in order<br/>to perform a procedure step, the signal may be reset even though<br/>the procedure does not specifically state to reset the signal.</li> </ol>          |                  |                           |  |  |
|                                                                             | <ol><li>When it is not desirable to RESET a safeguards action signal, this<br/>requirement shall be specifically stated in the procedure.</li></ol>                                                                                     |                  |                           |  |  |
| 7.0 <u>Fina</u>                                                             | al Conditions                                                                                                                                                                                                                           |                  |                           |  |  |
| 7.1                                                                         | None                                                                                                                                                                                                                                    |                  |                           |  |  |
| 8.0 <u>Ref</u> e                                                            | erences                                                                                                                                                                                                                                 |                  |                           |  |  |
| 8.1                                                                         | 8.1 Westinghouse Owners Group Emergency Response Guidelines, Executive Volume                                                                                                                                                           |                  |                           |  |  |
| 8.2                                                                         | 8.2 PCR002857                                                                                                                                                                                                                           |                  |                           |  |  |
| 8.3                                                                         | 8.3 PCR008341                                                                                                                                                                                                                           |                  |                           |  |  |
| 9.0 <u>Records</u>                                                          |                                                                                                                                                                                                                                         |                  |                           |  |  |
| 9.1                                                                         | 9.1 None                                                                                                                                                                                                                                |                  |                           |  |  |
|                                                                             |                                                                                                                                                                                                                                         |                  |                           |  |  |
|                                                                             |                                                                                                                                                                                                                                         |                  |                           |  |  |
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|                                                                             |                                                                                                                                                                                                                                         |                  |                           |  |  |

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# CALCULATION COVER SHEET AND REVIEW REPORT

| Calculation                                                                                                          | n No.                                         | C11617                                        |                        | Title of Cal      | D<br>Iculation: N                     | etermination<br>10nitor EALs                                          | of Contai                             | nment Radia    | tion                                   |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------|------------------------|-------------------|---------------------------------------|-----------------------------------------------------------------------|---------------------------------------|----------------|----------------------------------------|
| Rev. No.                                                                                                             |                                               | 0                                             | ·····                  | · · · ·           |                                       |                                                                       |                                       |                | ······································ |
| Addendum                                                                                                             | n Letter                                      |                                               |                        | Title of Ad       | dendum:                               |                                                                       |                                       | · · · ·        | ······                                 |
|                                                                                                                      | ·                                             | <i>.</i>                                      |                        |                   | •                                     |                                                                       |                                       |                |                                        |
| Safety Relat                                                                                                         | ted .                                         | 🗌 Yes 🖾 No                                    | (1)                    |                   | - · ·                                 |                                                                       | . :                                   | -              | (2)                                    |
| Svstem(s)                                                                                                            | / System N                                    | <u>o(s)</u> :                                 |                        |                   | · · · ·                               |                                                                       | · · · · · · · · · · · · · · · · · · · | <u></u>        |                                        |
| Radiation M                                                                                                          | onitoring (R)                                 | 1)/45                                         |                        |                   | · .                                   | . ;                                                                   |                                       |                | (3)                                    |
| <u>Originatin</u>                                                                                                    | g Docume                                      | <u>nt</u> :                                   |                        | 141 - 43<br>2 1 1 |                                       | · .                                                                   |                                       |                |                                        |
| NEI 99-01, R                                                                                                         | ev. 4                                         |                                               |                        |                   | 1                                     |                                                                       | · · ·                                 |                | (4)                                    |
| Supersede                                                                                                            | s:                                            |                                               |                        |                   | Supersede                             | d By:                                                                 |                                       | · · ·          |                                        |
| Calculatio                                                                                                           | n No(s).                                      | <u>n/a</u>                                    | · · · ·                |                   | Calculation                           | n No(s). <u>n/a</u>                                                   | <u> </u>                              |                |                                        |
| Addendun                                                                                                             | n No(s).                                      |                                               |                        |                   | Addendum                              | 1 No(s).                                                              | · · ·                                 |                | , t                                    |
|                                                                                                                      | · · ·                                         |                                               |                        | (5)               |                                       | •                                                                     |                                       |                | (6)                                    |
| Discipline:<br>Engir<br>Chen<br>Comp<br>Electric<br>Discipline:<br>Discipline:<br>Discipline:<br>Discipline:<br>Comp | ncering Mec<br>nistry/Radiz<br>puter<br>rical | hanics/Structural Er<br>ition Protection (Che | ngineering (I<br>m/RP) | EM/SE)            | · · ·                                 | <ul> <li>□ I&amp;C</li> <li>☑ Nuclear</li> <li>□ Mechanica</li> </ul> | ม                                     |                | <u>(</u> 7)                            |
| This Calcu                                                                                                           | lation has                                    | been reviewed and                             | l was accon            | nplished by       | the following                         | ng:                                                                   | Review                                | ers' Initials  | (8)                                    |
| Verific                                                                                                              | cation (Inc                                   | lependent Review)                             | *                      | ••••••            |                                       | · ·                                                                   |                                       |                |                                        |
| I Techni                                                                                                             | ical Reviev                                   | v                                             | · ·                    |                   | · ·                                   |                                                                       | T                                     | <u>RW</u>      |                                        |
| Preparer                                                                                                             | Reviewer                                      | Comments Attached                             | Disciplin              | ic                | Printed N                             | lame                                                                  |                                       | Signature      | Date (9)                               |
|                                                                                                                      |                                               | 🗌 Yes 🖾 No                                    | Nuclea                 | <b>r</b>          | John Helfe                            | nberger                                                               | - Ast                                 | Helpiley       | 18-19-04                               |
|                                                                                                                      | $\boxtimes$                                   | Yes No                                        | Nuclea                 | <b>r</b> 1        | Tim Wil                               | tman                                                                  | tim                                   | the R. With    | 10/20/04                               |
|                                                                                                                      |                                               | Yes No                                        |                        |                   |                                       |                                                                       | ·                                     |                |                                        |
|                                                                                                                      |                                               | Yes No                                        |                        |                   | •                                     | ·····                                                                 | <u></u>                               |                |                                        |
| Approver:                                                                                                            | : Prii                                        | nted Name:                                    | John H                 | Ielfenberger      | r                                     | Wisconsi                                                              | n PE Stam                             | p (If Required | )                                      |
|                                                                                                                      | Sigi                                          | nature:                                       | the state              | Nelino            | <u>y</u>                              | -                                                                     |                                       |                |                                        |
|                                                                                                                      | Dat                                           | e:                                            | 10-                    | 21.04             | . JEH                                 | -                                                                     | · ·                                   |                |                                        |
| Effective I                                                                                                          | Date:                                         |                                               | 10                     | ~                 |                                       |                                                                       |                                       |                | . '                                    |
| (See Steps 6.4<br>If different fi                                                                                    | 4.4 and 6.4.5)<br>rom Approve                 | r Date)                                       | n/a                    |                   |                                       |                                                                       |                                       |                | · ·.                                   |
|                                                                                                                      |                                               | . · · ·                                       |                        |                   |                                       | -                                                                     | :<br>                                 | · . ·          | · .                                    |
|                                                                                                                      |                                               | · · ·                                         | · · · · ·              |                   | ··· ·                                 |                                                                       | · ·                                   |                |                                        |
| 1 Partition                                                                                                          |                                               |                                               | . *                    |                   |                                       | ,<br>, , ,<br>, ,                                                     | т.<br>К. а.                           |                | •                                      |
|                                                                                                                      |                                               |                                               | •. •.                  |                   |                                       |                                                                       |                                       |                |                                        |
| <u> </u>                                                                                                             | · · · · · · · · · · · · · · · · · · ·         |                                               | . :                    |                   | ·<br>                                 | (10)                                                                  | · · ·                                 | •<br>•         | (11)                                   |
| There are included                                                                                                   | ·                                             |                                               | •<br>                  |                   | · · · · · · · · · · · · · · · · · · · |                                                                       |                                       |                |                                        |

# CALCULATION VERIFICATION CHECKLIST

#### Calculation # C11617

Revision 0

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#### Verification Items

#### Purpose

- Clear objective and problem statement
- Affected SSC been identified
- Intended use of results been identified
- Any limitation of applicability
- Revision content been summarized

#### Methodology

.

- Discussion of the method/approach and major steps
- Limitation of use of methodology identified

#### Acceptance Criteria

- Clear definition of acceptance criteria
- Exceptions clearly defined
- Sources of acceptance criteria clearly defined

#### Assumptions

- Sufficient rationale to permit verification of assumption
- Have unverified assumptions been identified as such
  - References provided for assumptions

#### Inputs

- All applicable Design Inputs been identified
- Has source document for inputs been identified
- Computer data program SQA approval

#### References

- Have all controlled plant input documents been identified
- If a procedure is cited, has the process owner been notified
- Are references available from KNPP records, or have they been attached

#### Calculation and Results

- Correct formula/method used to support the objective
- Formula variables (including units) clearly labeled and consistent with sources
- Computer program input/output been reviewed
- Reference to sketches provided
- Sufficient bases/rational to permit verification of engineering judgment
- Proper carry over and use of significant digits

#### Conclusions and Recommendations

- Clear statement of the results consistent with the objective
- Acceptability of the results clearly defined
- Recommendation for unacceptable results, AR written if necessary
- Clear definition of limitations or requirements imposed by the calculation
- necessary to maintain the validity of the results
- Have the effects of the calculation on output documents been identified and addressed

## CALCULATION VERIFICATION COMMENT/RESOLUTION

Calculation # C11617

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Revision 0

Reference Material Used:

| Item #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Reviewer's Comment                    | Preparer Resolution | Reviewer<br>Concurrence |
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| The state is the same same                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                       |                     |                         |
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| Revision No.    | 0           |     |     | , |

Addendum Letter

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| Calculation Verification Checklist (Form GNP-04.03.04-3)                        | NA        | NA       |
| Calculation Verification Comment/Resolution (Form GNP-04.03.04-4)               | NA        | NA       |
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Form GNP-04.03.04-2 Rev. F

## **50.59 APPLICABILITY REVIEW**

(Is the activity excluded from 50.59 review?)

Document/Activity number: C11617, Revision 0

Brief description of proposed activity (what is being changed and why):

Calculation C11617, "Determination of Containment Radiation Monitor EALs" is being performed to establish baseline values for R-40 & R-41 for the new Emergency Action Levels (EAL) Project.

Does the proposed activity involve or change any of the following documents or processes? Check YES or NO for EACH applicability review item. Explain in comments if necessary. [Ref. NMC 50.59 Resource Manual, Section 4]

NOTE: If you are unsure if a document or process may be affected, contact the process owner.

|                                               | Yes †                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | No<br>V | Document or<br>Process                                                                                                                                                                                                                                            | Applicable<br>Regulation | Contact/Action                                                                                                                          |  |  |  |
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| a                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ⊠       | Technical Specifications or Operating License                                                                                                                                                                                                                     | 10CFR50.92               | Process change per NAD-05.14.<br>Contact Licensing.                                                                                     |  |  |  |
| b                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ⊠       | Activity/change previously approved by NRC in license amendment or NRC SER                                                                                                                                                                                        | 10CFR50.90               | Identify NRC letter in comments below. Process change.<br>Contact Licensing for assistance.                                             |  |  |  |
| c                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | Activity/change covered by an existing approved<br>10CFR50.59 review, screening, or evaluation.                                                                                                                                                                   | 10CFR50 Appendix B       | Identify screening or evaluation in comments below.<br>Process change.                                                                  |  |  |  |
| đ                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ⊠.      | Quality Assurance Program (OQAPD/OQAP)                                                                                                                                                                                                                            | 10CFR50.54(a)            | Contact QA.<br>Refer to NAD-01.07.                                                                                                      |  |  |  |
| e                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ⊠       | Emergency Plan                                                                                                                                                                                                                                                    | 10CFR50.54(q)            | Contact EP.<br>Refer to NAD-05.15.                                                                                                      |  |  |  |
| ſ                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ⊠       | Security Plan                                                                                                                                                                                                                                                     | 10CFR50.54(p)            | Contact Security.<br>Refer to NAD-05.17.                                                                                                |  |  |  |
| g                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Ø       | IST Plan                                                                                                                                                                                                                                                          | 10CFR50.55a(f)           | Contact IST process owner.<br>Refer to NAD-01.24.                                                                                       |  |  |  |
| ħ                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Ø       | ISI Plan                                                                                                                                                                                                                                                          | 10CFR50.55a(g)           | Contact ISI process owner.<br>Refer to NADs 01.03, 01.05, and 05.11.                                                                    |  |  |  |
| i                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ⊠       | ECCS Acceptance Criteria                                                                                                                                                                                                                                          | 10CFR50.46               | Contact Licensing.                                                                                                                      |  |  |  |
| j                                             | <b>••</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ⊠       | USAR or any document incorporated by reference -<br>Check YES only if change is editorial (see<br>Attachment A).                                                                                                                                                  | 10CFR50.71               | Process USAR change per NEP-05.02.<br>Contact USAR process owner for assistance.                                                        |  |  |  |
| k                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         | Commitment - Commitment changes associated<br>with a response to Generic Letters and Bulletins, or<br>if described in the USAR require a pre-screening.                                                                                                           | 10CFR50 Appendix B       | Contact Licensing.<br>Refer to NAD-05.25.                                                                                               |  |  |  |
| 1                                             | -0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 8       | Maintenance activity or new/revised maintenance<br>procedure - Check YES only if clearly maintenance<br>and equipment will be restored to its as-designed<br>condition within 90 days (see Attachment C).                                                         | 10CFR50.65               | Evaluate under Maintenance Rule.<br>Refer to NAD-08.20 and NAD-08.21.                                                                   |  |  |  |
| m                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ×       | Degraded/Non-conforming plant condition - Check<br>YES if returned to as-designed condition in a timely<br>manner consistent with safety.                                                                                                                         | 10CFR50 Appendix B       | Initiate an Action Request (AR) and evaluate under<br>GL 91-18, Revision 1.<br>Contact licensing for assistance. Refer to GNP 11.08.03. |  |  |  |
| n                                             | A MANA A MANA A MANANA A MANA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ×       | New/revised administrative or managerial<br>directive/procedure (e.g., NAD, GNP, Fleet<br>Procedure) or a change to any procedure or other<br>controlled document (e.g., plant drawing) which is<br>clearly editorial/administrative. See Attachments A<br>and B. | 10CFR50 Appendix B       | Process procedure/document revision.                                                                                                    |  |  |  |
| 4.<br>5.<br>6.<br>Prep<br>(prin<br>(prin<br>F | Conclusion. Check one of the following:         All documents/processes listed above are checked NO. 10CFR50.59 applies to the proposed activity. A 50.59 pre-screening shall be performed.         One or more of the documents/processes listed above are checked YES, AND controls all aspects of the proposed activity. 10CFR50.59 does NOT apply. Process the change under the applicable program/process/procedure.         One or more of the documents/processes listed above are checked YES, however, some portion of the proposed activity is not controlled by any of the above processes. 10CFR50.59 applies to that portion. A 50.59 pre-screening shall be performed.         Comments:       Calc 11617 evaluates the coolant activities presented in the safety analysis (USAR) for Kewaunee power uprate and converts the activities to representative rad monitor readings as seen in containment.         Print name followed by signature. Attach completed form to document/activity/change package.         repared by:       John Helfenberger         orint/sign)       Image: 10/21/04         print/sign)       Date:         reviewed by:       Timothy R. Wiltman         rint/sign)       Image: 10/21/04         Page 13 of 14       Page 13 of 14 |         |                                                                                                                                                                                                                                                                   |                          |                                                                                                                                         |  |  |  |
|                                               | i i i i i i i i i i i i i i i i i i i                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 11F'*U4 | Date: JUL                                                                                                                                                                                                                                                         | - 22 2003                | Page 13 of 14                                                                                                                           |  |  |  |
|                                               | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         | INFOR                                                                                                                                                                                                                                                             | MATION LICE              | · . · ·                                                                                                                                 |  |  |  |

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## **50.59 PRE-SCREENING**

(Is a 50.59 screening required?)

1. Document/Activity number: C11617. Revision 0

2. Brief description of proposed activity (what is being changed and why):

Calculation C11617, "Determination of Containment Radiation Monitor EALs" is being performed to establish baseline values for R-40 & R-41 for new EALs.
Does the proposed activity involve or change any of the following documents or processes? Explain in Comments if necessary.

Check YES or NO for EACH pre-screening item. [Ref. NMC 50.59 Resource Manual, Section 5.1]

NOTE: If you are unsure if a document or process may be affected, contact the process owner.

NOTE: An asterisk (\*) indicates that the document is incorporated by reference in the USAR or is implicitly considered part of the USAR.

NOTE: Check NO if activity/change is considered editorial, administrative, or maintenance as defined in Attachments A, B, and C. Explain in Comments if necessary.

| ·     | Yes 🗸                      | No 🗸        | Document/Process                                                                                                                                                                                                                                                     | Directive/<br>Procedure                 |  |  |  |
|-------|----------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|--|--|--|
| a     |                            | $\boxtimes$ | Updated Safety Analysis Report (USAR)                                                                                                                                                                                                                                | NEP-05.02                               |  |  |  |
| b     | F                          | $\boxtimes$ | <ul> <li>Technical Specifications Bases or Technical Requirements Manual (TRM)</li> </ul>                                                                                                                                                                            | NAD-05.14,                              |  |  |  |
| С     |                            | N           | Commitments made in response to NRC Generic Letters and Bulletins, and those described in the USAR                                                                                                                                                                   | NAD-05.25                               |  |  |  |
| d     |                            | X           | * Environmental Qualification (EQ) Plan                                                                                                                                                                                                                              | NAD-01.08                               |  |  |  |
| c :   |                            |             | <ul> <li>Regulatory Guide 1.97 (RG 1.97) Accident Monitoring Instrumentation Plan</li> </ul>                                                                                                                                                                         | NAD-05.22                               |  |  |  |
| ſ     |                            | X           | * Fire Plan                                                                                                                                                                                                                                                          | NAD-01.02                               |  |  |  |
| B     |                            | X           | Appendix R Design Description                                                                                                                                                                                                                                        | NAD-01.02                               |  |  |  |
| h     |                            |             | Fire Protection Program Analysis (FPPA)                                                                                                                                                                                                                              | NAD-01.02                               |  |  |  |
| i     |                            | X           | Offsite Dose Calculation Manual (ODCM)                                                                                                                                                                                                                               | NAD-05.13                               |  |  |  |
| j     |                            | $\boxtimes$ | Radiological Environmental Monitoring Manual (REMM)                                                                                                                                                                                                                  | NAD-05.13                               |  |  |  |
| k     |                            | $\boxtimes$ | Station Blackout Design Description                                                                                                                                                                                                                                  | · · · · · · · · · · · · · · · · · · ·   |  |  |  |
| 1     |                            |             | Control Room Habitability Study                                                                                                                                                                                                                                      |                                         |  |  |  |
| m     |                            | $\boxtimes$ | Plant Drawing Changes/Discrepancies                                                                                                                                                                                                                                  | NAD-05.01                               |  |  |  |
| n     | 1                          |             | Calculations/Evaluations/Analyses/Computer Software - Check YES only if: 1) It directly or indirectly involves                                                                                                                                                       | Various                                 |  |  |  |
|       |                            | <b>X</b> .  | affects SSC-described in the USAR, or affects a methodology or method of evaluation safety analysis described in the USAR; or 2) It independently (i.e., not part of a modification) affects the licensing or design basis. (FC-dated 02-                            |                                         |  |  |  |
|       |                            |             | 46-2004) (TC duted 05-05-2004)                                                                                                                                                                                                                                       |                                         |  |  |  |
| 0     |                            | $\boxtimes$ | Permanent Plant Physical Changes - All require a screening.                                                                                                                                                                                                          | NAD-04.03                               |  |  |  |
| P     |                            | $\boxtimes$ | Temporary Plant Physical Changes (TCRs) - Check No only if installed for maintenance AND in effect for less than<br>90 days at power conditions.                                                                                                                     | NAD-04.03                               |  |  |  |
| q     |                            | $\boxtimes$ | QA Typing Determinations - Check YES only if reduction in classification, or affects design function as described in USAR.                                                                                                                                           | NAD-01.01                               |  |  |  |
| r     |                            | $\boxtimes$ | Setpoint or Acceptance Criteria - Check YES only if change affects plant monitoring, performance, or operation.                                                                                                                                                      | Various                                 |  |  |  |
| 5     |                            | $\boxtimes$ | Plant Procedures/Revisions - Check YES if change directly or indirectly involves operation, control, or configuration<br>of SSCs described in USAR (see Attachment B).                                                                                               | NAD-03.01                               |  |  |  |
| t     |                            | $\boxtimes$ | Engineering Specifications - Check YES only if a design function or design requirement may be affected.                                                                                                                                                              | NAD-05.03                               |  |  |  |
| u     |                            |             | Operations Night Orders or Operator Work Arounds - Check YES only if SSCs are operated or configured differently<br>than described in USAR                                                                                                                           | NAD-12.08                               |  |  |  |
| v     | 1                          |             | Temporary plant alterations (e.g., jumpers, scaffolding, shielding, barriers) - Check YES only if installed (or in effect)                                                                                                                                           | NAD-08.14,                              |  |  |  |
|       |                            | $\boxtimes$ | for maintenance for longer than 90 days at power conditions.                                                                                                                                                                                                         | GMP-127,<br>HP-04 007                   |  |  |  |
|       |                            | -           |                                                                                                                                                                                                                                                                      | FPP-08-09                               |  |  |  |
| w     |                            | $\boxtimes$ | Temporary plant alterations - Check YES only if not associated with maintenance.                                                                                                                                                                                     |                                         |  |  |  |
| X     |                            | Ø           | Corrective/Compensatory Actions - Check YES only if degraded/non-conforming plant condition accepted "as-is" or<br>compensatory action taken.                                                                                                                        | GNP-11.08.03                            |  |  |  |
| 4     | Conclus                    | ion Cher    | k one of the following:                                                                                                                                                                                                                                              |                                         |  |  |  |
|       | $\boxtimes$                | All of      | the documents or processes listed above are checked NO. A 50.59 screening is NOT required. Process change in accordance wi                                                                                                                                           | th the applicable                       |  |  |  |
|       | program/process/procedure. |             |                                                                                                                                                                                                                                                                      |                                         |  |  |  |
|       |                            | One or      | more of the documents or processes listed above are checked YES. A 50.59 screening shall be performed.                                                                                                                                                               |                                         |  |  |  |
| 5.    | Comme                      | nts:        |                                                                                                                                                                                                                                                                      | · • • • • • • • • • • • • • • • • • • • |  |  |  |
| 6.    | Print nat                  | ne follow   | culations does not apply because this change does not affect methodolgy, method of evaluation, or the licensing basis. It is met<br>red by signature. Either the prenater or reviewer shall be 50.59 screening qualified. Attach completed form to document/activity | ciy a conversion.                       |  |  |  |
| Pret  | ared by:                   | John        | Helfenberser Date: 10/17/04                                                                                                                                                                                                                                          | erange puerage.                         |  |  |  |
| (prii | i/sign)                    | 100         | 11 0 1 1.11 a M GO PAL                                                                                                                                                                                                                                               |                                         |  |  |  |
| Rev   | iewed by:                  | <u>-  /</u> | nothy R. WIITman I Jempiny R. Wiltman Date: 10/21/04                                                                                                                                                                                                                 | · · · · · · · · · · · · · · · · · · ·   |  |  |  |

Form GNP-04.04.01-2 Rev. C

Date: JUL 22 2003 INFORMATION USE

#### KEWAUNEE NUCLEAR POWER PLANT CALCULATION/EVALUATION

CALC/EVAL NO. C11617 REV. 0 PAGE NO. Page 1

#### 1.0 PURPOSE

The purpose of this calculation is to determine the appropriate values for initiation of Emergency Action Levels (EALs) for Containment High Radiation Monitors R-40 and R-41. In particular, the desired values are the radiation monitor responses during a LOCA with 5% clad damage, LOCA with 20% clad damage, and Technical Specification coolant activity limit dispersed into containment. (1.0  $\mu$ Ci/gm DOSE EQUIVALENT I-131, TS 3.1.c)

#### 2.0 BACKGROUND

Kewaunee Nuclear Power Plant (KNPP) is performing an EAL Upgrade Project. As a part of this project, there will be new values used for the action level settings associated with the containment high range radiation monitors. The current action levels associated with these monitors are based on the most limiting of either of two values: 1) value obtained from EPIP-TSC-09A, Core Damage Assessment procedure or 2) 1000 R/hr (automatic General Emergency per Chart B of EPIP-AD-02). During research and collaboration with the other NMC plants, it was determined that Kewaunee needed to verify values for the high range radiation monitors. Therefore, this calculation will define the radiation values seen in containment under the prescribed conditions (EALs) identified in NEI 99-01, Rev. 4. These 3 conditions of interest are:

- o RCS Barrier Loss (EAL #4)
- o Fuel Clad Barrier Loss (EAL #5)
- o Containment Barrier Potential Loss (EAL #6)

The loss of RCS barrier is calculated at the TS limit for coolant activity. The fuel clad barrier loss has radiation level corresponding to  $300 \ \mu$ Ci/gm I-131 equivalent. Assessment by the NUMARC EAL Task Force indicates that this amount of coolant activity is well above that expected for iodine spikes and corresponds to less than 5% fuel clad damage. This amount of radioactivity indicates significant clad damage and thus the Fuel Clad Barrier is considered lost. The containment barrier potential loss corresponds to a value which indicates significant fuel damage well in excess of that required for loss of RCS and Fuel Clad. It is prudent to treat this as a potential loss of containment, such that a General Emergency declaration is warranted. NUREG-1228, "Source Estimations During Incident Response to Severe Nuclear Power Plant Accidents," indicates that such conditions do not exist when the amount of clad damage is less than 20%.

#### KEWAUNEE NUCLEAR POWER PLANT CALCULATION/EVALUATION

CALC/EVAL NO. REV. PAGE NO. <u>C11617</u> <u>0</u> Page 2

### 3.0 INPUTS AND ASSUMPTIONS

Inputs:

3.0.1 Westinghouse Calculation CN-REA-02-34, Rev. 1, is used as the reference data for this calculation.

3.0.2 Kewaunee Technical Specifications

3.0.3 Updated Safety Analysis Report (USAR)

3.0.4 Offsite Dose Calculation Methodology (ODCM)

Assumptions:

3.1.1 Initial RCS volume dumps into containment during the LOCA.

3.1.2 Release fractions previously contained in the USAR are now internal to the ORIGEN computer code. These values were previously published as USAR table D.1-1 up to Rev. 16.

#### 4.0 METHODOLOGY AND ACCEPTANCE CRITERIA

The method for obtaining the values is as follows:

#### **TS Limit Calculation**

RCS activity values for clad defect (1% failed fuel) are obtained from USAR Table D.4-1 as updated for the Stretch Power Uprate. Dose equivalent factors are obtained from ODCM, Table 2.1 for the noble gases, and TS 1.p (definition section) for the dose equivalent I-131 factors. These values are shown in Attachment A –Table 3. The product of the RCS activites and the dose equiv. factor gives the dose equivalent clad activity which is shown on column 4 of Attachment A – Table 1. Then, the isotopic distribution is given in terms of Dose Equivalent lodine (DEI) I-131 by dividing the I-131 equivalent value into the dose equivalent clad activity. This, in turn, is multiplied by the RCS volume to give the total uCi/gm in the RCS for DE I-131, which is shown in column 6 of Attachment A – Table 1. The containment concentration is obtained by dividing the containment volume into the tota uCi/gm released to containment (column 8 of Table 1). The corresponding dose rates are then determined by multiplying the mR/hr per uCi/cc conversion factors from the ODCM. This gives us a calculated dose rate of 2.66E+01 R/hr for a release at maximum TS allowable coolant activity levels.

Calculation based on Core Total Fission Products

Core total fission product activities are obtained from USAR Table D.1-1 as updated for the Stretch Power Uprate. Dose equivalent factors are obtained from ODCM, Table 2.1 for the noble gases, and TS 1.p (definition section) for the dose equivalent I-131 factors. The product of these 2 values gives the total core dose equivalent activity (column 4 of Attachment A – Table 2). Then, the percent core activity in the GAP is given based on the gap fractions given in column 5. Reg Guide 1.183 gives values for use which are much higher than the values used here (1.0 noble gases, 0.4 halogens). A more conservative estimate of the dose is obtained using the assumed values in 3.1.2 above. The total curie

KEWAUNEE NUCLEAR POWER PLANT CALCULATION/EVALUATION CALC/EVAL NO. REV. PAGE NO. C11617 0 Page 3

in the gap space is then determined by multiplying the total core dose equiv. Activities by the release fractions (column 6, Table 2). This total cuies in the gap space is then multiplied by 300 and divided by the DE I-131 in RCS to get the total dose equivalent Ci in the gap space normalized to 300 uCi/ml. This number is divided by the containment volume to get the total normalized activity (to 300 uCi/ml) released to containment (RCS into containment) during the LOCA (column 8, Table 2). The corresponding dose rates are then determined by multiplying the mR/hr per uCi/cc conversion factors from the ODCM. This gives us a calculated dose rate of 9.89E+02 R/hr representing 5% clad failure. To obtain the 20% clad failure value, the 9.89E+02 R/hr (approximately 1000 R/hr) is multiplied by 4 to get 4000 R/hr.

#### 5.0 REFERENCES

- 5.1. Technical Specifications 3.1.c.
- 5.2. Westinghouse Electric Company Calculation Note Number CN-REA-02-34, Revision 1, "Radiation Sources to Support the Kewaunee 7.4% Uprating Program"
- 5.3 USAR, Rev. 18, Table 11.2-7
- 5.4 EPIP-TSC-09A, Core Damage Assessment
- 5.5 EPIP-AD-02, Emergency Class Determination
- 5.6 NEI 99-01, Rev. 4, Methodology for Development of Emergency Action Levels

## 6.0 CALCULATION AND RESULTS

Refer to Attachment 1 for all calculated values.

Based on the calculation, the following R-40 and R-41 values are obtained:

TS Coolant Activity Limit Release:

2.66E+01 R/hr, rounded to 30 R/hr.

5% Clad Damage:

9.89E+02 R/hr, rounded to 1000 R/hr.

20% Clad Damage:

4000 R/hr

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

In conclusion, the following values are recommended to be used for the EALs: EAL #4 (30 R/hr), EAL #5 (1000 R/hr), and EAL #6 (4000 R/hr).

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Attachment A - Table 1

## Calc. C11617, Rev. 0

P.4

| R-40/R-41 Reading who       | en operating a      | at T.S. Lími | t = 1 u C i/gm | DE I-131     | a and the second property is high first provide the second probability of the                                    | ·             | نىسچىرىيۇرىيىنى <del>تە</del> نبۇرىچىنىدىنىرورى رايلۇر بىلىلە | ר היותר אינארי ליידי אייראיי אייראיז אייראיז אייראיז אייראיז אייראיז אייראיז אייראיז אייראיז אייראיז אייראיז א<br>אייראיז אייראיז | Mirikadzaie |
|-----------------------------|---------------------|--------------|----------------|--------------|------------------------------------------------------------------------------------------------------------------|---------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>USAR Radionuclide Ac</b> | tivities and T      | S Limits     | · .            |              | • •                                                                                                              |               |                                                               |                                                                                                                                                                                                                                   |             |
|                             | 1                   | ·            |                |              |                                                                                                                  | Total uCi     | Containment                                                   |                                                                                                                                                                                                                                   |             |
|                             |                     |              | 1% Clad        |              |                                                                                                                  | Released to   | concentration                                                 |                                                                                                                                                                                                                                   | į.,         |
|                             | USAR Table          | the second   | Defect RCS     | Isotopic     |                                                                                                                  | Containment   | from RCS                                                      | R-40/R-41                                                                                                                                                                                                                         |             |
| · · · ·                     | D.4-1 1%            |              | Activity       | Distribution |                                                                                                                  | from RCS for  | activity for DEI                                              | Dose Rate                                                                                                                                                                                                                         | , ·         |
|                             | Clad Defect         | Dose         | (Dose          | based on     | Total uCi in RCS                                                                                                 | DEI 1-131 =   | 1-131 = 1                                                     | at Time 0                                                                                                                                                                                                                         | l           |
| · · · ·                     | <b>RCS</b> Activity | Equivalent   | Equiv.         | DEI 1-131 =  | for DEI I-131 = 1                                                                                                | 1 uCi/am      | uCi/am                                                        | Shutdown                                                                                                                                                                                                                          | 1           |
| Radionuclide                | (uCi/am)            | Factors      | uCi/am)        | 1 uCi/am     | uCi/am (uCi)                                                                                                     | (uCi)         | (uCi/cc)                                                      | (R/hr)                                                                                                                                                                                                                            |             |
| Kr-85                       | 8.60E+00            | 5.48E-02     | 4.71E-01       | 1.29E-01     | 1.54E+07                                                                                                         | 1.54E+07      | 4.12E-04                                                      | ·                                                                                                                                                                                                                                 | 1           |
| Kr-85m                      | 1.73E+00            | 3.98E+00     | 6.89E+00       | 1.89E+00     | 2.25E+08                                                                                                         | 2.25E+08      | 6.02E-03                                                      |                                                                                                                                                                                                                                   |             |
| Kr-87                       | 1.13E+00            | 2.01E+01     | 2.27E+01       | 6.23E+00     | 7.42E+08                                                                                                         | 7.42E+08      | 1.98E-02                                                      | ·                                                                                                                                                                                                                                 | ł           |
| Kr-88                       | 3.28E+00            | 5.00E+01     | 1.64E+02       | 4.50E+01     | 5.36E+09                                                                                                         | 5.36E+09      | 1.43E-01                                                      | ·                                                                                                                                                                                                                                 |             |
| Xe-133                      | 2.42E+02            | 1.00E+00     | _ 2.42E+02     | 6.64E+01     | 7.90E+09                                                                                                         | 7.90E+09      | 2.11E-01                                                      |                                                                                                                                                                                                                                   |             |
| Xe-133m: 10 11 11 11        | 3.44E+00            | 8.54E-01     | 2.94E+00       | 8.06E-01     | 9.60E+07                                                                                                         | 9.60E+07      | 2.57E-03                                                      |                                                                                                                                                                                                                                   |             |
| Xe-135                      | 8.69E+00            | 6.16E+00     | 5.35E+01       | 1.47E+01     | 1.75E+09                                                                                                         | 1.75E+09      | 4.68E-02                                                      |                                                                                                                                                                                                                                   |             |
| Xe-135m March 1996          | 5.01E-01            | :1.06E+01    | 5.31E+00       | 1.46E+00     | 1.73E+08                                                                                                         | 1.73E+08      | 4.64E-03                                                      |                                                                                                                                                                                                                                   | - '<br>  '  |
| Xe-138                      | 6.28E-01            | .3.00E+01    | 1.88E+01       | 5.17E+00     | 6.15E+08                                                                                                         | 6.15E+08      | 1.65E-02                                                      | 1 MA 6                                                                                                                                                                                                                            |             |
|                             |                     |              |                |              | and the second second second second second second second second second second second second second second second | • • • • • • • |                                                               |                                                                                                                                                                                                                                   | ·           |
| Xe-133 Equivalent           |                     |              | 5.17E+02       | 1.42E+02     | 1.69E+10                                                                                                         | 1.69E+10      | 4.52E-01                                                      | 2.47E+01                                                                                                                                                                                                                          |             |
|                             |                     | -            |                |              | •• · · ·                                                                                                         |               |                                                               |                                                                                                                                                                                                                                   | •           |
| 1-131                       | 2.84E+00            | 1.00E+00     | 2.84E+00       | 7.80E-01     | 9.28E+07                                                                                                         | 9.28E+07      | 2.48E-03                                                      |                                                                                                                                                                                                                                   |             |
| 1-132                       | 2.89E+00            | 5.90E-03     | 1.71E-02       | 4.68E-03     | 5.57E+05                                                                                                         | 5.57E+05      | 1.49E-05                                                      |                                                                                                                                                                                                                                   |             |
| I-133                       | 4.24E+00            | 1.69E-01     | 7.17E-01       | 1.97E-01     | 2.34E+07                                                                                                         | 2.34E+07      | 6.27E-04                                                      |                                                                                                                                                                                                                                   |             |
| 1-134                       | 5.86E-01            | 1.00E-03     | 5.86E-04       | 1.61E-04     | 1.91E+04                                                                                                         | 1.91E+04      | 5.12E-07                                                      |                                                                                                                                                                                                                                   |             |
| 1-135                       | 2.32E+00            | 2.93E-02     | 6.80E-02       | 1.87E-02     | 2.22E+06                                                                                                         | 2.22E+06      | 5.94E-05                                                      |                                                                                                                                                                                                                                   |             |
|                             |                     |              |                |              |                                                                                                                  |               |                                                               |                                                                                                                                                                                                                                   |             |
| I-131 Equivalent            |                     |              | 3.64E+00       | 1.00E+00     | 1.19E+08                                                                                                         | 1.19E+08      | 3.18E-03                                                      | 1.84E+00                                                                                                                                                                                                                          | · .         |

Total R-40/R-41 Dose Rate = 2.66E+01

Westinghouse Calc CN-RAE-02-34:

Core Thermal Power = 1782.6 MWth Cladding defects = 1% Clad Failure

RCS Volume = 1.19E+08 grams

Containment Volume = 3.7378E+10 cc Reference USAR 5.2.1: gives 1.32E+06 cf

Dose Factor for Xe-133 Equivalent for R-40/41 Dose Monitor = 5.48E+04 (mr/hr)/(uCi/cc) (per ODCM, Appendix B, Table B-1; 4.8E+02 mPtyr per uCliculmeter) Dose Factor for I-131 Equivalent for R-40/41 Dose Monitor = 5.79E+05 (mr/hr)/(uCi/cc) (per ODCM, Appendix A, conservatively set using Ca-134 dose factor) Attachment A - Table 2

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|                                                                                                                                               |                 | -                                     |              |                 |                   |                   | Total          | R-40/R-41                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------|--------------|-----------------|-------------------|-------------------|----------------|------------------------------------------------|
|                                                                                                                                               |                 |                                       |              |                 |                   | Total Dose        | Normalized     | Dose Rate a                                    |
|                                                                                                                                               | USAR Table      |                                       |              |                 |                   | Equiv. Ci in Gap  | 300 uCi/ml     | Time 0                                         |
|                                                                                                                                               | D.1-1 Core      |                                       | Total Core   |                 | Total Ci in Gap   | Space             | DEI Activity   | Shutdown fo                                    |
|                                                                                                                                               | Total Fission   | Dose                                  | Dose Equiv.  | Percent of Core | Space Expressed   | Normalized to     | Released to    | 300 uCi/cc                                     |
|                                                                                                                                               | Product         | Equivalent                            | Activities   | Activity in the | as Dose Equiv.    | 300 uCi/ml DEI    | Containment    | DEI Release                                    |
| Radionuclide                                                                                                                                  | Activities (Ci) | Factors                               | (Ci)         | Gap (fraction)  | (Ci)              | (Ci)              | (uCi/cc)       | (R/hr)                                         |
| <r-85< td=""><td>5.39E+05</td><td>5.48E-02</td><td>2.95E+04</td><td>8.50E-02</td><td>2.51E+03</td><td>1.63E+02</td><td></td><td></td></r-85<> | 5.39E+05        | 5.48E-02                              | 2.95E+04     | 8.50E-02        | 2.51E+03          | 1.63E+02          |                |                                                |
| (r-85m                                                                                                                                        | 1.31E+07        | 3.98E+00                              | 5.21E+07     | 1.41E-03        | 7.36E+04          | 4.78E+03          | ·              |                                                |
| (r-87                                                                                                                                         | 2.53E+07        | 2.01E+01                              | 5.09E+08     | 1.18E-03        | 6.02E+05          | 3.91E+04          |                |                                                |
| <r-88< td=""><td>3.56E+07</td><td>5.00E+01</td><td>1.78E+09</td><td>1.60E-03</td><td>2.85E+06</td><td>1.85E+05</td><td></td><td></td></r-88<> | 3.56E+07        | 5.00E+01                              | 1.78E+09     | 1.60E-03        | 2.85E+06          | 1.85E+05          |                |                                                |
| Ke-133                                                                                                                                        | 9.42E+07        | 1.00E+00                              | 9.42E+07     | 7.14E-03        | 6.73E+05          | 4.36E+04          |                |                                                |
| Ke-133m                                                                                                                                       | 2.88E+06        | 8.54E-01                              | 2.46E+06     | 4.57E-03        | 1.12E+04          | 7.30E+02          |                |                                                |
| Xe-135                                                                                                                                        | 2.61E+07        | 6.16E+00                              | 1.61E+08     | 1.93E-03        | 3.10E+05          | 2.01E+04          |                |                                                |
| Xe-135m                                                                                                                                       | 1.91E+07        | 1.06E+01                              | 2.02E+08     | 3.22E-04        | 6.52E+04          | 4.23E+03          |                |                                                |
| Ke-138                                                                                                                                        | 8.16E+07        | 3.00E+01                              | 2.45E+09     | . 0.00E+00      | 0.00E+00          | 0.00E+00          |                |                                                |
| Ke-133 Equivalent                                                                                                                             |                 |                                       | 5.25E+09     |                 | 4.59E+06          | 2.97E+05          | 7.96E+00       | 4.36E+02                                       |
| -131                                                                                                                                          | 4.76E+07        | 1.00E+00                              | 4.76E+07     | 1.01E-02        | 4.82E+05          | 3.13E+04          |                | <u>  · · · · · · · · · · · · · · · · · · ·</u> |
| -132                                                                                                                                          | 6.91E+07        | 5.90E-03                              | 4.08E+05     | 1.27E-03        | 5.18E+02          | 3.36E+01          |                |                                                |
| -133                                                                                                                                          | 9.83E+07        | 1.69E-01                              | 1.66E+07     | 3.74E-03        | 6.22E+04          | 4.04E+03          |                |                                                |
| •134                                                                                                                                          | 1.08E+08        | 1.00E-03                              | 1.08E+05     | 5.87E-04        | 6.34E+01          | 4.11E+00          |                |                                                |
| -135                                                                                                                                          | 9.18E+07        | 2.93E-02                              | 2.69E+06     | 2.15E-03        | 5.77E+03          | 3.74E+02          |                |                                                |
| -131 Equivalent                                                                                                                               |                 | · · · · · · · · · · · · · · · · · · · | 6.74E+07     |                 | 5.50E+05          | 3.57E+04          | 9.55E-01       | 5.53E+02                                       |
|                                                                                                                                               |                 |                                       | DEI I-131 in | BCS (uCi/ml) =  | 4.62E+03          | 3.00E+02          |                |                                                |
|                                                                                                                                               |                 |                                       |              |                 |                   | Total R-40/R-4    | 1 Dose Rate =  | 9.89E+02                                       |
| Nestinghouse Calc Cl                                                                                                                          | N-RAE-02-34:    | 0 6% of 1 77                          | 2 M/M/H)     |                 | NELOG-02 Rov A.   | · .               |                |                                                |
| Cladding defects – 1%                                                                                                                         | Clad Failure    | 0.070 01 1,171                        |              |                 | 300 uCi/ml DEL co | rrasponde to las  | e than 5% clar | t damage                                       |
| RCS Volume =                                                                                                                                  | 1 195+08        | arams                                 |              |                 |                   | incoponido to ico | 5 man 575 cia  | adamage                                        |
| Containment Volume -                                                                                                                          | - 2745110       | grama                                 | Peference II | SAR 52 1. divos | 1 325+06 of       | • •               |                |                                                |
| Jointainment volume -                                                                                                                         |                 | 40/41 Deco 1                          | Appliar      | 5 /9E+0/        |                   |                   |                |                                                |
| Jona Englar for Va. 12                                                                                                                        |                 |                                       |              |                 |                   |                   |                |                                                |

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#### Attachment A - Table 3

#### Calc. C11617, Rev. 0 P. 6

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## Dose Equivalent Factors

| Radioisotope | ODCM, Table 2.1  | Xe-133 Eq. Ratios |
|--------------|------------------|-------------------|
| Kr-85        | 1.61E+01         | 5.48E-02          |
| Kr-85m       | 1.17E+03         | 3.98E+00          |
| Kr-87        | 5.92E+03         | 2.01E+01          |
| Kr-88        | 1.47E+04         | 5.00E+01          |
| Xe-133       | 2.94E+02         | 1.00E+00          |
| Xe-133m      | 2.51E+02         | 8.54E-01          |
| Xe-135       | 1.81E+03         | 6.16E+00          |
| Xe-135m      | 3.12E+03         | 1.06E+01          |
| Xe-138       | 8.83E+03         | 3.00E+01          |
|              |                  |                   |
|              | *Tech. Spec. 1.p | I-131 Eq. Ratios  |
| I-131        | 1.00E+00         | 1.00E+00          |
| I-132        | 5.90E-03         | 5.90E-03          |
| I-133        | 1.69E-01         | 1.69E-01          |
| I-134        | 1.00E-03         | 1.00E-03          |
| I-135        | 2.93E-02         | 2.93E-02          |
|              |                  |                   |

- values taken directly out of Tech Specs

•••<sub>2</sub>
# **CALCULATION COVER SHEET AND REVIEW REPORT**

| Calculatio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | on No.                                         | C11619                                                                                                                             | <u></u>                                       | le of Cal                             | culation: Determi                                    | nation o               | f Cavity Level EAL RA                                                                                      | .2.2                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------|------------------------------------------------------|------------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| Rev. No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                | 0                                                                                                                                  | _                                             | · · · · · · · · · · · · · · · · · · · | <u>.</u>                                             |                        |                                                                                                            |                                                   |
| Addendur                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | n Letter                                       |                                                                                                                                    | <u></u>                                       | le of Ad                              | dendum:                                              | •                      | · · · · · · · · · · · · · · · · · · ·                                                                      |                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                |                                                                                                                                    | · · · · · · · · · · · · · · · · · · ·         | <u>.</u>                              |                                                      |                        |                                                                                                            |                                                   |
| SafetyRela                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ited                                           | 🗌 Yes 🖾 No                                                                                                                         | (1)                                           |                                       |                                                      |                        |                                                                                                            | (2)                                               |
| System(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | / System N                                     | <u>o(s)</u> :                                                                                                                      | • •                                           | · · · ·                               |                                                      |                        |                                                                                                            |                                                   |
| Residual He                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | at Removal/3-                                  | 1                                                                                                                                  |                                               | 1. :                                  |                                                      | •                      |                                                                                                            | (3)                                               |
| Originatir                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ng Docume                                      | <u>nt</u> :                                                                                                                        | · · · · ;                                     | •                                     |                                                      |                        | . · ·                                                                                                      |                                                   |
| NEI 99-01, I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Rev. 4                                         | · · · ·                                                                                                                            | · · · · · · · · · · · · · · · · · · ·         | 1+1 <sub>2</sub>                      |                                                      |                        |                                                                                                            | (4)                                               |
| Supersedo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 25:                                            | ·                                                                                                                                  | · ·                                           |                                       | Superseded By:                                       | ·                      |                                                                                                            |                                                   |
| Calculatio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | on No(s).                                      | n/a                                                                                                                                |                                               |                                       | Calculation No(s)                                    | <u>n/a</u>             |                                                                                                            |                                                   |
| Addendui                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | m No(s).                                       | · · · · · · · · · · · · · · · · · · ·                                                                                              | :<br>·                                        | <u> </u>                              | Addendum No(s).                                      | , <u> </u>             |                                                                                                            |                                                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | -                                              |                                                                                                                                    |                                               | (5)                                   |                                                      | · · · ·                |                                                                                                            | ര്ര                                               |
| Discipline:<br>Engi<br>Cher<br>Com                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | neering Mee<br>nistry/Radia<br>puter<br>trical | chanics/Structural Eng<br>ation Protection (Chem                                                                                   | ineering (EM/<br>//RP)                        | SE)                                   | ☐ I&(<br>⊠ Nu<br>☐ Me                                | C<br>clear<br>chanical |                                                                                                            | (7)                                               |
| Li Electrical (7)<br>This Calculation has been raviewed and was accomplished by the following: Reviewars' Initials (8)                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                |                                                                                                                                    |                                               |                                       |                                                      |                        |                                                                                                            |                                                   |
| This Calc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | utation nas                                    | been reviewed and                                                                                                                  | was accompl.                                  | ished by                              | the following:                                       |                        | Reviewers' Initials                                                                                        | (8)                                               |
| Verifi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | cation (Inc                                    | tependent Review)                                                                                                                  | was accompt                                   | ished by                              | the following:                                       | ·.                     | Reviewers' Initials                                                                                        | (8)                                               |
| Verifi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | cation (Ind<br>tical Review                    | lependent Review)<br>v                                                                                                             | was accompt                                   | ished by                              | the following:                                       | •.                     | Reviewers' Initials                                                                                        | (8)                                               |
| Verifi<br>Verifi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | cation (Inc<br>iical Review<br>Reviewer        | lependent Review)<br>v<br>Comments Attached                                                                                        | Discipline                                    |                                       | the following:                                       |                        | Reviewers' Initials<br>TRW<br>Signature                                                                    | (8)<br>Date (9)                                   |
| This Calc       □     Verifi       ⊠     Techn       Preparer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | cation (Ind<br>nical Review<br>Reviewer        | tependent Review)<br>v<br>Comments Attached                                                                                        | Discipline<br>Nuclear                         |                                       | Printed Name<br>John Helfenberger                    |                        | Reviewers' Initials<br>TRW<br>Signature<br>Sch. Welfubez                                                   | (8)<br>Date (9)<br>10/19/04                       |
| Inis Calc       □     Verifi       ⊠     Techn       Preparer     □                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | cation (Inc<br>ical Review<br>Reviewer         | lependent Review)<br>v<br>Comments Attached<br>Yes X No                                                                            | Discipline<br>Nuclear<br>Nuclear              |                                       | Printed Name<br>John Helfenberger<br>Timothy Wiltman |                        | Reviewers' Initials<br>TRW<br>Signature<br>Sel Heif Les<br>Ten thy R. Williams                             | (8)<br>Date (9)<br>10/19/04<br>10/19/04           |
| Preparer<br>Preparer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | cation (Inc<br>ical Review<br>Reviewer         | lependent Review)<br>v<br>Comments Attached<br>Ves No<br>Yes No<br>Yes No                                                          | Discipline<br>Nuclear<br>Nuclear              |                                       | Printed Name<br>John Helfenberger<br>Timothy Wiltman |                        | Reviewers' Initials<br>TRW<br>Signature<br>Sch Neifisber<br>Sch Neifisber<br>Limethy R. Williams           | (8)<br>Date (9)<br>10/19/04<br>, 10/19/04         |
| Preparer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | cation (Inc<br>tical Review<br>Reviewer        | Iependent Review)<br>V<br>Comments Attached<br>Yes No<br>Yes No<br>Yes No<br>Yes No                                                | Discipline<br>Nuclear<br>Nuclear              |                                       | Printed Name<br>John Helfenberger<br>Timothy Wiltman |                        | Reviewers' Initials<br>TRW<br>Signature<br>Sel Helf alog<br>June thy R. Williams                           | (8)<br>Date (9)<br>10/19/04<br>, 10/19/04         |
| Inis Calc<br>Verifi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | cation (Ind<br>ical Review<br>Reviewer         | lependent Review)<br>v<br>Comments Attached<br>□ Yes ⊠ No<br>□ Yes □ No<br>□ Yes □ No<br>□ Yes □ No<br>□ Yes □ No<br>□ Yes □ No    | Discipline<br>Nuclear<br>Nuclear<br>John Helf | enberger                              | r Wi                                                 | isconsin 1             | Reviewers' Initials<br>TRW<br>Signature<br>Jel Neiffulez<br>Timethy R. Wilton of<br>PE Stamp (If Required) | (8)<br>Date (9)<br>10/19/04<br>10/19/04           |
| Inis Calc         Verifi         X         Techn         Preparer         X         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I | cation (Ind<br>ical Review<br>Reviewer         | lependent Review)<br>v<br>Comments Attached<br>□ Yes ⊠ No<br>□ Yes □ No<br>□ Yes □ No<br>□ Yes □ No<br>nted Name:<br>nature:<br>e: | Discipline<br>Nuclear<br>Nuclear<br>John Helf | enberger                              | r Wi                                                 | isconsin l             | Reviewers' Initials<br>TRW<br>Signature<br>Sel Melfulez<br>Tenthy R. Wiltows<br>PE Stamp (If Required)     | (8)<br>Date (9)<br>10/19/04<br>10/19/04           |
| Approver<br>(See Steps 6<br>If different 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | cation (Ind<br>ical Review<br>Reviewer         | Iependent Review) V Comments Attached Yes ⊠ No Yes ⊠ No Yes □ No Yes □ No Yes □ No No ted Name: hature: e:                         | Discipline<br>Nuclear<br>Nuclear<br>John Helf | Tenberger                             | r Wi                                                 | isconsin               | Reviewers' Initials<br>TRW<br>Signature<br>Sel Neif Les<br>Limithy R. Williams<br>PE Stamp (If Required)   | (8)<br>Date (9)<br>10/19/04<br>10/19/04           |
| I his Calc<br>Verifi<br>Techn<br>Preparer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | cation (Ind<br>ical Review<br>Reviewer         | lependent Review) V Comments Attached □ Yes ⊠ No □ Yes ⊠ No □ Yes □ No □ Yes □ No nted Name: nature: e: br Date)                   | Discipline<br>Nuclear<br>Nuclear<br>John Helf | enberger                              | Timothy Wiltman                                      | isconsin               | Reviewers' Initials<br>TRW<br>Signature<br>Sel Nelfuls<br>Los thy R. Williams<br>PE Stamp (If Required)    | (8)<br>Date (9)<br>10/19/04<br>, 10/19/04<br>(11) |

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# CALCULATION VERIFICATION CHECKLIST

| Calculation # C11619                                                                                            |                                        | Revision         | 0     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            | . ` .            |            |
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| Verification Items                                                                                              |                                        |                  |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | YES                        | NO               | N/A        |
| Purpose                                                                                                         |                                        | · · ·            | :     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 网                          |                  |            |
| <ul> <li>Clear objective and problem st</li> <li>Affected SSC been identified</li> </ul>                        | atement                                |                  |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            | . <sup>1</sup> . |            |
| <ul> <li>Intended use of results been id</li> <li>Any limitation of applicability</li> </ul>                    | entified                               | . '              |       | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                            |                  | i          |
| Revision content been summar                                                                                    | rized                                  |                  |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            | •                | •          |
| Methodology                                                                                                     |                                        | з<br>-           |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | X                          |                  |            |
| <ul> <li>Discussion of the method/appr</li> <li>Limitation of use of methodology</li> </ul>                     | oach and major steps<br>ogy identified |                  | ·     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                  |            |
| Contraction of the second second second second second second second second second second second second second s |                                        | -                |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | · M                        | 'n               |            |
| Acceptance Unierta                                                                                              | aditaria .                             |                  | •     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Щ                          | ιu.              | . <b>ப</b> |
| Exceptions clearly defined                                                                                      | cinena                                 |                  |       | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | • '                        | · · · ·          |            |
| Sources of acceptance criteria                                                                                  | clearly defined                        |                  |       | • • •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                            |                  |            |
| Sources of acceptance enterna                                                                                   | cicarly defined                        |                  |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                  |            |
| Assumptions                                                                                                     |                                        | •<br>•           |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | X                          |                  |            |
| • Sufficient rationale to permit v                                                                              | verification of assumptio              | n                |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                  | •          |
| <ul> <li>Have unverified assumptions t</li> </ul>                                                               | been identified as such                | ÷                |       | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | · · · · ·                  |                  |            |
| References provided for assum                                                                                   | nptions                                | • • •            |       | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | · ·                        |                  | -          |
|                                                                                                                 |                                        | 11               |       | . :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ·                          |                  |            |
| Inputs                                                                                                          |                                        | -<br>-           | •     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | لکھ                        |                  | . Ц        |
| All applicable Design Inputs b                                                                                  | een identified                         | -                |       | · · · ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | · · · ·                    | • •.             |            |
| Has source document for input                                                                                   | ts been identified                     | -                |       | ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1. 1. 1. 1.<br>1. 1. 1. 1. | • *              |            |
| • Computer data program SQA                                                                                     | approval                               |                  | •     | • • • • •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                  |            |
| Referances                                                                                                      |                                        |                  | •     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | X                          | n                |            |
| Have all controlled plant input                                                                                 | t documents been identif               | ied              |       | . :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | _م                         | ••••             |            |
| • If a procedure is cited, has the                                                                              | process owner been not                 | ified            |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | •                          | -                | . ·        |
| • Are references available from                                                                                 | KNPP records, or have t                | hey been attac   | hed   | · ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | •                          | •                |            |
| Calculation and Results                                                                                         |                                        |                  |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | × ×                        |                  |            |
| Correct formula/method used                                                                                     | to support the objective               |                  |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | •                          | · · · · ·        |            |
| <ul> <li>Formula variables (including t sources</li> </ul>                                                      | units) clearly labeled and             | l consistent wi  | h     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                  |            |
| Computer program input/outp                                                                                     | ut been reviewed                       |                  |       | en en el composition de la com | · · · ·                    | · · .            | • •        |
| Reference to sketches provide                                                                                   | d                                      | · · ·            |       | • • •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                            |                  |            |
| <ul> <li>Sufficient bases/rational to per</li> </ul>                                                            | rmit verification of engin             | neering judgme   | ent . |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                  |            |
| • Proper carry over and use of s                                                                                | ignificant digits                      | ·. · ·           |       | · · · ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                            |                  |            |
| Conclusions and Recommendations                                                                                 |                                        |                  |       | · ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | × ×.                       |                  |            |
| • Clear statement of the results                                                                                | consistent with the object             | tive             | ÷.,   | • •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                            |                  |            |
| • Acceptability of the results cle                                                                              | early defined                          |                  | : :   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | • •                        |                  |            |
| Recommendation for unaccep                                                                                      | table results, AR written              | if necessary     |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                  |            |
| Clear definition of limitations                                                                                 | or requirements impose                 | d by the calcul  | ation |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                  | •          |
| Have the offects of the patents                                                                                 | any of the results                     | to been identifi | ad .  | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | •                          |                  |            |
| and addressed                                                                                                   | mon on output documen                  | is occuration in | .cu   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | • •                        |                  | ·<br>·     |
|                                                                                                                 |                                        |                  |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            | - · · ·          | · .        |
|                                                                                                                 |                                        | · .              |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            | · · ·            | •<br>:     |
|                                                                                                                 |                                        | •                |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                  |            |

# CALCULATION VERIFICATION COMMENT/RESOLUTION

Calculation # C11619

Revision 0

Reference Material Used:

| Item #                                                                                                                                                        | Reviewer's Comment | Preparer Resolution | Reviewer<br>Concurrence |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|-------------------------|
| and the second second                                                                                                                                         | None.              |                     |                         |
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### TABLE OF CONTENTS AND REVISION CONTROL

Revision No. 0

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| Calculation Verification Checklist (Form GNP-04.03.04-3)          | NA        | NA       |
| Calculation Verification Comment/Resolution (Form GNP-04.03.04-4) | NA        | NA       |
| Table of Contents and Revision Control (Form GNP-04.03.04-2)      | NA        | NA       |
| 50.59 Applicability Review                                        | i         | 0        |
| 50.59 Pre-Screening                                               | ii        | 0        |
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### **50.59 APPLICABILITY REVIEW**

(Is the activity excluded from 50.59 review?)

Document/Activity number: CI1619, Revision 0

1. 2.

3.

Brief description of proposed activity (what is being changed and why):

Calculation to determine cavity level that would result in uncovering a fuel assembly.

Does the proposed activity involve or change any of the following documents or processes? Check YES or NO for EACH applicability review item. Explain in comments if necessary. [Ref. NMC 50.59 Resource Manual, Section 4]

NOTE: If you are unsure if a document or process may be affected, contact the process owner.

|             | Yes<br>√a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | No<br>V       | Document or<br>Process                                                                                                                                                                                                                                            | Applicable<br>Regulation      | Contact/Action                                                                                                                          |  |  |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--|--|
| a           | Ū.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               | Technical Specifications or Operating License                                                                                                                                                                                                                     | 10CFR50.92                    | Process change per NAD-05.14.<br>Contact Licensing.                                                                                     |  |  |
| b           | ם,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ⊠             | Activity/change previously approved by NRC in license amendment or NRC SER                                                                                                                                                                                        | 10CFR50.90                    | Identify NRC letter in comments below. Process change.<br>Contact Licensing for assistance.                                             |  |  |
| c           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               | Activity/change covered by an existing approved<br>10CFR50.59 review, screening, or evaluation.                                                                                                                                                                   | 10CFR50 Appendix B            | Identify screening or evaluation in comments below.<br>Process change.                                                                  |  |  |
| d           | , D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               | Quality Assurance Program (OQAPD/OQAP)                                                                                                                                                                                                                            | 10CFR50.54(a)                 | Contact QA.<br>Refer to NAD-01.07.                                                                                                      |  |  |
| e           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ⊠ .           | Emergency Plan                                                                                                                                                                                                                                                    | 10CFR50.54(q)                 | Contact EP.<br>Refer to NAD-05.15.                                                                                                      |  |  |
| ſ           | <u>ם</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               | Security Plan                                                                                                                                                                                                                                                     | 10CFR50.54(p)                 | Contact Security.<br>Refer to NAD-05.17.                                                                                                |  |  |
| g           | . □]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               | IST Plan                                                                                                                                                                                                                                                          | 10CFR50.55a(f)                | Contact IST process owner.<br>Refer to NAD-01.24.                                                                                       |  |  |
| h           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               | ISI Plan                                                                                                                                                                                                                                                          | 10CFR50.55a(g)                | Contact ISI process owner.<br>Refer to NADs 01.03, 01.05, and 05.11.                                                                    |  |  |
| i           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | $\boxtimes$   | ECCS Acceptance Criteria                                                                                                                                                                                                                                          | 10CFR50.46                    | Contact Licensing.                                                                                                                      |  |  |
| j           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ⊠             | USAR or any document incorporated by reference -<br>Check YES only if change is editorial (see<br>Attachment A).                                                                                                                                                  | 10CFR50.71                    | Process USAR change per NEP-05.02.<br>Contact USAR process owner for assistance.                                                        |  |  |
| k<br>·      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Ø             | Commitment - Commitment changes associated<br>with a response to Generic Letters and Bulletins, or<br>if described in the USAR require a pre-screening.                                                                                                           | 10CFR50 Appendix B            | Contact Licensing<br>Refer to NAD-05.25.                                                                                                |  |  |
| 1           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               | Maintenance activity or new/revised maintenance<br>procedure - Check YES only if clearly maintenance<br>and equipment will be restored to its as-designed<br>condition within 90 days (see Attachment C).                                                         | 10CFR50.65                    | Evaluate under Maintenance Rule.<br>Refer to NAD-08.20 and NAD-08.21.                                                                   |  |  |
| ы           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ⊠             | Degraded/Non-conforming plant condition - Check<br>YES if returned to as-designed condition in a timely<br>manner consistent with safety.                                                                                                                         | 10CFR50 Appendix B            | Initiate an Action Request (AR) and evaluate under<br>GL 91-18, Revision 1.<br>Contact licensing for assistance. Refer to GNP 11.08.03. |  |  |
| n           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               | New/revised administrative or managerial<br>directive/procedure (e.g., NAD, GNP, Fleet<br>Procedure) or a change to any procedure or other<br>controlled document (e.g., plant drawing) which is<br>clearly editorial/administrative. See Attachments A<br>and B. | 10CFR50 Appendix B            | Process procedure/document revision.                                                                                                    |  |  |
| <b>4.</b>   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               | on. Check one of the following:<br>All documents/processes listed above are checked NO. 10                                                                                                                                                                        | CFR50.59 applies to the prope | ised activity. A 50.59 pre-screening shall be performed.                                                                                |  |  |
| 5.          | <ul> <li>One or more of the documents/processes listed above are checked YES, <u>AND</u> controls all aspects of the proposed activity. 10CFR50.59 does <u>NOT</u> apply. Process the change under the applicable program/process/procedure.</li> <li>One or more of the documents/processes listed above are checked YES, however, some portion of the proposed activity is not controlled by any of the above processes. 10CFR50.59 applies to that portion. A 50.59 pre-screening shall be performed.</li> </ul> |               |                                                                                                                                                                                                                                                                   |                               |                                                                                                                                         |  |  |
| 6.          | This activity is merely a conversion of elevation to a percent level.<br>Print name followed by signature. Attach completed form to document/activity/change package.                                                                                                                                                                                                                                                                                                                                               |               |                                                                                                                                                                                                                                                                   |                               |                                                                                                                                         |  |  |
| Pre<br>(pri | pared b<br>nt/sign)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | y: <u>Joh</u> | n Helfenberger                                                                                                                                                                                                                                                    | 2. Helfnber-                  | Date: 10/19/04                                                                                                                          |  |  |
| Rev         | eviewed by: Timothy R. Wiltman I Timothy R. Wiltman Date: 10/19/04                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |                                                                                                                                                                                                                                                                   |                               |                                                                                                                                         |  |  |

Form GNP-04.04.01-1 Rev. C

Date: JUL 22 2003

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INFORMATION USE

# 50.59 PRE-SCREENING (Is a 50.59 screening required?)

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| 1     | 1<br>Docum                                                                                                                                                                                   |                                                                                                                                                       | (is a 50.59 screening required?)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                         |  |  |  |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--|--|--|
| 2.    | Brief description of proposed activity (what is being changed and why):                                                                                                                      |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |  |  |  |
|       | Calcula                                                                                                                                                                                      | tion to de                                                                                                                                            | termine reactor cavity level that would result in the uncovering of an irradiated fuel assembly outside of the vessel.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |  |  |  |
| 3.    | Does th                                                                                                                                                                                      | e proposi                                                                                                                                             | ed activity involve or change any of the following documents or processes? Explain in Comments if necessary.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                         |  |  |  |
| ·     | Check<br>NOTE:                                                                                                                                                                               | YES or N<br>If you :                                                                                                                                  | O for EACH pre-screening item. [Ref. NMC 50.59 Resource Manual, Section 5.1]<br>are unsure if a document or process may be affected, contact the process owner.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |  |  |  |
|       | NOTE                                                                                                                                                                                         | An aste                                                                                                                                               | risk (*) indicates that the document is incorporated by reference in the USAR or is implicitly considered part of the USAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | •                       |  |  |  |
| -     | NOTE                                                                                                                                                                                         | NOTE: Check NO if activity/change is considered editorial administrative or maintenance as defined in Attachments A. B. and C. Explain in Comments if |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |  |  |  |
|       |                                                                                                                                                                                              | necessa                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |  |  |  |
|       | Yes -                                                                                                                                                                                        | No 🗸                                                                                                                                                  | Document/Process                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Directive/<br>Procedure |  |  |  |
| a     |                                                                                                                                                                                              | $\boxtimes$                                                                                                                                           | Updated Safety Analysis Report (USAR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NEP-05.02               |  |  |  |
| b     |                                                                                                                                                                                              | $\boxtimes$                                                                                                                                           | Technical Specifications Bases or Technical Requirements Manual (TRM)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NAD-05.14,<br>NAD-03.25 |  |  |  |
| c     |                                                                                                                                                                                              | $\boxtimes$                                                                                                                                           | Commitments made in response to NRC Generic Letters and Bulletins, and those described in the USAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | NAD-05.25               |  |  |  |
| d     |                                                                                                                                                                                              | X                                                                                                                                                     | Environmental Qualification (EQ) Plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NAD-01.08               |  |  |  |
| c     |                                                                                                                                                                                              | X                                                                                                                                                     | Regulatory Guide 1.97 (RG 1.97) Accident Monitoring Instrumentation Plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | NAD-05.22               |  |  |  |
| f     |                                                                                                                                                                                              | X                                                                                                                                                     | * Fire Plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | NAD-01.02               |  |  |  |
| 8     |                                                                                                                                                                                              |                                                                                                                                                       | Appendix R Design Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NAD-01.02               |  |  |  |
| h     |                                                                                                                                                                                              | Ø                                                                                                                                                     | * Fire Protection Program Analysis (FPPA)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | NAD-01.02               |  |  |  |
| i     |                                                                                                                                                                                              | X                                                                                                                                                     | Offsite Dose Calculation Manual (ODCM)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NAD-05.13               |  |  |  |
| j     |                                                                                                                                                                                              | X                                                                                                                                                     | Radiological Environmental Monitoring Manual (REMM)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | NAD-05.13               |  |  |  |
| k     |                                                                                                                                                                                              | X                                                                                                                                                     | Station Blackout Design Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                         |  |  |  |
| 1     |                                                                                                                                                                                              | N                                                                                                                                                     | Control Room Habitability Study                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |  |  |  |
| m     |                                                                                                                                                                                              |                                                                                                                                                       | Plant Drawing Changes/Discrepancies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | NAD-05.01               |  |  |  |
| n     | - <u>L</u>                                                                                                                                                                                   |                                                                                                                                                       | Calculations/Evaluations/Analyses/Computer Software - Check YES only if: 1) It directly or indirectly involves                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Various                 |  |  |  |
|       |                                                                                                                                                                                              |                                                                                                                                                       | affects SSC-described in the USAR, or affects a methodology or method of evaluation safety analysis described in<br>the USAR; or 2) It independently (i.e., not part of a modification) affects the licensing or design basis. (FC-dated 03-<br>46-2004) (TC dated 05-05-2004)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                         |  |  |  |
| 0     | P                                                                                                                                                                                            | $\boxtimes$                                                                                                                                           | Permanent Plant Physical Changes - All require a screening.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | NAD-04.03               |  |  |  |
| р     |                                                                                                                                                                                              | $\boxtimes$                                                                                                                                           | Temporary Plant Physical Changes (TCRs) - Check No only if installed for maintenance AND in effect for less than 90 days at power conditions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NAD-04.03               |  |  |  |
| ٩     | Ţ,                                                                                                                                                                                           | Ø                                                                                                                                                     | QA Typing Determinations - Check YES only if reduction in classification, or affects design function as described in USAR.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | NAD-01.01               |  |  |  |
| r     |                                                                                                                                                                                              | $\boxtimes$                                                                                                                                           | Setpoint or Acceptance Criteria - Check YES only if change affects plant monitoring, performance, or operation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Various                 |  |  |  |
| S     | <u> </u>                                                                                                                                                                                     | $\boxtimes$                                                                                                                                           | Plant Procedures/Revisions - Check YES if change directly or indirectly involves operation, control, or configuration<br>of SSCs described in USAR (see Attachment B).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NAD-03.01               |  |  |  |
| L     | A                                                                                                                                                                                            | $\boxtimes$                                                                                                                                           | Engineering Specifications - Check YES only if a design function or design requirement may be affected.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | NAD-05.03               |  |  |  |
| u     |                                                                                                                                                                                              | $\boxtimes$                                                                                                                                           | Operations Night Orders or Operator Work Arounds - Check YES only if SSCs are operated or configured differently than described in USAR.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | NAD-12.08               |  |  |  |
| V.    | <u> </u>                                                                                                                                                                                     | · ]                                                                                                                                                   | Temporary plant alterations (e.g., jumpers, scaffolding, shielding, barriers) - Check YES only if installed (or in effect) for maintenance for longer than 90 date at nouver conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | NAD-08.14,              |  |  |  |
|       | Ē                                                                                                                                                                                            |                                                                                                                                                       | for maintenance for longer than so days at power conditions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | HP-04.002,              |  |  |  |
|       |                                                                                                                                                                                              |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | FPP-08-09               |  |  |  |
| w     |                                                                                                                                                                                              | M                                                                                                                                                     | remporary plant alterations - Check TES only if not associated with maintenance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                         |  |  |  |
| ×     | 5                                                                                                                                                                                            | $\boxtimes$                                                                                                                                           | Correcuve/Compensatory Actions - Check YES only if degraded/non-conforming plant condition accepted "as-is" or<br>compensatory action taken.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | GNP-11.08.03            |  |  |  |
|       | Conclus                                                                                                                                                                                      | on Charl                                                                                                                                              | k one of the following:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | •                       |  |  |  |
| ٦.    | Conclusion. Lheck one of the following:<br>All of the documents or processes listed above are checked NO. A SO SO coregoing is NOT acquired. Broase change is apportance with the applicable |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |  |  |  |
|       | program/process/procedure.                                                                                                                                                                   |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |  |  |  |
|       |                                                                                                                                                                                              | One or                                                                                                                                                | more of the documents or processes listed above are checked YES. A 50.59 screening shall be performed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |  |  |  |
| 5.    | Commen                                                                                                                                                                                       | its:                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |  |  |  |
| 6 .   | Checklis<br>Print no.                                                                                                                                                                        | t item 'n'                                                                                                                                            | was checked NO because this cale does not affect a methodology, method of evaluation, or any part of the design or licensing l                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | basis.                  |  |  |  |
| Pren  | $\int V \int V dV dV$                                                                                                                                                                        |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |  |  |  |
| (prin | (print/sign) / 11 D L / 11                                                                                                                                                                   |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |  |  |  |
| Revi  | ewed by:                                                                                                                                                                                     | lin                                                                                                                                                   | othy K. Wiltinan 1 Temothy R. Y. Liltman Date: 10/19/04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                         |  |  |  |
| For   | m GNI                                                                                                                                                                                        | -04 04                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 14 - 44 4               |  |  |  |
| 1.01  | in Givr                                                                                                                                                                                      | -04.04                                                                                                                                                | INFORMATION LISE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 14 0114                 |  |  |  |
|       |                                                                                                                                                                                              |                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                         |  |  |  |
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Calc. C11619, Rev. 0

#### **Determination of Cavity Level for EAL RA2.2**

#### 1.0 Purpose/Background

This calculation is to support the conversion of KNPP current EAL (Emergency Action Levels) to the NEI 99-01, Rev. 4 scheme. Per the new EAL RA2.2, a calculation is needed to indicate the reactor cavity Level that would result in uncovering an irradiated fuel assembly outside the reactor vessel. This value represents the maximum height the fuel could be during refueling. This value is bounding and conservative for all conditions.

2.0 Inputs/Assumptions/Methodology/Acceptance Criteria

2.1 Inputs: Dwg. XK-113557-5, Rev. D1, Operations Procedure N-RHR-34C, Rev. N

2.2 Assumptions: None

2.3 Methodology:

Per manipulator crane drawing XK-113557-5, the top of a fuel assembly with the gripper tube assembly fully retracted is at a plant elevation of 638'7". Per Operations Procedure, N-RHR-34C, RHR Operation At A Reduced Inventory Condition:

Reactor cavity at 0% (612'4" elevation = 200 INWC (inches water column)) Range is 200 to 850 INWC (1% is equal to 6.5 INWC). Therefore:

638' 7" <u>-612' 4"</u> 26' 3" or 315 inches

315"

650 (inch span) = 48.46% or  $315" \times (\%/6.5") = 48.46\%$ 

For EAL RA2.2, the value will be rounded conservatively to 50%.

2.4 Acceptance Criteria: None.

#### 3.0 References/Calculation Results/Recommendations

Per references (XK-113557-5 and N-RHR-34C), the calculated value of 48.46% will be conservatively rounded up to 50%. So with reactor vessel level greater than 50%, a fuel assembly will not be exposed even at its highest elevation during refueling operations.

[These indications are taken from Rx Vessel Level sightglass and Reactor Cavity Level (LI-41337/LT-24068).]

# CALCULATION COVER SHEET AND REVIEW REPORT

| Calculatio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <u>n No</u> .                                 | C11620                                         | Tit                   | e of Cal   | Evalu                                  | uation of Ra<br>onse Action            | diological Effluent Mor<br>Levels     | nitor    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------|-----------------------|------------|----------------------------------------|----------------------------------------|---------------------------------------|----------|
| Rev. No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                               | 0                                              | · · · · · ·           | . •<br>. • | · · ·                                  | . •                                    | :                                     |          |
| Addendun                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | n Letter                                      |                                                | <u></u>               | le of Ad   | dendum:                                | 1                                      | <u> </u>                              |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -                                             |                                                |                       |            | · · · · · · · · · · · · · · · · · · ·  | -                                      |                                       |          |
| Safety Rela                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ted                                           | 🗌 Yes 🖾 No                                     | (1)                   |            |                                        | •                                      |                                       | (2)      |
| System(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | / System No                                   | <u>o(s)</u> :                                  |                       |            |                                        |                                        | · · · · · · · · · · · · · · · · · · · |          |
| Radiation M                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | onitoring (RN                                 | 1)/45                                          |                       |            | T                                      |                                        |                                       | . (3)    |
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| NEI 99-01, R                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | lev. 4                                        |                                                | · · · ·               | <u>.</u>   | 1                                      |                                        |                                       | (4)      |
| Supersede<br>Calculatio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | s:<br>n No(s).                                | n/a                                            | • •                   |            | Superseded By<br>Calculation No        | r:<br>o(s). <u>n/a</u>                 |                                       |          |
| Addendun                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | n No(s).                                      |                                                | • •                   |            | Addendum No                            | (s)                                    | · · · · · · · · · · · · · · · · · · · |          |
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| Engin     Chen     Com     Elect                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | neering Mec<br>nistry/Radia<br>puter<br>rical | hanics/Structural Eng<br>tion Protection (Chem | incering (EM/<br>/RP) | SE)        |                                        | I&C<br>Nuclear<br>Mechanical           |                                       | (7)      |
| This Calcı                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ulation has                                   | been reviewed and                              | was accompli          | shed by    | the following:                         | · · · · · · · · · · · · · · · · · · ·  | Reviewers' Initials                   | (8)      |
| 🗌 Verifi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | cation (Ind                                   | ependent Review)                               | : .                   |            | ·                                      | · · ·                                  | · · · · · · · · · · · · · · · · · · · |          |
| 🛛 Techn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ical Review                                   |                                                |                       |            |                                        | •••••••••••••••••••••••••••••••••••••• | TRW                                   |          |
| Preparer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Reviewer                                      | Comments Attached                              | Discipline            |            | Printed Name                           |                                        | Signature                             | Date (9) |
| Ø                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                               | 🗌 Yes 🖾 No                                     | Nuclear               |            | John Helfenber                         | ger                                    | Joh Helfales                          | 10/20/04 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | $\boxtimes$                                   | Yes No                                         | Nuclear               |            | Timothy Wiltm                          | nan                                    | Timotre R. Witnen                     | 10/20/04 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                               | Yes No                                         |                       |            | · · · ·                                |                                        | 0                                     | · · ·    |
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| Approver                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | : Prin                                        | ited Name:                                     | John Helf             | enberger   | •<br>•                                 | Wisconsin I                            | PE Stamp (If Required)                |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Sign                                          | ature:                                         | Jer-Her               | In 24      |                                        |                                        |                                       |          |
| Effective                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Date                                          | 2:                                             | <u>10/21</u>          | 704 0      | ······································ |                                        |                                       |          |
| (See Steps 6.<br>If different f                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 4.4 and 6.4.5)<br>rom Approve                 | r Date)                                        | n/a                   |            |                                        |                                        |                                       |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                               |                                                |                       |            |                                        |                                        |                                       |          |
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# CALCULATION VERIFICATION CHECKLIST

| Calculation # | C11620 |      |
|---------------|--------|------|
| F             |        | <br> |

Revision

n

#### Verification Items

Purpose

- Clear objective and problem statement
- Affected SSC been identified
- Intended use of results been identified
- Any limitation of applicability
- Revision content been summarized

#### Methodology

- Discussion of the method/approach and major steps
- Limitation of use of methodology identified

#### Acceptance Criteria

- Clear definition of acceptance criteria
- Exceptions clearly defined
- Sources of acceptance criteria clearly defined

#### Assumptions

- Sufficient rationale to permit verification of assumption
- Have unverified assumptions been identified as such
- References provided for assumptions.

#### Inputs

- All applicable Design Inputs been identified Has source document for inputs been identified
- Computer data program SQA approval

#### References

- Have all controlled plant input documents been identified
- If a procedure is cited, has the process owner been notified
- Are references available from KNPP records, or have they been attached

#### Calculation and Results

- Correct formula/method used to support the objective
- Formula variables (including units) clearly labeled and consistent with sources
- Computer program input/output been reviewed
- Reference to sketches provided
- Sufficient bases/rational to permit verification of engineering judgment Proper carry over and use of significant digits

#### Conclusions and Recommendations

- Clear statement of the results consistent with the objective
- Acceptability of the results clearly defined
- Recommendation for unacceptable results, AR written if necessary
- Clear definition of limitations or requirements imposed by the calculation
- necessary to maintain the validity of the results
- Have the effects of the calculation on output documents been identified and addressed



NO

 $\Box$ 

N/A

YES

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## **CALCULATION VERIFICATION COMMENT/RESOLUTION**

Calculation # C11620

Revision 0

Reference Material Used:

| Item #                                                                                                          | Reviewer's Comment | Preparer Resolution                   | Reviewer<br>Concurrence |
|-----------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------|-------------------------|
| 4.a. Υμαίτα), μι τ. <sub>271</sub> , ήρι⇔αχμι,                                                                  | NA                 |                                       |                         |
| 4. <b>-</b>                                                                                                     |                    |                                       |                         |
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Calculation No. C11620

Revision No. 0

Addendum Letter

| Section, Attachment, or Other Description                         | Page #(s) | Revision |
|-------------------------------------------------------------------|-----------|----------|
| Calculation Cover Sheet and Review Report (Form GNP-04.03.04-1)   | NA        | NA       |
| Calculation Verification Checklist (Form GNP-04.03.04-3)          | NA        | NA       |
| Calculation Verification Comment/Resolution (Form GNP-04.03.04-4) | NA        | NA       |
| Table of Contents and Revision Control (Form GNP-04.03.04-2)      | NA        | NA       |
| 50.59 Applicability Review                                        | i         | 0        |
| 50.59 Pre-Screening                                               | ii        | 0        |
| 1.0 Purpose                                                       | -1        | 0        |
| 2.0 Background                                                    | 1         | 0        |
| 3.0 Inputs and Assumptions                                        | 1         | 0        |
| 4.0 Methodology and Acceptance Criteria                           | 1         | 0        |
| 5.0 Réferences                                                    | 2         | 0        |
| 6.0 Calculations and Results                                      | 2         | 0        |
| 7.0 Conclusions and Recommendations                               | . 3       | 0        |
| Attachment A                                                      |           |          |
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| RASCAL Runs for Containment SPING                                 | 9 - 13    | 0        |
| RASCAL Runs for Steam Line SG Safeties                            | 14 - 18   | 0        |
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### **50.59 APPLICABILITY REVIEW**

(Is the activity excluded from 50.59 review?)

Document/Activity number: C11620, Rev. 0

1. 2.

3.

Brief description of proposed activity (what is being changed and why):

Evaluation of RASCAL runs to review emergency action levels based on radiological effluent release from the plant.

Does the proposed activity involve or change any of the following documents or processes? Check YES or NO for EACH applicability review item. Explain in comments if necessary. [Ref. NMC 50.59 Resource Manual, Section 4]

NOTE: If you are unsure if a document or process may be affected, contact the process owner.

|             | Yes [                                                                                                                                                                                                                                                                                                                                                                                                                                                         | No<br>V   | Document or<br>Process                                                                                                                                                                                                                                            | Applicable<br>Regulation      | Contact/Action                                                                                                                                                                                                                    |  |  |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| B           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           | Technical Specifications or Operating License                                                                                                                                                                                                                     | 10CFR50.92                    | Process change per NAD-05.14.<br>Contact Licensing.                                                                                                                                                                               |  |  |
| b           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ⊠         | Activity/change previously approved by NRC in license amendment or NRC SER                                                                                                                                                                                        | 10CFR50.90                    | Identify NRC letter in comments below. Process change.<br>Contact Licensing for assistance.                                                                                                                                       |  |  |
| c           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ⊠         | Activity/change covered by an existing approved<br>10CFR50.59 review, screening, or evaluation.                                                                                                                                                                   | 10CFR50 Appendix B            | Identify screening or evaluation in comments below.<br>Process change.                                                                                                                                                            |  |  |
| d           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           | Quality Assurance Program (OQAPD/OQAP)                                                                                                                                                                                                                            | 10CFR50.54(a)                 | Contact QA.<br>Refer to NAD-01.07.                                                                                                                                                                                                |  |  |
| c           | ١                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Ň         | Emergency Plan                                                                                                                                                                                                                                                    | 10CFR50.54(q)                 | Contact EP.<br>Refer to NAD-05.15.                                                                                                                                                                                                |  |  |
| f           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ⊠         | Security Plan                                                                                                                                                                                                                                                     | 10CFR50.54(p)                 | Contact Security.<br>Refer to NAD-05.17.                                                                                                                                                                                          |  |  |
| 8           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ⊠         | IST Plan                                                                                                                                                                                                                                                          | 10CFR50.55a(f)                | Contact IST process owner.<br>Refer to NAD-01.24.                                                                                                                                                                                 |  |  |
| h           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Ø         | ISI Plan                                                                                                                                                                                                                                                          | 10CFR50.55a(g)                | Contact ISI process owner.<br>Refer to NADs 01.03, 01.05, and 05.11.                                                                                                                                                              |  |  |
| i           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           | ECCS Acceptance Criteria                                                                                                                                                                                                                                          | 10CFR50.46                    | Contact Licensing.                                                                                                                                                                                                                |  |  |
| j           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               | . 🖾       | USAR or any document incorporated by reference -<br>Check YES only if change is editorial (see<br>Attachment A).                                                                                                                                                  | 10CFR50.71                    | Process USAR change per NEP-05.02.<br>Contact USAR process owner for assistance.                                                                                                                                                  |  |  |
| k           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Ø         | Commitment - Commitment changes associated<br>with a response to Generic Letters and Bulletins, or<br>if described in the USAR require a pre-screening.                                                                                                           | 10CFR50 Appendix B            | Contact Licensing.<br>Refer to NAD-05.25.                                                                                                                                                                                         |  |  |
| 1           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               | . Ø       | Maintenance activity or new/revised maintenance<br>procedure - Check YES only if clearly maintenance<br>and equipment will be restored to its as-designed<br>condition within 90 days (see Attachment C).                                                         | 10CFR50.65                    | Evaluate under Maintenance Rule.<br>Refer to NAD-08.20 and NAD-08.21.                                                                                                                                                             |  |  |
| m           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ×         | Degraded/Non-conforming plant condition - Check<br>YES if returned to as-designed condition in a timely<br>manner consistent with safety.                                                                                                                         | 10CFR50 Appendix B            | Initiate an Action Request (AR) and evaluate under<br>GL 91-18, Revision 1.<br>Contact licensing for assistance. Refer to GNP 11.08.03.                                                                                           |  |  |
| n           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Ø         | New/revised administrative or managerial<br>directive/procedure (e.g., NAD, GNP, Fleet<br>Procedure) or a change to any procedure or other<br>controlled document (e.g., plant drawing) which is<br>clearly editorial/administrative. See Attachments A<br>and B. | 10CFR50 Appendix B            | Process procedure/document revision.                                                                                                                                                                                              |  |  |
| 4.          | <ul> <li>Conclusion. Check one of the following:</li> <li>All documents/processes listed above are checked NO. 10CFR50.59 applies to the proposed activity. A 50.59 pre-screening shall be performed.</li> <li>One or more of the documents/processes listed above are checked YES. <u>AND</u> controls all aspects of the proposed activity. 10CFR50.59 does <u>NOT</u> apply. Process the change under the applicable program/process/procedure.</li> </ul> |           |                                                                                                                                                                                                                                                                   |                               |                                                                                                                                                                                                                                   |  |  |
| 5.          | the above processes. 10CFR50.59 applies to that portion. A 50.59 pre-screening shall be performed.<br>Comments:<br>RASCAL software was used to simulate dose at the site boundary. This evaluation merely reviews those results.                                                                                                                                                                                                                              |           |                                                                                                                                                                                                                                                                   |                               |                                                                                                                                                                                                                                   |  |  |
| 6.          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Print nan | ne followed by signature. Attach completed form to docu                                                                                                                                                                                                           | ment/activity/change package. | na sense a series de la companya de la companya de la companya de la companya de la companya de la companya de<br>Esta de la companya d |  |  |
| Pre<br>(pri | Prepared by: John Helfenberger / Allelfaluz Date: 10/20/04                                                                                                                                                                                                                                                                                                                                                                                                    |           |                                                                                                                                                                                                                                                                   |                               |                                                                                                                                                                                                                                   |  |  |
| Rev<br>(pri | viewed by                                                                                                                                                                                                                                                                                                                                                                                                                                                     | y: 1      | imothy R. Wiltman I Ter                                                                                                                                                                                                                                           | mothy R. Wiltm                | am Date: 10/21/04                                                                                                                                                                                                                 |  |  |
|             | Ì                                                                                                                                                                                                                                                                                                                                                                                                                                                             | : ·       |                                                                                                                                                                                                                                                                   |                               |                                                                                                                                                                                                                                   |  |  |
| F           | Form GNP-04.04.01-1 Rev. C Date: IIII 22.2003 Page 13 of 14                                                                                                                                                                                                                                                                                                                                                                                                   |           |                                                                                                                                                                                                                                                                   |                               |                                                                                                                                                                                                                                   |  |  |

**INFORMATION USE** 

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s,

### 50.59 PRE-SCREENING

(is a 50.59 screening required?)

Document/Activity number: C11620, Rev. 0 1. Brief description of proposed activity (what is being changed and why): 2.

necessary

3.

Evaluation of RASCAL software runs demonstrating dose rates seen at site boundary under varying effluent releases from the site.

Does the proposed activity involve or change any of the following documents or processes? Explain in Comments if necessary.

Check YES or NO for EACH pre-screening item. [Ref. NMC 50.59 Resource Manual, Section 5.1] NOTE: If you are unsure if a document or process may be affected, contact the process owner.

NOTE: An asterisk (\*) indicates that the document is incorporated by reference in the USAR or is implicitly considered part of the USAR.

NOTE: Check NO if activity/change is considered editorial, administrative, or maintenance as defined in Attachments A, B, and C. Explain in Comments if

Directive/ Yes Document/Process No ✓ Procedure NEP-05.02 Updated Safety Analysis Report (USAR) 1 ľ  $\square$ NAD-05.14. b Technical Specifications Bases or Technical Requirements Manual (TRM) 1  $\boxtimes$ NAD-03.25 Commitments made in response to NRC Generic Letters and Bulletins, and those described in the USAR NAD-05.25 с \$  $\boxtimes$ d Environmental Qualification (EQ) Plan NAD-01.08  $\boxtimes$ 1 Regulatory Guide 1.97 (RG 1.97) Accident Monitoring Instrumentation Plan  $\square$ NAD-05.22 e 4 f  $\boxtimes$ Fire Plan , seg NAD-01.02 1 Appendix R Design Description NAD-01.02 g 1  $\boxtimes$ h  $\boxtimes$ Fire Protection Program Analysis (FPPA) NAD-01.02 i  $\square$ Offsite Dose Calculation Manual (ODCM) NAD-05.13 1 Radiological Environmental Monitoring Manual (REMM) NAD-05.13 j  $\square$ X Station Blackout Design Description k Control Room Habitability Study I NAD-05.01 m  $\square$ Plant Drawing Changes/Discrepancies Calculations/Evaluations/Analyses/Computer Software - Check YES only if: 1) It directly or indirectly involve Various n affects SSC-described in the USAR, or affects a methodology or method of evaluation safety analysis described in  $\boxtimes$ the USAR; or 2) It independently (i.e., not part of a modification) affects the licensing or design basis. (TC-dated 03-46-2004) (TC dated 05-05-2004) NAD-04.03 Permanent Plant Physical Changes - All require a screening. 0  $\square$ NAD-04.03 p Temporary Plant Physical Changes (TCRs) - Check No only if installed for maintenance AND in effect for less than  $\square$ . 90 days at power conditions. QA Typing Determinations - Check YES only if reduction in classification, or affects design function as described in NAD-01.01 q  $\square$ USAR. Setpoint or Acceptance Criteria - Check YES only if change affects plant monitoring, performance, or operation.  $\boxtimes$ Various r Plant Procedures/Revisions - Check YES if change directly or indirectly involves operation, control, or configuration NAD-03.01 s  $\boxtimes$ of SSCs described in USAR (see Attachment B). NAD-05.03 Engineering Specifications - Check YES only if a design function or design requirement may be affected. Ł  $\boxtimes$ Operations Night Orders or Operator Work Arounds - Check YES only if SSCs are operated or configured differently NAD-12.08 บ  $\boxtimes$ than described in USAR. Temporary plant alterations (e.g., jumpers, scaffolding, shielding, barriers) - Check YES only if installed (or in effect) NAD-08.14, GMP-127, for maintenance for longer than 90 days at power conditions.  $\square$ HP-04.002. FPP-08-09 Temporary plant alterations - Check YES only if not associated with maintenance. w  $\boxtimes$ Corrective/Compensatory Actions - Check YES only if degraded/non-conforming plant condition accepted "as-is" or X GNP-11.08.03  $\boxtimes$ compensatory action taken. 4.

Conclusion. Check one of the following:  $\boxtimes$ 

All of the documents or processes listed above are checked NO. A 50.59 screening is NOT required. Process change in accordance with the applicable program/process/procedure.

One or more of the documents or processes listed above are checked YES. A 50.59 screening shall be performed.

5. Comments

This evaluation does not affect a methodology, method of evaluation described in USAR and also does not affect design or licensing basis. Print name followed by signature. Either the preparer or reviewer shall be 50.59 screening qualified. Attach completed form to document/activity/change package 6.

Prepared by: John Helfenberger Date: 10/20/04 (print/sign) Reviewed by: Date: 10 (print/sign) Form GNP-04.04.01-2 Rev. C Date: JUL 22 2003

**INFORMATION USE** 

#### KEWAUNEE NUCLEAR POWER PLANT CALCULATION/EVALUATION

CALC/EVAL NO. REV. PAGE NO. C11620 0

#### 1.0 Purpose

The purpose of this evaluation is to review the data obtained from runs of RASCAL for various release conditions from the plant. This data will input to settings of the new Emergency Action Levels (EAL)s that are being established as a part of an ongoing NMC effort to have all plants in compliance with NEI 99-01, Rev. 4, "Methodology for Development of Emergency Action Levels."

#### 2.0 Background

Data has been provided from RASCAL for abnormal radiological levels associated with radiological effluent. There are 2 such EALs that RASCAL runs have been performed. The first is AS1 which is an initiating condition for a Site Area Emergency. This is defined as "Offsite dose resulting from an actual or immiment release of gaseous radioactivity exceeds 100 mR TEDE or 500 mR Thyroid CDE for the actual or projected duration of the release." Dose assessment using actual meteorology indicates doses greater than 100 mR TEDE or 500 mR thyroid CDE at or beyond the site boundary.

The second is AG1 which is an initiating condition for a General Emergency. This is defined as "Offsite dose resulting from an actual or imminent release of gaseous radioactivity exceeds 1000 mR TEDE or 5000 mR Thyroid CDE for the actual or projected duration of the release using actual meteorology." Dose assessment using actual meteorology indicates doses greater than 1000 mR TEDE or 5000 mR Thyroid CDE at or beyond the site boundary.

These 2 initiating conditions were simulated with data in RASCAL for 4 release pathways on site: through the Auxiliary Building Stack, Containment Stack, Steam Line Steam Generator Safeties, or Steam Line PORVs.

#### **3.0** Inputs and Assumptions

Anticipated values were input into RASCAL such to obtain the desired values at the site boundary. Average wind speeds, direction, and stability are assumed to be as stated in USAR Section 2.7.2.

#### 4.0 Methodology and Acceptance Criteria

Runs were performed with the RASCAL software. This is an NRC approved code for use in emergency preparedness. There is no formal acceptance criteria for this evaluation.

#### KEWAUNEE NUCLEAR POWER PLANT CALCULATION/EVALUATION

| CALC/EVAL NO. | C11620  |
|---------------|---------|
| REV.          | · O · · |
| PAGE NO.      | 2       |

### 5.0 References

NEI 99-01, Rev. 4, (NUMARC/NESP-007) "Methodology for Development of Emergency Action Levels" dated January 2003

### 6.0 Calculation and Results

The following are the results of the computer runs (see Attachment A):

| 401        |  |
|------------|--|
| <b>n</b> 0 |  |

Release rates result in 0.5 rem Thyroid CDE at the site boundary

| `             |               |                   |       | · · · ·             |            |
|---------------|---------------|-------------------|-------|---------------------|------------|
|               | SPING Channel | Counts            | units | <b>Release Rate</b> | units      |
| Aux Bldg      | 01-07         | 1.00E+04          | cpm   | 6.67                | Ci/sec     |
| • • •         | 01-09         | 1.00E+01          | cpm   | 6.67                | Ci/sec     |
|               | 01-03         | 1.44E+04          | uCi   | 1.36E-01            | Ci/sec     |
| Containment   | 02-07         | 2.00E+03          | cpm   | 6.70E+00            | Ci/sec     |
|               | 02-09         | n/a               | cpm   | n/a                 | Ci/sec     |
|               | 02-03         | 2.97E+03          | uCi   | 1.37E-01            | Ci/sec     |
|               | Rad Monitor   |                   | : :   |                     |            |
| SG Safety     | R-31          | 8.30E-02          | R/hr  | 6.81E+06            | Ci/sec     |
|               | R-32          | n/a               | ·     | •                   |            |
| ; · · .       | R-33          | 8.30E-02          | R/hr  | 6.81E+06            | Ci/sec     |
| · · · · ·     | R-34          | `. <b>n/a</b> .∷. |       |                     |            |
| SG PORV       | R-31          | 1.77E-01          | R/hr  | 6.78E+06            | Ci/sec     |
| · · · · · · · | R-32          | n/a 👘             | 111   |                     |            |
| ·2 · · · ·    | R-33          | 1.77E-01          | R/hr  | 6.78E+06            | Ci/sec     |
| -             | R-34          | n/a               |       |                     | . <i>.</i> |

AG1

Release rates result in 5.0 rem Thyroid CDE at the site boundary

|             |             | المتحدية والمسترج | 1 + x |          |        |
|-------------|-------------|-------------------|-------|----------|--------|
| Aux Bldg    | 01-07       | 1.00E+05          | cpm   | 6.67E+01 | Ci/sec |
|             | 01-09       | 1.00E+02          | cpm   | 6.67E+01 | Ci/sec |
|             | 01-03       | 1.44E+05          | uCi   | 1.36E+00 | Ci/sec |
| Containment | 02-07       | 2.00E+04          | cpm   | 6.71E+01 | Ci/sec |
|             | 02-09       | 2.00E+01          | cpm   | 6.71E+01 | Ci/sec |
|             | 02-03       | 2.97E+04          | uCi   | 1.37E+00 | Ci/sec |
| a           | Rad Monitor | -                 |       | · · ·    |        |
| SG Safety   | R-31        | 8.30E-01          | R/hr  | 6.81E+07 | Ci/sec |
|             | R-32        | n/a               | • :   |          |        |
|             | R-33        | 8.30E-01          | R/hr  | 6.81E+07 | Ci/sec |
|             | R-34        | n/a               |       | •        |        |
| SG PORV     | R-31        | 1.77E+00          | R/hr  | 6.78E+07 | Ci/sec |
|             | R-32        | 1.77E+00          | R/hr  | 6.78E+07 | Ci/sec |
|             | R-33        | 1.77E+00          | R/hr  | 6.78E+07 | Ci/sec |
|             | R-34        | 1.77E+00          | R/hr  | 6.78E+07 | Ci/sec |

#### KEWAUNEE NUCLEAR POWER PLANT CALCULATION/EVALUATION

#### CALC/EVAL NO. REV. PAGE NO.

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Evaluation of this data reveals the appropriate step change in radiological results for a corresponding step change in either counts or dose rates. Increase in classification from AS1 to AG1 has the corresponding x10 increase in both source release values and dose rates at the boundary.

### 7.0 Conclusions and Recommendations

The results from RASCAL appear reasonable and are representative of what would be expected with the release rates used. It is recommended that the RASCAL runs be used in the development of the EALs for Kewaunee.

# Attachment A

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# EAL Aux Sping (AS1)

|                                        |                                                                                                                                     | RELEASE<br>CONCEN.<br>µCi/cc | RELEASE<br>RATE<br>Ci/sec | %   |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------------------------|-----|
| 01-07                                  | Mid-range gas = <u><math>1.0E04</math></u> cpm,<br>convert cpm reading to $\mu$ Ci/cc<br>using conversion Table 3, EPIP-RET-<br>02B | 1.57E0 μCi/cc                | 6.67 Ci/sec               | 98% |
| 01-09                                  | High-range gas = <u>1E01</u> cpm,<br>convert cpm reading to μCi/cc<br>using conversion Table 4, EPIP-RET-<br>02B                    | 0<br>1.57E0 μCi/cc           | 6.67 Ci/sec               | 98% |
| 01-03<br>(See: EPIP-RET-02B,<br>5.5.3) | lodine ( <b>1.44E4</b> μCi ) ÷ ( 4.5E5 cc ) =                                                                                       | 3.2E-2 μCi/cc                | 1.36E-1<br>Ci/sec         | 2%  |
|                                        |                                                                                                                                     | 1.6E0 μCi/cc                 | 6.80 Ci/sec               |     |

# EAL Aux Sping (AG1)

N. DEPARTMENT

| SPING CHANNEL                          |                                                                                                                      | RELEASE<br>CONCEN.<br>μCi/cc | RELEASE<br>RATE<br>Ci/sec | %   |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------|---------------------------|-----|
| 01-07                                  | Mid-range gas = <u>1E05</u> cpm,<br>convert cpm reading to $\mu$ Ci/cc<br>using conversion Table 3, EPIP-RET-<br>02B | 1.57E1 μCi/cc                | 6.67E01<br>Ci/sec<br>r    | 98% |
| 01-09                                  | High-range gas = <u>1E02</u> cpm,<br>convert cpm reading to µCi/cc<br>using conversion Table 4, EPIP-RET-<br>02B     | 1.57E1 μCi/cc                | 6.67E01<br>Ci/sec         | 98% |
| 01-03<br>(See: EPIP-RET-02B,<br>5.5.3) | lodine ( <b>1.44E5</b> μCi ) ÷ ( 4.5E5 cc ) =                                                                        | 3.2E-1 μCi/cc                | 1.36E0<br>Ci/sec          | 2%  |
|                                        |                                                                                                                      | 1.6E1 μCi/cc                 | 51.12<br>Ci/sec           |     |

Case description: Run date/time:

EAL AS1 Aux sping 09/29/2004 08:22

### Maximum Dose Values (rem) - Close-In

| Dist from release  | • :     |         | :       |         | en gri pi |         | 11 - E. I | ·       |
|--------------------|---------|---------|---------|---------|-----------|---------|-----------|---------|
| miles              | (0.06)  | (0.12)  | (0.19)  | (0.31)  | (0.43)    | (0.62)  | (0.81)    | (1.24)  |
| (kilometers)       | 0.1     | 0.2     | 0.3     | 0.5     | 0.7       | 1.      | 1.3       | 2.      |
| Total EDE          | 8.4E-01 | 2.8E-01 | 1.6E-01 | 8.6E-02 | 6.0E-02   | 4.3E-02 | 3.4E-02   | 2.4E-02 |
| Thyroid CDE        | 1.8E+01 | 5.6E+00 | 3.0E+00 | 1.5E+00 | 9.7E-01   | 6.6E-01 | 5.0E-01   | 3.2E-01 |
| Acute Lung         | 5.2E-01 | 1.6E-01 | 8.4E-02 | 4.2E-02 | 2.8E-02   | 1.9E-02 | 1.4E-02   | 1.1E-02 |
| Total Acute Bone   | 1.7E-01 | 7.6E-02 | 5.1E-02 | 3.2E-02 | 2.5E-02   | 1.9E-02 | 1.6E-02   | 1.2E-02 |
| Inhalation CEDE    | 5.7E-01 | 1.8E-01 | 9.4E-02 | 4.6E-02 | 3.1E-02   | 2.1E-02 | 1.6E-02   | 1.0E-02 |
| Cloud Shine        | 1.1E-01 | 5.7E-02 | 4.0E-02 | 2.7E-02 | 2.1E-02   | 1.7E-02 | 1.4E-02   | 1.1E-02 |
| Period Gnd Shine   | 5.1E-02 | 1.6E-02 | 8.3E-03 | 4.1E-03 | 2.7E-03   | 1.8E-03 | 1.4E-03   | 1.5E-03 |
| 4-day Ground Shine | 1.6E-01 | 4.9E-02 | 2.6E-02 | 1.3E-02 | 8.5E-03   | 5.8E-03 | 4.4E-03   | 3.4E-03 |
|                    |         | 1. L.   |         |         | * . *     |         |           |         |

Notes:

1. Doses exceeding PAGs are underlined.

2. Early-Phase PAGs: TEDE - 1 rem, Thyroid CDE - 5 rem

3. \*\*\* indicates values less than 0.1 mrem

- To view all values use Detailed Results | Numeric Table
- 4. Total EDE = CEDE Inhalation + Cloud Shine + 4-Day Ground Shine
- 5. Total Acute Bone = Bone Inhalation + Cloud Shine + Period Ground Shine

#### Case Summary

**Event Type** Nuclear Power Plant Location Nåme: Kewaunee City, county, state: Carlton, Kewaunee, WI Lat / Long / Elev: 44.3431° N, 87.5361° W, 194 m Time zone: Central Population (1990): 119 / 1,305 / 9,763 (2 / 5 / 10 mi)

> 1772 MW(t) 22000 MWD / MTU **PWR Dry Ambient** 1.30E+06 ft3. 46 psig 0.50 %/d 3.21E+04 gal

#### **Reactor Parameters**

| Reactor power:        |    |
|-----------------------|----|
| Average fuel burn-up: |    |
| Containment type:     |    |
| Containment volume:   |    |
| Design pressure:      |    |
| Design leak rate:     | •  |
| Coolant volume:       | .` |
| Assemblies in core:   |    |
| Steam generator type: | ľ  |

Sou

| Type:                | Monitored Release - Mixtures  |
|----------------------|-------------------------------|
| Shutdown:            | No                            |
| Sample ID:           | <undefined></undefined>       |
| Sample taken:        | 06/03/04 00:00                |
|                      |                               |
| Gross concentration: | 1.60E+00 uCi/cm <sup>3</sup>  |
| Flow rate:           | 9.00E+03 ft <sup>3</sup> /min |
|                      |                               |

121 U-Tube

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9.5

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| e ,                     |         |   |
|-------------------------|---------|---|
| User defined percentage | S       | - |
| Noble gases:            | 98.000% |   |
| Halogens:               | 2.000%  |   |
| Alkali metals:          | 0.000%  | • |
| Tellurium group:        | 0.000%  |   |
| Barium, Strontium:      | 0.000%  |   |
| Nóble metals:           | 0.000%  | ł |
| Lanthanides:            | 0.000%  | , |
| Cerium group:           | 0.000%  | • |
| 5 T T                   |         |   |

# Release Pathway

| Type:                  | Direct to Atmosphere  |
|------------------------|-----------------------|
| Release point:         | Not an isolated stack |
| Release height:        | 0. m                  |
| Building wake effects: | Computed              |
|                        |                       |

# Release timings

| lease timings          |                   |
|------------------------|-------------------|
| o atmosphere start:    | 06/03/2004 00:00  |
| o atmosphere duration: | 0 days, and 01:00 |

# Meteorology

| Type:<br>Data set name:<br>Data set desc: | Predefined - Site-specific<br>EAL1 standard met<br>KEWA Dir=222 Spd=12.6 Stab=F Precp=N |                                      |        |            |
|-------------------------------------------|-----------------------------------------------------------------------------------------|--------------------------------------|--------|------------|
| Summary of data<br>at release point:      | Туре                                                                                    | Dir Speed Stability<br>deg mph class | Precip | Temp<br>°F |
| 00:00                                     | Obs                                                                                     | 222 12.6 F                           | None   | 60         |

# Calculations

| Case description:        | EAL AS1 Aux sping                           |
|--------------------------|---------------------------------------------|
| End of calculations:     | 06/03/2004 06:00                            |
| Distance of calculation: | Close-in only                               |
| Close-in distances:      | 0.1, 0.2, 0.3, 0.5, 0.7, 1.0, 1.3, 2.0 mile |
|                          |                                             |

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EAL AG1 Aux sping Case description: Run date/time: 09/29/2004 08:20

### Maximum Dose Values (rem) - Close-In

| Dist from release  | •        |         |         |         |         |           |         |         |  |
|--------------------|----------|---------|---------|---------|---------|-----------|---------|---------|--|
| miles              | (0.06)   | (0.12)  | (0,19)  | (0.31)  | (0.43)  | (0.62)    | (0.81)  | (1.24)  |  |
| (kilometers)       | 0.1      | 0.2     | 0.3     | 0.5     | 0.7     | <b>1.</b> | 1.3     | 2.      |  |
| Total EDE          | 8.4E+00  | 2.8E+00 | 1.6E+00 | 8.6E-01 | 6.0E-01 | 4.3E-01   | 3.4E-01 | 2.4E-01 |  |
| Thyroid CDE        | 1.8E+02  | 5.6E+01 | 3.0E+01 | 1.5E+01 | 9.7E+00 | 6.6E+00   | 5.0E+00 | 3.2E+00 |  |
| Acute Lung         | 5.2E+00  | 1.6E+00 | 8.4E-01 | 4.2E-01 | 2.8E-01 | 1.9E-01   | 1.4E-01 | 1.1E-01 |  |
| Total Acute Bone   | 1.7E+00  | 7.6E-01 | 5.1E-01 | 3.2E-01 | 2.5E-01 | 1.9E-01   | 1.6E-01 | 1.2E-01 |  |
| Inhalation CEDE    | 5.7E+00  | 1.8E+00 | 9.4E-01 | 4.6E-01 | 3.1E-01 | 2.1E-01   | 1.6E-01 | 1.0E-01 |  |
| Cloud Shine        | 1.1E+00  | 5.7E-01 | 4.0E-01 | 2.7E-01 | 2.1E-01 | 1.7E-01   | 1.4E-01 | 1.1E-01 |  |
| Period Gnd Shine   | 5.1E-01  | 1.6E-01 | 8.3E-02 | 4.1E-02 | 2.7E-02 | 1.8E-02   | 1.4E-02 | 1.5E-02 |  |
| 4-day Ground Shine | .1.6E+00 | 4.9E-01 | 2.6E-01 | 1.3E-01 | 8.5E-02 | 5.8E-02   | 4.4E-02 | 3.4E-02 |  |
| - <u>k</u>         |          |         |         |         | ·       |           | 1       |         |  |

Notes:

1. Doses exceeding PAGs are underlined.

2. Early-Phase PAGs: TEDE - 1 rem, Thyroid CDE - 5 rem

\*\*\* indicates values less than 0.1 mrem
 To view all values - use Detailed Results | Numeric Table
 Total EDE = CEDE Inhalation + Cloud Shine + 4-Day Ground Shine

5. Total Acute Bone = Bone Inhalation + Cloud Shine + Period Ground Shine

### **Case Summary**

**Event Type** 

#### Nuclear Power Plant

Locatic

| Nåme:                | Kewaunee                            |
|----------------------|-------------------------------------|
| City, county, state: | Carlton, Kewaunee, WI               |
| Lat / Long / Elev:   | 44.3431° N, 87.5361° W, 194 m       |
| Time zone:           | Central                             |
| Population (1990):   | 119 / 1,305 / 9,763 (2 / 5 / 10 mi) |
|                      |                                     |

121 **U-Tube** 

1772 MW(t). 22000 MWD / MTU PWR Dry Ambient 1.30E+06 ft3 46 psig 0.50 %/d 3.21E+04 gal

**Reactor Parameters** 

| Reactor power:        |
|-----------------------|
| Average fuel burn-up: |
| Containment type:     |
| Containment volume:   |
| Design pressure:      |
| Design leak rate:     |
| Coolant volume:       |
| Assemblies in core:   |
| Steam generator type: |

#### Source Term

| Type:                | Monitored Release - Mixtures  |
|----------------------|-------------------------------|
| Shutdown:            | No                            |
| Sample ID:           | <undefined></undefined>       |
| Sample taken:        | 06/03/04 00:00                |
|                      |                               |
| Gross concentration: | 1.60E+01 µCi/cm <sup>3</sup>  |
| Flow rate:           | 9.00E+03 ft <sup>3</sup> /min |
|                      |                               |

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|                          | •       |
|--------------------------|---------|
| User defined percentages | · · ·   |
| Noble gases:             | 98.000% |
| Halogens:                | 2.000%  |
| Alkali metals:           | 0.000%  |
| Tellurium group:         | 0.000%  |
| Barium Strontium:        | 0.000%  |
| Noble metals:            | 0.000%  |
| I anthanides:            | 0.000%  |
| Cerium group:            | 0.000%  |
|                          | · · · · |

# Release Pathway

.

| Type:                  | ' : : | Direct to At | mosphere   | • |
|------------------------|-------|--------------|------------|---|
| Release point:         |       | Not an isola | ited stack |   |
| Release height:        |       | 0. m         |            |   |
| Building wake effects: |       | Computed     |            |   |
|                        | · •   | •            |            |   |

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Release timings To atmosphere start: 06/03/2004 00:00 To atmosphere duration: 0 days, and 01:00 

### Meteorology

| Type:<br>Data set name:<br>Data set desc: | Predefined - Site-specific<br>EAL1 standard met<br>KEWA Dir=222 Spd=12.6 Stab=F Precp=N |        |            |
|-------------------------------------------|-----------------------------------------------------------------------------------------|--------|------------|
| Summary of data at release point:         | Dir Speed Stability<br>Type deg mph class                                               | Precip | Temp<br>°F |
| 00:00                                     | Obs 222 12.6 F                                                                          | None   | 60         |

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### Calculations

00:00

| Case description:        | EAL AG1 Aux sping                            |
|--------------------------|----------------------------------------------|
| End of calculations:     | 06/03/2004 06:00                             |
| Distance of calculation: | Close-in only                                |
| Close-in distances:      | 0.1, 0.2, 0.3, 0.5, 0.7, 1.0, 1.3, 2.0 miles |

Printed: Tuesday, October 19, 2004 17:52

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# EAL Containment Sping (AS1)

| SPING CHANNEL                             |                                                                                                               | RELEASE<br>CONCEN.<br>µCi/cc | RELEASE<br>RATE<br>Ci/sec | %   |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------|---------------------------|-----|
| 02-05                                     | Low-range gas                                                                                                 | NA                           | NA                        |     |
| 02-07<br>(use if 02-05 is off scale high) | Mid-range gas = <u>2.0E+3</u> cpm,<br>convert cpm reading to μCi/cc<br>using conversion Table 3, EPIP-RET-02B | 3.23E-1 μCi/cc               | 6.71E0 Ci/sec             | 98% |
| 02-09<br>(use if 02-07 is off scale high) | High-range gas =cpm,<br>convert cpm reading to μCi/cc<br>using conversion Table 4, EPIP-RET-02B               | NA                           | NA                        |     |
| 02-03<br>(See: EPIP-RET-02B, 5.5.3)       | lodine ( <u>2.97E+3</u> μCi) + (4.5E5 cc) =                                                                   | 6.60E-3 μCi/cc               | 1.37E-1 Ci/sec            | 2%  |
|                                           | Total                                                                                                         | 3.30E-1 μCi/cc               | 6.85E0 Ci/sec             |     |

| EAL Containm                              | nent Sping (AG1)                                                                                                   |                              |                           |                    |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------|------------------------------|---------------------------|--------------------|
| SPING CHANNEL                             |                                                                                                                    | RELEASE<br>CONCEN.<br>μCi/cc | RELEASE<br>RATE<br>Ci/sec | %                  |
| 02-05                                     | Low-range gas                                                                                                      | NA                           | NA                        |                    |
| 02-07<br>(use if 02-05 is off scale high) | Mid-range gas = $2.0E+4$ cpm,<br>convert cpm reading to $\mu$ Ci/cc<br>using conversion Table 3, EPIP-RET-<br>02B  | 3.23E0 µCi/cc                | 6.71E+1 Ci/sec            | 98%                |
| 02-09<br>(use if 02-07 is off scale high) | High-range gas = $2.0E+1$ cpm,<br>convert cpm reading to $\mu$ Ci/cc<br>using conversion Table 4, EPIP-RET-<br>02B | 3.23E0 µСі/сс                | OR<br>6.71E+1 Ci/sec      | 98%                |
| 02-03<br>(See: EPIP-RET-02B, 5.5.3)       | lodine ( <u>2.97E+4</u> µCi ) ÷ (4.5E5 cc ) =                                                                      | 6.60E-2 μCi/cc               | 1.37E0 Ci/sec             | 2%                 |
|                                           | Total                                                                                                              | 3.30E0 µCi/cc                | 6.85E+1 Ci/sec            | 1. 1. <sup>1</sup> |

Case description: Run date/time:

EAL AS1 Reactor Bldg Vent 09/17/2004 11:50

#### Maximum Dose Values (rem) - Close-In

| Dist from release                     |         |         |         |                     |         |         |         | in die glach |
|---------------------------------------|---------|---------|---------|---------------------|---------|---------|---------|--------------|
| miles                                 | (0.06)  | (0.12)  | (0.19)  | (0.31)              | (0.43)  | (0.62)  | (0.81)  | (1.24)       |
| (kilometers)                          | 0.1     | 0.2     | 0.3     | 0.5                 | 0.7     | 1.      | 1.3     | 2.           |
| Total EDE                             | 8.4E-01 | 2.8E-01 | 1.6E-01 | 8.6E-02             | 6.1E-02 | 4.3E-02 | 3.4E-02 | 2.5E-02      |
| Thyroid CDE                           | 1.8E+01 | 5.6E+00 | 3.0E+00 | 1.5E+00             | 9.8E-01 | 6.6E-01 | 5.0E-01 | 3.2E-01      |
| Acute Lung                            | 5.2E-01 | 1.6E-01 | 8.5E-02 | 4.2E-02             | 2.8E-02 | 1.9E-02 | 1.4E-02 | 1.1E-02      |
| Total Acute Bone                      | 1.7E-01 | 7.6E-02 | 5.1E-02 | 3.2E-02             | 2.5E-02 | 1.9E-02 | 1.6E-02 | 1.2E-02      |
| Inhalation CEDE                       | 5.8E-01 | 1.8E-01 | 9.4E-02 | 4.6E-02             | 3.1E-02 | 2.1E-02 | 1.6E-02 | 1.1E-02      |
| Cloud Shine                           | 1.1E-01 | 5.7E-02 | 4.1E-02 | 2.7E-02             | 2.1E-02 | 1.7E-02 | 1.4E-02 | 1.1E-02      |
| Period Grid Shine                     | 5.1E-02 | 1.6E-02 | 8.3E-03 | 4.1E-03             | 2.7E-03 | 1.9E-03 | 1.4E-03 | 1.5E-03      |
| 4-day Ground Shine                    | 1.6E-01 | 4.9E-02 | 2.6E-02 | 1.3E-02             | 8.6E-03 | 5.8E-03 | 4.4E-03 | 3.4E-03      |
| · · · · · · · · · · · · · · · · · · · |         |         | • * 、   | an an an the second | 1 1     |         |         |              |

Notes:

1. Doses exceeding PAGs are underlined.

2. Early-Phase PAGs: TEDE - 1 rem, Thyroid CDE - 5 rem 3. \*\*\* indicates values less than 0.1 mrem

To view all values - use Detailed Results | Numeric Table 4. Total EDE = CEDE Inhalation + Cloud Shine + 4-Day Ground Shine 5. Total Acute Bone = Bone Inhalation + Cloud Shine + Period Ground Shine

#### Case Summar

| Event Type            | Nuclear Power Plant                 |
|-----------------------|-------------------------------------|
| Location              |                                     |
| Name:                 | Kewaunee                            |
| City, county, state:  | Carlton, Kewaunee, WI               |
| Lat / Long / Elev:    | 44.3431° N, 87.5361° W, 194 m       |
| Time zone:            | Central                             |
| Population (1990):    | 119 / 1,305 / 9,763 (2 / 5 / 10 mi) |
|                       |                                     |
| Reactor Parameters    |                                     |
| Reactor power:        | 1772 MW(t)                          |
| Average fuel burn-up: | 22000 MWD / MTU                     |
| Containment type:     | PWR Dry Ambient                     |
| Containment volume:   | 1.30E+06 ft <sup>3</sup>            |
| Design pressure:      | 46 psig                             |
| Design leak rate:     | 0.50 %/d                            |
| Coolant volume:       | 3.21E+04 gal                        |
| Assemblies in core:   | 121                                 |
| Steam generator type: | U-Tube                              |
|                       |                                     |
| Source Term           |                                     |
| Туре:                 | Monitored Release - Mixtures        |
| Shutdown:             | No                                  |
| Sample ID:            | <undefined></undefined>             |

| Sample taken:        |   | 06/03/04 | 00:00   |
|----------------------|---|----------|---------|
| Gross concentration: | ÷ | 3.30E-01 | µCi/cm³ |
| Flow rate:           |   | 4.40E+04 | ft³/min |

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| User defined percentages |          |         | 4         |           |           |     |
|--------------------------|----------|---------|-----------|-----------|-----------|-----|
| Noble gases:             | 98.000   | 1%      |           | · · · ·   |           |     |
| Halogens:                | 2.000%   | 6       | ··· · · · | · · ·     |           |     |
| Alkali metals:           | 0.000%   | 6       | · .       | • •       |           |     |
| Tellurium group:         | 0.000%   | 6       | • •       | .: ·      |           |     |
| Barium, Strontium:       | 0.000%   | 6       |           |           |           | •   |
| Noble metals:            | 0.000%   | 6       |           |           |           |     |
| Lanthanides:             | 0.000%   | 6.      |           | -         |           |     |
| Cerium group:            | . 0.000% | 6       |           | ÷.        |           |     |
|                          |          |         |           | • •       |           |     |
| Release Pathway          |          |         |           | · · .     |           |     |
| Type:                    | Direct   | to Atm  | osphere   | •         |           |     |
| Release point:           | Not an   | isolat  | ed stack  | •         |           |     |
| Release height:          | 0, m     |         |           | • • •     |           |     |
| Building wake effects:   | Compi    | uted    |           |           |           |     |
|                          | ·        |         |           | Y         |           |     |
| Release timings          |          | •       |           |           |           |     |
| To atmosphere start:     | 06/03/   | 2004 0  | 00:00     |           |           |     |
| To atmosphere duration:  | 0 days   | , and ( | 01:00     | •         |           |     |
|                          | ·        | •       |           | · .       | ·         |     |
| Meteorology              |          | •       |           |           |           |     |
| Type:                    | Prede    | fined - | Site-spec | cific     |           |     |
| Data set name:           | EAL1     | standa  | rd met    | . :       |           |     |
| Data set desc:           | KEWA     | Dir=2   | 22 Spd=   | 2.6 Stab= | F Precp=N |     |
|                          |          |         |           |           | •         | · . |
| Summary of data          | . •      | Dir     | Speed     | Stability |           | Tem |
| at release point:        | Type     | deg     | mph :     | class     | Precip    | °F  |
|                          | •••      | 0       | •         |           | •         |     |
| 00:00                    | Obs      | 222     | 12.6      | F         | None      | 60  |
|                          |          |         | •         |           |           |     |
|                          |          |         |           |           |           |     |

### Calculations

| Cáse description:        | EAL AS1 Reactor Bldg Vent                    |
|--------------------------|----------------------------------------------|
| End of calculations:     | 06/03/2004 06:00                             |
| Distance of calculation: | Close-in only                                |
| Close-in distances:      | 0.1, 0.2, 0.3, 0.5, 0.7, 1.0, 1.3, 2.0 miles |
|                          |                                              |

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Rev. B

Case description: EAL AG1 Reactor Bldg Vent Run date/time: 09/17/2004 11:48

### Maximum Dose Values (rem) - Close-In

| Diet from  |           |         | • • • • |         |         |         |         | · · · · |         |
|------------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|
| miles      | elease    | (0.06)  | (0.12)  | (0.19)  | (0.31)  | (0.43)  | (0.62)  | (0.81)  | (1.24)  |
| (kilomete  | ers)      | 0.1     | 0.2     | 0.3     | 0.5     | 0.7     | 1.      | 1.3     | 2.      |
| Total EDE  |           | 8.4E+00 | 2.8E+00 | 1.6E+00 | 8.6E-01 | 6.1E-01 | 4.3E-01 | 3.4E-01 | 2.5E-01 |
| Thyroid C  | DE        | 1.8E+02 | 5.6E+01 | 3.0E+01 | 1.5E+01 | 9.8E+00 | 6.6E+00 | 5.0E+00 | 3.2E+00 |
| Acute Lun  | g         | 5.2E+00 | 1.6E+00 | 8.5E-01 | 4.2E-01 | 2.8E-01 | 1.9E-01 | 1.4E-01 | 1.1E-01 |
| Total Acul | le Bone   | 1.7E+00 | 7.6E-01 | 5.1E-01 | 3.2E-01 | 2.5E-01 | 1.9E-01 | 1.6E-01 | 1.2E-01 |
| Inhalation | CEDE      | 5.8E+00 | 1.8E+00 | 9.4E-01 | 4.6E-01 | 3.1E-01 | 2.1E-01 | 1.6E-01 | 1.1E-01 |
| Cloud Shi  | ne        | 1.1E+00 | 5.7E-01 | 4.1E-01 | 2.7E-01 | 2.1E-01 | 1.7E-01 | 1.4E-01 | 1.1E-01 |
| Period Gn  | d Shine   | 5.1E-01 | 1.6E-01 | 8.3E-02 | 4.1E-02 | 2.7E-02 | 1.9E-02 | 1.4E-02 | 1.5E-02 |
| 4-day Gro  | und Shine | 1.6E+00 | 4.9E-01 | 2.6E-01 | 1.3E-01 | 8.6E-02 | 5.8E-02 | 4.4E-02 | 3.4E-02 |
| 4-day Gro  | und Shine | 1.6E+00 | 4.9E-01 | 2.6E-01 | 1.3E-02 | 8.6E-02 | 5.8E-02 | 4.4E-02 | 3.4E-02 |

Notes:

1. Doses exceeding PAGs are underlined.

2. Early-Phase PAGs: TEDE - 1 rem, Thyroid CDE - 5 rem 3. \*\*\* indicates values less than 0.1 mrem

To view all values - use Detailed Results | Numeric Table

4. Total EDE = CEDE Inhalation + Cloud Shine + 4-Day Ground Shine

5. Total Acute Bone = Bone Inhalation + Cloud Shine + Period Ground Shine

#### Case Summary

**Event** Type

Nuclear Power Plant

#### Location

| Nåme:                | Kewaunee                            |
|----------------------|-------------------------------------|
| City, county, state: | Carlton, Kewaunee, WI               |
| Lat / Long / Elev:   | 44.3431° N, 87.5361° W, 194 m       |
| Time zone:           | Central                             |
| Population (1990):   | 119 / 1,305 / 9,763 (2 / 5 / 10 mi) |
|                      |                                     |

121 **U-Tube** 

1772 MW(t) 22000 MWD / MTU PWR Dry Ambient 1.30E+06 ft<sup>3</sup> 46 psig 0.50 %/d 3.21E+04 gal

#### Reactor Parameters

| Reactor power:        |   |
|-----------------------|---|
| Average fuel burn-up: |   |
| Containment type:     |   |
| Containment volume:   | · |
| Design pressure:      |   |
| Design leak rate:     |   |
| Coolant volume:       |   |
| Assemblies in core:   |   |
| Steam generator type: |   |

# So

| Туре:                | Monitored Release - Mixtur   |
|----------------------|------------------------------|
| Shutdown:            | No                           |
| Sample ID:           | <undefined></undefined>      |
| Sample taken:        | 06/03/04 00:00               |
|                      |                              |
| Gross concentration: | 3.30E+00 µCi/cm <sup>3</sup> |
| Flow rate:           | 4.40E+04 ft³/min             |
|                      |                              |

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| User defined percentages              |         |
|---------------------------------------|---------|
| Noble gases:                          | 98.000% |
| Halogens:                             | 2.000%  |
| Alkali metals:                        | 0.000%  |
| Tellurium group:                      | 0.000%  |
| Barium, Strontium:                    | 0.000%  |
| Noble metals:                         | 0.000%  |
| Lanthanides:                          | 0.000%  |
| Cérium group:                         | 0.000%  |
| · · · · · · · · · · · · · · · · · · · |         |

#### Release Pathway

| Туре:                  | Direct to Atmosphere  |
|------------------------|-----------------------|
| Release point:         | Not an isolated stack |
| Release height:        | 0. m                  |
| Building wake effects: | Computed              |
|                        |                       |

Release timings To atmosphere start: 06/03/2004 00:00 To atmosphere duration: 0 days, and 01:00

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### Meteorology

| Type:<br>Data set name:<br>Data set desc: | Predefined - Site-specific<br>EAL1 standard met<br>KEWA Dir=222 Spd=12.6 Stab=F | - Precp=N |
|-------------------------------------------|---------------------------------------------------------------------------------|-----------|
| Summary of data<br>at release point:      | Dir Speed Stability<br>Type deg mph class                                       | Precip    |
| 00:00                                     | Obs 222 12.6 F                                                                  | None      |

Temp °F

60

# Calculations

| Case description:        | EAL AG1 Reactor Bldg Vent                    |
|--------------------------|----------------------------------------------|
| End of calculations:     | 06/03/2004 06:00                             |
| Distance of calculation: | Close-in only                                |
| Close-in distances:      | 0.1, 0.2, 0.3, 0.5, 0.7, 1.0, 1.3, 2.0 miles |
| · .*                     |                                              |

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### EAL Steam Line SG Safety (AS1)

**1B Steam Line** 1A Steam Line (Use R-32 when R-31 is offscale high) (Use R-34 when R-33 is offscale high) R-31 (<u>83</u> mR/hr)  $(10^{-3}) =$ <u>.083</u> R/hr (= X) mR/hr) (10<sup>-3</sup>) = <u>.083</u> R/hr (= X) R-33 ( 83 OR OR NA R-32 R/hr (= X)R-34 NA R/hr (= X)

Steam Flow Rate Steam Flow Rate (From EPIP-TSC-08A) (From EPIP-TSC-08A) 4.9E6 cc/sec (= Z) 4.9E6 (or EPIP-TSC-08B) (or EPIP-TSC-08B) cc/sec (= Z)

16.7  $\frac{\mu Ci/cc}{R/hr}$  (= Y) at 1 hour after RX shutdown  $X \times Y = 1.39E0 \mu Ci/cc$ 

X x Y x Z x  $\left(10^{-6} \frac{\text{Ci}}{\mu \text{Ci}}\right) = \frac{6.81\text{E}+6}{\text{sec}} \frac{\text{Ci}}{\text{sec}}$  Gross Release Rate

## EAL Steam Line SG Safety (AG1)

1A Steam Line 1B Steam Line (Use R-32 when R-31 is offscale high) (Use R-34 when R-33 is offscale high)

R-31 (<u>830</u> mR/hr) (10<sup>-3</sup>) = <u>83</u> R/hr (= X) R-33 (<u>830</u> mR/hr)  $(10^{-3}) =$ <u>.83</u> R/hr (= X) OR

| R-32   |               | NA    | R/hr (= X) R-34     |               |     | NA        | R/hr (= | X)    | ·<br>· |
|--------|---------------|-------|---------------------|---------------|-----|-----------|---------|-------|--------|
| Steam  | Flow Rate     |       | Steam               | Flow Rate     | · ; |           |         |       |        |
| (From  | EPIP-TSC-08A) |       | (From               | EPIP-TSC-08A) |     | · · · · · | · · · · |       |        |
| (or EP | IP-TSC-08B)   | 4.9E6 | cc/sec (= Z) (or EF | PIP-TSC-08B)  |     | 4.9E6     | cc/sec  | (= Z) |        |

OR

X x Y = <u>1.39E1  $\mu$ Ci/cc</u>

| x | x  | Y x Z | x | 10-6 | <u> </u> | <u>6.81E+7</u> | Ci  | Gross | Re lease | Rate |
|---|----|-------|---|------|----------|----------------|-----|-------|----------|------|
|   | ۰. | • . • |   |      | ⊖µCi∋    |                | sec | · .   | ·.       | ; ·  |

Case description: Run date/time:

EAL AG1 SG Safety 09/17/2004 11:13

### Maximum Dose Values (rem) - Close-In

| Dist from release  | • . •     |            |         |                                                                                                                                                                                                                                   |         |         |                  |         |
|--------------------|-----------|------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|------------------|---------|
| miles 👔            | (0.06)    | (0.12)     | (0.19)  | (0.31)                                                                                                                                                                                                                            | (0.43)  | (0.62)  | (0.81)           | (1.24)  |
|                    | · · · · · |            |         | en en ser el ser el ser el ser el ser el ser el ser el ser el ser el ser el ser el ser el ser el ser el ser el<br>La ser el ser el ser el ser el ser el ser el ser el ser el ser el ser el ser el ser el ser el ser el ser el ser |         |         |                  | · · ·   |
| (kilometers)       | 0.1       | <b>0.2</b> | 0.3     | 0.5                                                                                                                                                                                                                               | 0.7     | 1.      | ` <b>1.3</b> ∕ ⊸ | 2.      |
| Total EDE          | 8.4E+00   | 2.8E+00    | 1.6E+00 | .8.6E-01                                                                                                                                                                                                                          | 6.0E-01 | 4.3E-01 | 3.4E-01          | 2.4E-01 |
| Thyroid CDE        | 1.8E+02   | 5.6E+01    | 3.0E+01 | <u>1.5E+01</u>                                                                                                                                                                                                                    | 9.7E+00 | 6.6E+00 | 5.0E+00          | 3.2E+00 |
| Acute Lung         | 5.2E+00   | 1.6E+00    | 8.4E-01 | 4.2E-01                                                                                                                                                                                                                           | 2.8E-01 | 1.9E-01 | 1.4E-01          | 1.1E-01 |
| Total Acute Bone   | 1.7E+00   | 7.6E-01    | 5.1E-01 | 3.2E-01                                                                                                                                                                                                                           | 2.5E-01 | 1.9E-01 | 1.6E-01          | 1.2E-01 |
| Inhalation CEDE    | 5.7E+00   | 1.8E+00    | 9.4E-01 | 4.6E-01                                                                                                                                                                                                                           | 3.1E-01 | 2.1E-01 | 1.6E-01          | 1.0E-01 |
| Cloud Shine        | 1.1E+00   | 5.7E-01    | 4.0E-01 | 2.7E-01                                                                                                                                                                                                                           | 2.1E-01 | 1.7E-01 | 1.4E-01          | 1.1E-01 |
| Period Gnd Shine   | 5.1E-01   | 1.6E-01    | 8.3E-02 | 4.1E-02                                                                                                                                                                                                                           | 2.7E-02 | 1.8E-02 | 1.4E-02          | 1.5E-02 |
| 4-day Ground Shine | 1.6E+00   | 4.9E-01    | 2.6E-01 | 1.3E-01                                                                                                                                                                                                                           | 8.5E-02 | 5.8E-02 | 4.4E-02          | 3.4E-02 |

Notes:

1. Doses exceeding PAGs are underlined.

2. Early-Phase PAGs: TEDE - 1 rem, Thyroid CDE - 5 rem 3. \*\*\* indicates values less than 0.1 mrem

To view all values - use Detailed Results | Numeric Table

4. Total EDE = CEDE Inhalation + Cloud Shine + 4-Day Ground Shine

5. Total Acute Bone = Bone Inhalation + Cloud Shine + Period Ground Shine

### Case Summary

Event Type

Nuclear Power Plant

Location

| Näme:                | Kewaunee                            |
|----------------------|-------------------------------------|
| City, county, state: | Carlton, Kewaunee, WI               |
| Lat / Long / Elev:   | 44.3431° N, 87.5361° W, 194 m       |
| Time zone:           | Central                             |
| Population (1990):   | 119 / 1,305 / 9,763 (2 / 5 / 10 mi) |
|                      |                                     |

121 U-Tube

1772 MW(t) 22000 MWD / MTU **PWR Dry Ambient** 1.30E+06 ft3 46 psig 0.50 %/d 3.21E+04 gal

**Reactor Parameters** 

| Reactor power:        |
|-----------------------|
| Average fuel burn-up: |
| Containment type:     |
| Containment volume:   |
| Design pressure:      |
| Design leak rate:     |
| Coolant volume:       |
| Assemblies in core:   |
| Steam generator type: |
| <u> </u>              |

Source Term

| Туре:                | Monitored Release - Mixture |
|----------------------|-----------------------------|
| Shutdown:            | No                          |
| Sample ID:           | <undefined></undefined>     |
| Sample taken:        | 06/03/04 00:00              |
|                      |                             |
| Gross concentration: | 1.39E+01 uCi/cm3            |
| Flow rate:           | 4.90E+06 cm <sup>3</sup> /s |
|                      |                             |

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Rev.O

Pis

| User defined percentages |         |
|--------------------------|---------|
| Noble gases:             | 98.000% |
| Halogens:                | 2.000%  |
| Alkali metals:           | 0.000%  |
| Tellurium group:         | 0.000%  |
| Barium, Strontium:       | 0.000%  |
| Nöble metals:            | 0.000%  |
| Lanthanides:             | 0.000%  |
| Cerium group:            | 0.000%  |
|                          |         |

# Release Pathway

| Туре:                  | Direct to Atmosphere  |
|------------------------|-----------------------|
| Release point:         | Not an isolated stack |
| Release height:        | 0. m                  |
| Building wake effects: | Computed              |
|                        |                       |

Release timings To atmosphere start: 06/03/2004 00:00 To atmosphere duration: 0 days, and 01:00

11.

### Meteorology

| Type:             | Predefined - Site-specific     | •       |
|-------------------|--------------------------------|---------|
| Data set name:    | EAL1 standard met              | ,<br>,  |
| Data set desc:    | KEWA Dir=222 Spd=12.6 Stab=F F | recp=N  |
|                   |                                | · · · · |
| Summary of data   | Dir Speed Stability            | •       |
| at release point: | Type deg mph class F           | recip   |

¥., .

| nmary of data |      | Dir Speed | Stability         |         | Temp |
|---------------|------|-----------|-------------------|---------|------|
| elease point: | Туре | deg mph   | class             | Precip  | ۴F   |
|               |      |           | · · · · · · · · · | : · · · |      |
| 00:00         | Obs  | 222 12.6  | F                 | None -  | 60 - |

### Calculations

| Case description:        | EAL AG1 SG Safety                            |
|--------------------------|----------------------------------------------|
| End of calculations:     | 06/03/2004 06:00                             |
| Distance of calculation: | Close-in only                                |
| Close-in distances:      | 0.1, 0.2, 0.3, 0.5, 0.7, 1.0, 1.3, 2.0 miles |
|                          |                                              |

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C11620 Rev. Q

# C11620 Rev. 0 P. 17

#### Source Term to Dose / RASCAL 3.0

| Case description: | · ,   | EAL AS1 SG Safety |  |
|-------------------|-------|-------------------|--|
| Run date/time:    | · . · | 09/17/2004 11:12  |  |

### Maximum Dose Values (rem) - Close-In

|                            |         |         |         |               | 5 g 1 i 4 |         | •       |         |
|----------------------------|---------|---------|---------|---------------|-----------|---------|---------|---------|
| Dist from release<br>miles | (0.06)  | (0.12)  | (0.19)  | (0.31)        | (0.43)    | (0.62)  | (0.81)  | (1.24)  |
| (kilometers)               | 0.1     | 0.2     | 0.3     | 0.5           | 0.7       | 1.      | 1.3     | 2.      |
| Total EDE                  | 8.4E-01 | 2.8E-01 | 1.6E-01 | 8.6E-02       | 6.0E-02   | 4.3E-02 | 3.4E-02 | 2.4E-02 |
| Thyroid CDE                | 1.8E+01 | 5.6E+00 | 3.0E+00 | 1.5E+00       | 9.7E-01   | 6.6E-01 | 5.0E-01 | 3.2E-01 |
| Acute Luna                 | 5.2E-01 | 1.6E-01 | 8.4E-02 | 4.2E-02       | 2.8E-02   | 1.9E-02 | 1.4E-02 | 1.1E-02 |
| Total Acute Bone           | 1.7E-01 | 7.6E-02 | 5.1E-02 | 3.2E-02       | 2.5E-02   | 1.9E-02 | 1.6E-02 | 1.2E-02 |
| Inhalation CEDE            | 5.7E-01 | 1.8E-01 | 9.4E-02 | 4.6E-02       | 3.1E-02   | 2.1E-02 | 1.6E-02 | 1.0E-02 |
| Cloud Shine                | 1.1E-01 | 5.7E-02 | 4.0E-02 | 2.7E-02       | 2.1E-02   | 1.7E-02 | 1.4E-02 | 1.1E-02 |
| Period Grid Shine          | 5.1E-02 | 1.6E-02 | 8.3E-03 | 4.1E-03       | 2.7E-03   | 1.8E-03 | 1.4E-03 | 1.5E-03 |
| 4-day Ground Shine         | 1.6E-01 | 4.9E-02 | 2.6E-02 | 1.3E-02       | 8.5E-03   | 5.8E-03 | 4.4E-03 | 3.4E-03 |
| · •                        |         |         |         | *. <b>.</b> . | · ·       |         |         |         |

#### Notes:

1. Doses exceeding PAGs are underlined.

- 2. Early-Phase PAGs: TEDE 1 rem, Thyroid CDE 5 rem
- 3. \*\*\* indicates values less than 0.1 mrem
- To view all values use Detailed Results | Numeric Table 4. Total EDE = CEDE Inhalation + Cloud Shine + 4-Day Ground Shine
- 5. Total Acute Bone = Bone Inhalation + Cloud Shine + Period Ground Shine

### Case Summary

**Event** Type

**Nuclear Power Plant** 

Location

| Name:                | Kewaunee                            |
|----------------------|-------------------------------------|
| City, county, state: | Carlton, Kewaunee, WI               |
| Lat / Long / Elev:   | 44.3431° N, 87.5361° W, 194 m       |
| Time zone:           | Central                             |
| Population (1990):   | 119 / 1,305 / 9,763 (2 / 5 / 10 mi) |
|                      |                                     |

### **Reactor Parameters**

Reactor power: Average fuel burn-up: Containment type: Containment volume: Design pressure: Design leak rate: Coolant volume: Assemblies in core: Steam generator type: 1772 MW(t) 22000 MWD / MTU PWR Dry Ambient 1.30E+06 ft3 46 psig 0.50 %/d

3.21E+04 gal 121 **U-Tube** 

Source Term

| Type:                | Monitored Release - Mixture  |
|----------------------|------------------------------|
| Shutdown:            | No                           |
| Sample ID:           | <undefined></undefined>      |
| Sample taken:        | 06/03/04 00:00               |
| Gross concentration: | 1.39E+00 µCi/cm <sup>3</sup> |
| Flow rate:           | 4.90E+06 cm <sup>3</sup> /s  |



| and the second second second second second second second second second second second second second second second |                                      |
|------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| User defined percentages                                                                                         |                                      |
| Noble gases:                                                                                                     | 98.000%                              |
| Halogens:                                                                                                        | 2.000%                               |
| Alkali metals:                                                                                                   | 0.000%                               |
| Tellurium aroup:                                                                                                 | 0.000%                               |
| Barium, Strontium:                                                                                               | 0.000%                               |
| Noble metals:                                                                                                    | 0.000%                               |
| Lanthanides:                                                                                                     | 0.000%                               |
| Cerium group:                                                                                                    | 0.000%                               |
|                                                                                                                  |                                      |
| Release Pathway                                                                                                  |                                      |
| Type:                                                                                                            | Direct to Atmosphere                 |
| Release point:                                                                                                   | Not an isolated stack                |
| Release height:                                                                                                  | 0. m                                 |
| Building wake effects:                                                                                           | Computed                             |
|                                                                                                                  |                                      |
| Release timinos                                                                                                  |                                      |
| To atmosphere start:                                                                                             | 06/03/2004 00:00                     |
| To atmosphere duration:                                                                                          | 0 days, and 01:00                    |
|                                                                                                                  |                                      |
| Meteorology                                                                                                      |                                      |
| Type:                                                                                                            | Predefined - Site-specific           |
| Data set name:                                                                                                   | EAL1 standard met                    |
| Data set desc:                                                                                                   | KEWA Dir=222 Spd=12.6 Stab=F Preco=N |
|                                                                                                                  |                                      |
| Summary of data                                                                                                  | Dir Speed Stability                  |
| at release point:                                                                                                | Type deg mph class Precip            |
|                                                                                                                  |                                      |

| e point: | Туре | deg         | mph class | Precip | ۴F  |
|----------|------|-------------|-----------|--------|-----|
| 00:00    | Obs  | 222         | 12.6 F    | None   | 60  |
|          |      | i a<br>a na |           | •      | . : |

Temp °F

#### Calculations

| Case description:        | EAL AS1 SG Safety                            |
|--------------------------|----------------------------------------------|
| End of calculations:     | 06/03/2004 06:00                             |
| Distance of calculation: | Close-in only                                |
| Close-in distances:      | 0.1, 0.2, 0.3, 0.5, 0.7, 1.0, 1.3, 2.0 miles |

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### EAL Steam Line PORV (AS1)

1A Steam Line (Use R-32 when R-31 is offscale high) (Use R-34 when R-33 is offscale high)

| R-31 ( | 177 mR/hr) (10 <sup>-3</sup> ) = | <u>.177 </u> R/hr | (= X) R-33 (_   | <u>177</u> mR/hr) (10 <sup>-3</sup> | ) = <u>.177</u> R/hr | (= X) |
|--------|----------------------------------|-------------------|-----------------|-------------------------------------|----------------------|-------|
|        | OR                               |                   |                 | OR                                  |                      |       |
| R-32   |                                  | NA                | R/hr (= X) R-34 |                                     | NA R/hr              | (= X) |
| Steam  | Flow Rate                        |                   | Steam           | Flow Rate                           |                      |       |

 (From EPIP-TSC-08A)
 (or EPIP-TSC-08B)
 2.3E6
 cc/sec (= Z)
 (or EPIP-TSC-08B)
 2.3E6
 cc/sec (= Z)

16.7  $\frac{\mu Ci/cc}{R/hr}$  (= Y) at 1 hour after RX shutdown

X x  $\dot{Y} = 2.95E0 \ \mu Ci/cc$ 

X x Y x Z x  $\left(10^{-6} \frac{\text{Ci}}{\mu \text{Ci}}\right) = \frac{6.78\text{E}+6}{\text{sec}} \frac{\text{Ci}}{\text{sec}}$  Gross Release Rate

# EAL Steam Line PORV (AG1)

1A Steam Line (Use R-32 when R-31 is offscale high) (Use R-34 when R-33 is offscale high)

| R-31   | ( <u>1766</u> mR/hr) (10 <sup>-3</sup> | <sup>1</sup> ) = <u>1.77</u> | _ R/hr (= X)   | 🦾 R-33 (  | <u>1766</u> mR | /hr) (10 <sup>-3</sup> _) = | 1.77  | R/hr (= X) |                  |
|--------|----------------------------------------|------------------------------|----------------|-----------|----------------|-----------------------------|-------|------------|------------------|
|        |                                        | OR                           |                |           |                | OR                          |       | • • •      |                  |
| R-32   |                                        | 1.77                         | R/hr (= X)     | R-34      | : · · · ·      | 1                           | .77   | R/hr (= X) | ) . <sup>1</sup> |
| Stear  | n Flow Rate                            |                              |                | Steam     | Flow Rate      |                             |       |            |                  |
| (Fron  | n EPIP-TSC-08A)                        |                              |                | 🔆 (From l | EPIP-TSC-08    | BA)                         |       |            |                  |
| (or El | PIP-TSC-08B)                           | 2.3E                         | 6 cc/sec (= Z) | (or EPI   | P-TSC-08B)     | 2                           | 2.3E6 | cc/sec (=  | Z)               |

 $X \times Y = 2.95E+1 \mu Ci/cc$ 

| X x Y | xZx | $10^{-6}$ <u>Ci</u> | = <u>6.78E+7</u> | <u>Ci</u> | Gross Re | lease | Rate |
|-------|-----|---------------------|------------------|-----------|----------|-------|------|
|       |     |                     |                  | 000       |          | ·     |      |

Case description: EAL AG1 PORV Run date/time: 09/17/2004 11:04

### Maximum Dose Values (rem) - Close-In

| Dist from release  | •       |         |         |           |         | •       |         | · · · · · · |
|--------------------|---------|---------|---------|-----------|---------|---------|---------|-------------|
| miles              | (0.06)  | (0.12)  | (0.19)  | (0.31)    | (0.43)  | (0.62)  | (0.81)  | (1.24)      |
| (kilometers)       | 0.1     | 0.2     | 0.3     | 0.5       | 0.7     | 1.      | 1.3     | 2.          |
| Total EDE          | 8.4E+00 | 2.8E+00 | 1.6E+00 | 8.6E-01   | 6.0E-01 | 4.3E-01 | 3.4E-01 | 2.4E-01     |
| Thyroid CDE        | 1.8E+02 | 5.6E+01 | 3.0E+01 | 1.5E+01   | 9.7E+00 | 6.6E+00 | 5.0E+00 | 3.2E+00     |
| Acute Lung         | 5.2E+00 | 1.6E+00 | 8.4E-01 | 4.2E-01   | 2.8E-01 | 1.9E-01 | 1.4E-01 | 1.1E-01     |
| Total Acute Bone   | 1.7E+00 | 7.6E-01 | 5.1E-01 | 3.2E-01   | 2.4E-01 | 1.9E-01 | 1.6E-01 | 1.2E-01     |
| Inhalation CEDE    | 5.7E+00 | 1.8E+00 | 9.3E-01 | 4.6E-01   | 3.1E-01 | 2.1E-01 | 1.6E-01 | 1.0E-01     |
| Cloud Shine        | 1.1E+00 | 5.7E-01 | 4.0E-01 | 2.7E-01   | 2.1E-01 | 1.7E-01 | 1.4E-01 | 1.1E-01     |
| Period Gnd Shine   | 5.1E-01 | 1.5E-01 | 8 2F-02 | 4 1F-02   | 2 7F-02 | 1 8E-02 | 1 4F-02 | 1.5E-02     |
| 4-day Ground Shine | 1.6E+00 | 4.8E-01 | 2.6E-01 | 1.3E-01   | 8.5E-02 | 5.8E-02 | 4.4E-02 | 3.4E-02     |
|                    | · .     |         | · · .   | さった たた たり | 1       |         | . • .   |             |

Notes:

1. Doses exceeding PAGs are underlined.

2. Early-Phase PAGs: TEDE - 1 rem, Thyroid CDE - 5 rem

3. \*\*\* indicates values less than 0.1 mrem

To view all values - use Detailed Results | Numeric Table

4. Total EDE = CEDE Inhalation + Cloud Shine + 4-Day Ground Shine

5. Total Acute Bone = Bone Inhalation + Cloud Shine + Period Ground Shine

#### Case Summary

**Event Type** Nuclear Power Plant Location Näme: Kewaunee City, county, state: Carlton, Kewaunee, WI Lat / Long / Elev: 44.3431° N, 87.5361° W, 194 m Time zone: Central Population (1990); 119 / 1,305 / 9,763 (2 / 5 / 10 mi) **Reactor Parameters** Reactor power: 1772 MW(t) Average fuel burn-up: 22000 MWD / MTU Containment type: PWR Dry Ambient Containment volume: 1.30E+06 ft3

Design pressure: 46 psig Design leak rate: 0.50 %/d Coolant volume: 3.21E+04 gal Assemblies in core: 121 Steam generator type: U-Tube

Source Term

| Type:                | Monitored Release - Mixtures |
|----------------------|------------------------------|
| Shutdown:            | No                           |
| Sample ID:           | <undefined></undefined>      |
| Sample taken:        | 06/03/04 00:00               |
|                      |                              |
| Gross concentration: | 2.95E+01 uCi/cm3             |
| Flow rate:           | 2.30E+06 cm <sup>3</sup> /s  |
|                      |                              |

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| User defined percentages |         |
|--------------------------|---------|
| Noble gases:             | 98.000% |
| Halogens:                | 2.000%  |
| Alkali metals:           | 0.000%  |
| Tellurium group:         | 0.000%  |
| Barium, Strontium:       | 0.000%  |
| Nöble metals:            | 0.000%  |
| Lanthanides:             | 0.000%  |
| Cerium group:            | 0.000%  |
|                          | P       |

## Release Pathway

| Type:                  | Direct to Atmosphere  |
|------------------------|-----------------------|
| Release point:         | Not an isolated stack |
| Release height:        | 0. m                  |
| Building wake effects: | Computed              |
|                        |                       |

# Release timings

| To atmosphere start:    | 06/03/2004 00:00  |
|-------------------------|-------------------|
| To atmosphere duration: | 0 days, and 01:00 |
| £ .                     |                   |

# Meteorology

| Type:<br>Data set name:<br>Data set desc: | Predefined<br>EAL1 stand<br>KEWA Dir= | - Site-specific<br>ard met<br>222 Spd=12.6 Stab= | =F Precp=N |            |
|-------------------------------------------|---------------------------------------|--------------------------------------------------|------------|------------|
| Summary of data at release point:         | Dir<br>Type deg                       | Speed Stability<br>mph class                     | Precip     | Temp<br>°F |
| 00:00                                     | Obs 222                               | 12.6 F                                           | None       | 60         |

1.77 1.75

### Calculations

| Case description:        | EAL AG1 PORV                                 |
|--------------------------|----------------------------------------------|
| End of calculations:     | 06/03/2004 06:00                             |
| Distance of calculation: | Close-in only                                |
| Close-in distances:      | 0.1, 0.2, 0.3, 0.5, 0.7, 1.0, 1.3, 2.0 miles |

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| Case description: | EAL AS1 PORV     |      |
|-------------------|------------------|------|
| Run date/time:    | 09/17/2004 11:05 | • •. |

### Maximum Dose Values (rem) - Close-In

| Dist from release  | · · · · | • .     | · · ·   |         | .147 - L |         |         |         |
|--------------------|---------|---------|---------|---------|----------|---------|---------|---------|
| miles              | (0.06)  | (0.12)  | (0.19)  | (0.31)  | (0.43)   | (0.62)  | (0.81)  | (1.24)  |
| (kilometers)       | 0.1     | 0.2     | 0.3     | 0.5     | 0.7      | 1.      | 1.3     | 2.      |
| Total EDE          | 8.4E-01 | 2.8E-01 | 1.6E-01 | 8.6E-02 | 6.0E-02  | 4.3E-02 | 3.4E-02 | 2.4E-02 |
| Thyroid CDE        | 1.8E+01 | 5.6E+00 | 3.0E+00 | 1.5E+00 | 9.7E-01  | 6.6E-01 | 5.0E-01 | 3.2E-01 |
| Acute Lung         | 5.2E-01 | 1.6E-01 | 8.4E-02 | 4.2E-02 | 2.8E-02  | 1.9E-02 | 1.4E-02 | 1.1E-02 |
| Total Acute Bone   | 1.7E-01 | 7.6E-02 | 5.1E-02 | 3.2E-02 | 2.4E-02  | 1.9E-02 | 1.6E-02 | 1.2E-02 |
| Inhalation CEDE    | 5.7E-01 | 1.8E-01 | 9.3E-02 | 4.6E-02 | 3.1E-02  | 2.1E-02 | 1.6E-02 | 1.0E-02 |
| Cloud Shine        | 1.1E-01 | 5.7E-02 | 4.0E-02 | 2.7E-02 | 2.1E-02  | 1.7E-02 | 1.4E-02 | 1.1E-02 |
| Period Grid Shine  | 5.1E-02 | 1.5E-02 | 8.2E-03 | 4.1E-03 | 2.7E-03  | 1.8E-03 | 1.4E-03 | 1.5E-03 |
| 4-day Ground Shine | 1.6E-01 | 4.8E-02 | 2.6E-02 | 1.3E-02 | 8.5E-03  | 5.8E-03 | 4.4E-03 | 3.4E-03 |
|                    | · · · · |         |         |         | •        |         | 1 · · · | ·.      |

Notes: 1. Doses exceeding PAGs are underlined. 2. Early-Phase PAGs: TEDE - 1 rem, Thyroid CDE - 5 rem 3. \*\*\* indicates values less than 0.1 mrem To view all values - use Detailed Results | Numeric Table 4. Total EDE = CEDE Inhalation + Cloud Shine + 4-Day Ground Shine 5. Total Acute Bone = Bone Inhalation + Cloud Shine + Period Ground Shine

### **Case Summary**

| Event Type            | Nuclear Power Plant                 |
|-----------------------|-------------------------------------|
| Location              |                                     |
| Name:                 | Kewaunee                            |
| City, county, state:  | Carlton, Kewaunee, WI               |
| Lat / Long / Elev:    | 44.3431° N. 87.5361° W. 194 m       |
| Time zone:            | Central                             |
| Population (1990):    | 119 / 1,305 / 9,763 (2 / 5 / 10 mi) |
| Reactor Parameters    |                                     |
| Reactor power:        | 1772 MW(t)                          |
| Average fuel burn-up: | 22000 MWD / MTU                     |
| Containment type:     | PWR Dry Ambient                     |
| Containment volume:   | 1.30E+06 ft <sup>3</sup>            |
| Design pressure:      | 46 psig                             |
| Design leak rate:     | 0.50 %/d                            |
| Coolant volume:       | 3.21E+04 gal                        |
| Assemblies in core:   | 121                                 |
| Steam generator type: | U-Tube                              |
| <b>0</b>              |                                     |
|                       |                                     |
| Type:                 | Monitored Release - Mixtures        |
| Snuldown.             | NO                                  |
| Sample ID.            |                                     |
| Sample taken:         | 00/03/04 00:00                      |
| Gross concentration:  | 2 95F+00 uCi/cm <sup>3</sup>        |
| Elow rate:            | 2 20E+06 am3/a                      |

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|                          |         | ÷., |
|--------------------------|---------|-----|
| User defined percentages | · · · · | •   |
| Noble gases:             | 98.000% |     |
| Halogens:                | 2.000%  | 23  |
| Alkali metals:           | 0.000%  | •   |
| Tellurium aroup:         | 0.000%  |     |
| Barium, Strontium:       | 0.000%  |     |
| Noble metals:            | 0.000%  | :   |
| Lanthanides:             | 0.000%  | •   |
| Cerium group:            | 0.000%  |     |
|                          |         |     |

# Release Pathway

| Туре:                  | Direct to Atmosphere  |
|------------------------|-----------------------|
| Release point:         | Not an isolated stack |
| Release height:        | 0. m                  |
| Building wake effects: | Computed              |
|                        |                       |

# Release timings

| cicase minigo           |                   |
|-------------------------|-------------------|
| Fő atmosphere start:    | 06/03/2004 00:00  |
| To atmosphere duration: | 0 days, and 01:00 |

# Meteorology

| Type:             | Predefined - Site-specific  |           |
|-------------------|-----------------------------|-----------|
| Data set name:    | EAL1 standard met           |           |
| Data set desc:    | KEWA Dir=222 Spd=12.6 Stab= | F Precp=N |
|                   |                             |           |
| Summary of data   | Dir Speed Stability         | Temp      |
| at release point: | Type deg mph class          | Precip °F |
|                   |                             |           |

### 00:00 Obs 222 12.6 F None

60

### Calculations

| Case description:        | EAL AS1 PORV                                 | · |
|--------------------------|----------------------------------------------|---|
| End of calculations:     | 06/03/2004 06:00                             |   |
| Distance of calculation: | Close-in only                                |   |
| Close-in distances:      | 0.1, 0.2, 0.3, 0.5, 0.7, 1.0, 1.3, 2.0 miles |   |



C1162D

Rev. O
|            |           |           | •      |        |
|------------|-----------|-----------|--------|--------|
| CALCULATIO | N COVER S | SHEET AND | REVIEW | REPORT |

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erection that is

| Calculation No.        | C11622                       | Determination of R-2 Reading with Loss of<br><u>Title of Calculation</u> : Inventory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             |
|------------------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Rev. No.               | 0                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |
| Addendum Letter        |                              | Title of Addendum:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | . :         |
|                        |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |
| Safety Related         | 🗌 Yes 🛛 No (1)               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | (2)         |
| System(s) / System     | <u>n No(s)</u> :             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |
| Radiation Monitoring   | (RM)/45                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | (3)         |
| Originäting Docu       | <u>ment</u> :                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |
| VEI 99-01, Rev. 4      |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | (4)         |
| supersedes:            |                              | Superseded By:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |             |
| Calculation No(s)      | <u>n/a</u>                   | Calculation No(s). <u>n/a</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | _           |
| Addendum No(s).        |                              | Addendum No(s).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |
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| Chemistry/Ra           | adiation Protection (Chem/RI | P) (EM/SE) [] INC<br>[] Nuclear<br>[] Mechanical                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ന           |
| This Calculation I     | has been reviewed and was    | s accomplished by the following: Reviewers' Initials                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | (8)         |
| ] Verification (       | (Independent Review)         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |
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| reparer Reviewer       | Comments Attached            | Discipline Printed Name Signature Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (9)         |
|                        | Yes 🛛 No                     | Nuclear John Helfenberger Helfulry 10/21/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 04          |
|                        | Yes No                       | Nuclear Timothy R. Wiltman Timothy R. Wiltman 10/21/0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4           |
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| Approver: F            | Printed Name:                | John Helfenberger Wisconsin PE Stamp (If Required)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | • .:        |
| S                      | Signature:                   | J.E. Hellahes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | : .         |
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| See Steps 6.4.4 and 6. | <b>4.5)</b>                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |
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# CALCULATION VERIFICATION CHECKLIST

#### Calculation # C11622

Revision

#### Verification Items

# Purpose

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- Clear objective and problem statement
- Affected SSC been identified
- Intended use of results been identified
- Any limitation of applicability
- Revision content been summarized

#### Methodology

- Discussion of the method/approach and major steps
- Limitation of use of methodology identified

#### Acceptance Criteria

- Clear definition of acceptance criteria
- Exceptions clearly defined
- Sources of acceptance criteria clearly defined

#### Assumptions

- Sufficient rationale to permit verification of assumption
- Have unverified assumptions been identified as such
- References provided for assumptions

#### Inputs

- All applicable Design Inputs been identified
- Has source document for inputs been identified
- Computer data program SQA approval

#### References

- Have all controlled plant input documents been identified
- If a procedure is cited, has the process owner been notified
- Are references available from KNPP records, or have they been attached

Calculation and Results

- Correct formula/method used to support the objective
- Formula variables (including units) clearly labeled and consistent with sources
- Computer program input/output been reviewed
- Reference to sketches provided
- Sufficient bases/rational to permit verification of engineering judgment
- Proper carry over and use of significant digits

#### Conclusions and Recommendations

- Clear statement of the results consistent with the objective
- Acceptability of the results clearly defined
- Recommendation for unacceptable results, AR written if necessary
- Clear definition of limitations or requirements imposed by the calculation necessary to maintain the validity of the results
- Have the effects of the calculation on output documents been identified
  - and addressed

N/A

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| Calcul                                                                                                          | ation | # <u>C11622</u> |        | Revision 0          |                      |
|-----------------------------------------------------------------------------------------------------------------|-------|-----------------|--------|---------------------|----------------------|
| Refere                                                                                                          | nce N | Aaterial Used:  |        |                     |                      |
| Item#                                                                                                           | ŧ     | Reviewer's Co   | omment | Preparer Resolution | Reviewe<br>Concurren |
|                                                                                                                 |       | N/A             |        |                     |                      |
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Date: MAY 18 2004 REFERENCE USE

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# TABLE OF CONTENTS AND REVISION CONTROL

Calculation No. \_C11622

Revision No. \_0

Addendum Letter

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|----|-----|-----|---|--|--|

| Section, Attachment, or Other Description                         | Page #(s)                             | Revision  |
|-------------------------------------------------------------------|---------------------------------------|-----------|
| Calculation Cover Sheet and Review Report (Form GNP-04.03.04-1)   | NA                                    | NA        |
| Calculation Verification Checklist (Form GNP-04.03.04-3)          | NA                                    | NA        |
| Calculation Verification Comment/Resolution (Form GNP-04.03.04-4) | NA                                    | NA        |
| Table of Contents and Revision Control (Form GNP-04.03.04-2)      | NA                                    | NA .      |
| 50.59 Applicability Review                                        | i                                     | 0         |
| 50.59 Pre-Screening                                               | ii                                    | 0         |
| 1.0 Purpose                                                       | · · · · · · · · · · · · · · · · · · · | 0         |
| 2.0 Background                                                    | 1                                     | 0         |
| 3.0 Inputs and Assumptions                                        | 1                                     | 0         |
| 4.0 Methodology and Acceptance Criteria                           | 1                                     | 0         |
| 5.0 References                                                    | 2                                     | 0         |
| 6.0 Calculation and Results                                       | 2                                     | 0         |
| 7.0 Conclusions and Recommendations                               | 3                                     | 0         |
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# **50.59 APPLICABILITY REVIEW**

(Is the activity excluded from 50.59 review?)

Document/Activity number: C11622, Rev. 0

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3.

Brief description of proposed activity (what is being changed and why):

Calculate a rough approximation of dose levels seen at rad monitor R-2 if fuel were uncovered.

Does the proposed activity involve or change any of the following documents or processes? Check YES or NO for EACH applicability review item. Explain in comments if necessary. [Ref. NMC 50.59 Resource Manual, Section 4]

NOTE: If you are unsure if a document or process may be affected, contact the process owner.

|             | Yes                                             | No<br>V                      | Document or<br>Process                                                                                                                                                                                                                                                      | Applicable<br>Regulation                                                                                                 | Contact/Action                                                                                                                                                                              |
|-------------|-------------------------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a           |                                                 |                              | Technical Specifications or Operating License                                                                                                                                                                                                                               | 10CFR50.92                                                                                                               | Process change per NAD-05.14.<br>Contact Licensing.                                                                                                                                         |
| Ь           |                                                 |                              | Activity/change previously approved by NRC in license amendment or NRC SER                                                                                                                                                                                                  | 10CFR50.90                                                                                                               | Identify NRC letter in comments below. Process change.<br>Contact Licensing for assistance.                                                                                                 |
| с           |                                                 |                              | Activity/change covered by an existing approved<br>10CFR50.59 review, screening, or evaluation.                                                                                                                                                                             | 10CFR50 Appendix B                                                                                                       | Identify screening or evaluation in comments below.<br>Process change.                                                                                                                      |
| d           |                                                 |                              | Quality Assurance Program (OQAPD/OQAP)                                                                                                                                                                                                                                      | 10CFR50.54(a)                                                                                                            | Contact QA.<br>Refer to NAD-01.07.                                                                                                                                                          |
| c           |                                                 | . 🖾 :                        | Emergency Plan                                                                                                                                                                                                                                                              | 10CFR50.54(q)                                                                                                            | Contact EP.<br>Refer to NAD-05.15.                                                                                                                                                          |
| f           |                                                 | Ø                            | Security Plan                                                                                                                                                                                                                                                               | 10CFR50.54(p)                                                                                                            | Contact Security.<br>Refer to NAD-05.17.                                                                                                                                                    |
| 8           |                                                 | Ø                            | IST Plan                                                                                                                                                                                                                                                                    | 10CFR50.55a(f)                                                                                                           | Contact IST process owner.<br>Refer to NAD-01.24.                                                                                                                                           |
| h           |                                                 |                              | ISI Plan                                                                                                                                                                                                                                                                    | 10CFR50.55a(g)                                                                                                           | Contact ISI process owner.<br>Refer to NADs 01.03, 01.05, and 05.11.                                                                                                                        |
| i           |                                                 | Ø                            | ECCS Acceptance Criteria                                                                                                                                                                                                                                                    | 10CFR50.46                                                                                                               | Contact Licensing.                                                                                                                                                                          |
| j           |                                                 |                              | USAR or any document incorporated by reference -<br>Check YES only if change is editorial (see<br>Attachment A).                                                                                                                                                            | 10CFR50.71                                                                                                               | Process USAR change per NEP-05.02.<br>Contact USAR process owner for assistance.                                                                                                            |
| k           |                                                 | Ø                            | Commitment - Commitment changes associated<br>with a response to Generic Letters and Bulletins, or<br>if described in the USAR require a pre-screening.                                                                                                                     | 10CFR50 Appendix B                                                                                                       | Contact Licensing.<br>Refer to NAD-05.25.                                                                                                                                                   |
| 1           |                                                 | ⊠                            | Maintenance activity or new/revised maintenance<br>procedure - Check YES only if clearly maintenance<br>and equipment will be restored to its as-designed<br>condition within 90 days (see Attachment C).                                                                   | 10CFR50.65                                                                                                               | Evaluate under Maintenance Rule.<br>Refer to NAD-08.20 and NAD-08.21.                                                                                                                       |
| m           |                                                 | × 🛛                          | Degraded/Non-conforming plant condition - Check<br>YES if returned to as-designed condition in a timely<br>manner consistent with safety.                                                                                                                                   | 10CFR50 Appendix B                                                                                                       | Initiate an Action Request (AR) and evaluate under<br>GL 91-18, Revision 1.<br>Contact licensing for assistance. Refer to GNP 11.03.03.                                                     |
| n           |                                                 | ⊠                            | New/revised administrative or managerial<br>directive/procedure (e.g., NAD, GNP, Fleet<br>Procedure) or a change to any procedure or other<br>controlled document (e.g., plant drawing) which is<br>clearly editorial/administrative. See Attachments A<br>and B.           | 10CFR50 Appendix B                                                                                                       | Process procedure/document revision.                                                                                                                                                        |
| 4.          | אנונים, אין אין אין אין אין אין אין אין אין אין |                              | on. Check one of the following:<br>All documents/processes listed above are checked NO. 10<br>One or more of the documents/processes listed above are<br>pply. Process the change under the applicable program/p<br>One or more of the documents/processes listed above are | OCFR50.59 applies to the propo<br>checked YES, <u>AND</u> controls a<br>process/procedure.<br>checked YES, however, some | used activity. A 50.59 pre-screening shall be performed.<br>Il aspects of the proposed activity. 10CFR50.59 does <u>NOT</u><br>portion of the proposed activity is not controlled by any of |
| 5.          |                                                 | Commen<br>We are n           | ts:<br>ts:<br>of changing anything in the EP plan with this. It is mere                                                                                                                                                                                                     | A 50.59 pre-screening shall be<br>ly a calculation to estimate dos                                                       | e rates.                                                                                                                                                                                    |
| 6.          |                                                 | Print nam                    | e followed by signature. Attach completed form to docu                                                                                                                                                                                                                      | iment/activity/change package.                                                                                           |                                                                                                                                                                                             |
| Pre<br>(pri | pared b<br>int/sign                             | y: <u>Joh</u>                | n Helfenberger                                                                                                                                                                                                                                                              | Helfinley                                                                                                                | Date: 10/21/04                                                                                                                                                                              |
| Re          | viewed                                          | by: Tin                      | nothy R. Wiltman ISan                                                                                                                                                                                                                                                       | rothy R. Wiltman                                                                                                         | Date: 10/21/04                                                                                                                                                                              |
| (pri        | inusign                                         | U a 121<br>1 - 2 - 2 - 2<br> |                                                                                                                                                                                                                                                                             | <i>0</i>                                                                                                                 |                                                                                                                                                                                             |

Form GNP-04.04.01-1 Rev. C

Date: JUL 22 2003

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**INFORMATION USE** 

# **50.59 PRE-SCREENING**

(is a 50.59 screening required?)

Document/Activity number: C11622, Rev. 0 Brief description of proposed activity (what is being changed and why):

1. 2.

3.

This calculation is a rough estimate of dose levels expected if a single fuel assembly were to become uncovered while seated in the reactor

Does the proposed activity involve or change any of the following documents or processes? Explain in Comments if necessary.

Check YES or NO for EACH pre-screening item. [Ref. NMC 50.59 Resource Manual, Section 5.1]

NOTE: If you are unsure if a document or process may be affected, contact the process owner.

NOTE: An asterisk (\*) indicates that the document is incorporated by reference in the USAR or is implicitly considered part of the USAR.

NOTE: Check NO if activity/change is considered editorial, administrative, or maintenance as defined in Attachments A, B, and C. Explain in Comments if necessary.

|          | Yes                         | No ✓        | Document/Process                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Directive/<br>Procedure                           |
|----------|-----------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| a        |                             | $\boxtimes$ | Updated Safety Analysis Report (USAR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NEP-05.02                                         |
| b        |                             |             | Technical Specifications Bases or Technical Requirements Manual (TRM)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NAD-05.14,<br>NAD-03.25                           |
| c        | · 🖅                         |             | * Commitments made in response to NRC Generic Letters and Bulletins, and those described in the USAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | NAD-05.25                                         |
| d        | . #                         | X           | Environmental Qualification (EQ) Plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NAD-01.08                                         |
| ¢.       | 1                           |             | Regulatory Guide 1.97 (RG 1.97) Accident Monitoring Instrumentation Plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | NAD-05.22                                         |
| ٢.       | 1                           | $\boxtimes$ | 🖈 - Fire Plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | - NAD-01.02                                       |
| g j      | F                           | $\boxtimes$ | • Appendix R Design Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | NAD-01.02                                         |
| h        |                             |             | <ul> <li>Fire Protection Program Analysis (FPPA)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | NAD-01.02                                         |
| i        | 4                           | $\square$   | • Offsite Dose Calculation Manual (ODCM)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | NAD-05.13                                         |
| j.       |                             | $\boxtimes$ | * Radiological Environmental Monitoring Manual (REMM)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NAD-05.13                                         |
| k        | - 14                        | $\boxtimes$ | Station Blackout Design Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | • • • • •                                         |
| 1        | E.                          | $\square$   | • Control Room Habitability Study geta appendix appendix and a second seco |                                                   |
| m        | . 1                         | $\boxtimes$ | Plant Drawing Changes/Discrepancies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | NAD-05.01                                         |
| n        |                             |             | Calculations/Evaluations/Analyses/Computer Software - Check YES only if: 1) It directly or indirectly involves<br>affects SSC described in the USAR, or affects a methodology or method of evaluation safety analysis described in<br>the USAR; or 2) It independently (i.e., not part of a modification) affects the licensing or design basis. (TC dated 03-<br>46-2004) (TC dated 05-05-2004)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Various                                           |
| .0       | •                           | $\boxtimes$ | Permanent Plant Physical Changes - All require a screening.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | NAD-04.03                                         |
| p        | Ţ,                          | $\boxtimes$ | Temporary Plant Physical Changes (TCRs) - Check No only if installed for maintenance AND in effect for less than<br>90 days at power conditions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | NAD-04.03                                         |
| q        | I                           | $\boxtimes$ | QA Typing Determinations - Check YES only if reduction in classification, or affects design function as described in USAR.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | NAD-01.01                                         |
| I        |                             | $\boxtimes$ | Setpoint or Acceptance Criteria - Check YES only if change affects plant monitoring, performance, or operation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Various                                           |
| 5        |                             |             | Plant Procedures/Revisions - Check YES if change directly or indirectly involves operation, control, or configuration<br>of SSCs described in USAR (see Attachment B).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NAD-03.01                                         |
| t        |                             | $\boxtimes$ | Engineering Specifications - Check YES only if a design function or design requirement may be affected.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | NAD-05.03                                         |
| u        |                             | $\square$   | Operations Night Orders or Operator Work Arounds - Check YES only if SSCs are operated or configured differently than described in USAR.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | NAD-12.08                                         |
| v        | مينية <mark>الم</mark> الية |             | Temporary plant alterations (e.g., jumpers, scaffolding, shielding, barriers) - Check YES only if installed (or in effect) for maintenance for longer than 90 days at power conditions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | NAD-08.14,<br>GMP-127,<br>HP-04.002,<br>FPP-08-09 |
| w        |                             | $\boxtimes$ | Temporary plant alterations - Check YES only if not associated with maintenance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                   |
| <b>X</b> |                             | $\boxtimes$ | Corrective/Compensatory Actions - Check YES only if degraded/non-conforming plant condition accepted "as-is" or compensatory action taken.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | GNP-11.08.03                                      |
| 4.       | Conclus                     | ion. Chec   | k one of the following:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                   |

All of the documents or processes listed above are checked NO. A 50.59 screening is <u>NOT</u> required. Process change in accordance with the applicable program/process/procedure.

One or more of the documents or processes listed above are checked YES. A 50.59 screening shall be performed.

5. Comments:

Item N is checked no because this will not be used to change any values in our USAR or licensing basis. It is merely an approximation of dose values. 6. Print name followed by signature. Either the preparer or reviewer shall be 50.59 screening qualified. Attach completed form to document/activity/change package.

Prepared by: John Helfenberger Date: 10/21/04 (print/sign) Reviewed by: Date: (print/sign)

Form GNP-04.04.01-2 Rev. C

| Date: JUL 22 2003 |     |
|-------------------|-----|
| INFORMATION       | USE |

KEWAUNEE NUCLEAR POWER PLANT CALCULATION/EVALUATION CALC/EVAL NO. REV. PAGE NO.

#### <u>C11627</u> <u>Q</u> Page 1

# 1.0 PURPOSE

The purpose of this calculation is to determine the appropriate values for initiation of Emergency Action Levels (EALs) associated with loss of RPV Inventory affecting core decay heat removal capability with irradiated fuel in the RPV. (EAL: CS2 and CG1) In particular, this calculation will support leaving the containment area radiation monitor, R-2, at its current alarm setting of 100 mR/hr for the high alarm setting and proving that the readings on the refueling elevation with a single fuel assembly exposed will result in a dose rate of at least 100 mR/hr at the location of the detector (R-2).

# BACKGROUND

2.0

4.0

Kewaunee Nuclear Power Plant (KNPP) is performing an EAL Upgrade Project. As a part of this project, there will be new values used for the action level settings associated with the containment radiation monitors. It was requested to determine a "rough estimate" of the dose rates that would be seen on the refueling elevation if there were a complete loss of inventory during refueling such that the tops of the fuel assemblies were exposed.

## 3.0 INPUTS AND ASSUMPTIONS

Inputs:

3.0.1 USAR Table D.3-2, as amended for the Power Uprate

#### Assumptions:

3.1.1 A single fuel assembly provides the bounding value for the minimum alarm value.

3.1.2 The dose rate from the single fuel assembly will be treated as a point source.

3.2.3 It is assumed that R-2 provides a more direct "line-of-sight" to the gamma dose than R-40 and R-41 which are located behind the steam generator vaults. R-2 is located near the personnel hatch (to the left as one enters containment) and mounted on a pipe next to the outer wall.

3.2.4 It is assumed that there will be at least 100 hours prior to a fuel assembly being exposed since Technical Specifications (TS 3.8.a.3) require 148 hours prior to fuel movements.

3.2.5 It is assumed that even though there will be some shielding from the point source from the cavity walls, that sufficient "shine" exists in containment such that this rough approximation is within reason.

3.2.6 100% of the disintegrations produce a 0.8 MeV photon. Gamma abundance is 1.

# METHODOLOGY AND ACCEPTANCE CRITERIA

The method for obtaining the values is as follows:

The total curies that are contained in a fuel assembly as analyzed for the fuel handling accident are given in USAR Table D.3-2. The sum of these nuclide values is 1.18E+06 Ci. This will be used for the activity of the one fuel assembly assumed in the core for the

#### KEWAUNEE NUCLEAR POWER PLANT CALCULATION/EVALUATION

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purposes of this calculation. There is no formal acceptance criteria for this calculation.

# 5.0 REFERENCES

- 5.1. Technical Specifications 3.8.a.3
- 5.2. Los Alamos Radiation Monitoring Notebook, LA-UR-00-2584, dated June 2000. Copy obtainable from www.nrrpt.org/documents/la-ur-00-2584.pdf.
- 5.3 Dwg. XK-113557-5, Rev. D1
- 5.4 Dwg. A-208, Rev. BK
- 5.5 NEI 99-01, Rev. 4, Methodology for Development of Emergency Action Levels

5.6 USAR Table D.3-2

5.7 Radiological Health Handbook, January, 1970, Section II Radioisotope, Decay, and Radioassay Data

# 6.0 CALCULATION AND RESULTS

Reference 5.2, page 13, gives a rule of thumb for gamma rays. It states "for point sources with energies between 0.07 and 4 MeV, the exposure rate in roentgens per hour at 1 ft is given within 20% by 6 CEN, where C is the number of curies, E is the average gamma energy per disintegration in MeV, and N is the gamma abundance." It also goes on to show an average gamma energy is 0.8MeV. For simplification, we will use assumption 3.2.6 above (i.e. N=1.0).

So, if we input the KNPP values into the equation, we get:

GA (R/hr @ 1 ft.) = 6CEN = 6 x 1.18E+06 Ci x 0.8 MeV (1.0) = 5.66E+06 R/hr @ 1 ft.

Continuing, reference 5.2, page 39, gives the calculated exposure rate (X) from a point source as:

 $X (R/hr) = GA/r^2$ 

G = specific gamma ray constant (R/hr @ 1 meter per Ci) A = activity of source in curies

r = distance from the source in meters

Per references 5.3 and 5.4, there is an approximate linear 81.5 ft between the top of fuel and the R-2 detector (35.5 ft vertical and 46 ft horizontal). This corresponds to 81.5/3.2808 = 24.84 meters.

Solving for X (R/hr) gives:

5.66E+06 R/hr / (24.84 m)<sup>2</sup> = 9.18E+03 R/hr.

KEWAUNEE NUCLEAR POWER PLANT CALCULATION/EVALUATION

7.0

# CONCLUSIONS AND RECOMMENDATIONS

In conclusion, based on the rough estimate shown above, there is confidence that there will be at least 100 mR/hr as seen by R-2 if there was fuel uncovered in the core during refueling. The estimated value of 9.18E+03 R/hr may be reduced somewhat due to shielding of the cavity walls, but a radiation shine would exist in the containment from the source and add to the overall dose. A more rigorous approach would use a direct line of sight to the detector, account for all the shielding between the floor and walls of the cavity, and estimate a total value for shine coming from within the containment building. This calculation was meant to merely provide a rough estimate of rad levels on the refueling elevation.

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Page :

It is recommended that the existing 100 mR/hr High Alarm Setpoint for Radiation Monitor R-2 would make a very conservative setting for the loss of RPV inventory EALs. Based on the large amount of radiation that would be seen from such an event, this R-2 alarm would provide an early warning for emergency actions associated with the loss of reactor inventory.





|      |            | •                         |         |             |              |             |            |                | 1                    |          | _         |              | •           |           | •            |             |                                        | •                        | -            |                                     | ,              |                          | •              |           |                  |               | _        |           | •                   | •        |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| L    | ***        |                           | -       |             | ~            |             |            | -              | *1 *                 | 2 80940  | 1         | 1 3          | 198 (47%)-1 | e erar    |              |             | =                                      | mar                      | - <u>  ~</u> |                                     |                |                          | **             | Han Han   |                  | <u> </u>      |          | -         | 82A 3672            |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| -    | <b>B-1</b> |                           |         | -           | -            |             | 04         | <u>•</u> +     | <b>R R</b>           |          | 1.1       |              |             |           | NG-1         |             |                                        | \$ \$ 10.01              |              |                                     |                | 9-9,0-                   | const.         | 103       | 67134            | 32            |          | -         |                     |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ŀ    | 8-12 I     |                           |         |             |              | <b>****</b> | D-48       | <u>-</u>  -    | *1 *                 |          |           | <b>P407</b>  |             |           | 1000 St. 100 | 1000 B      |                                        | 2 8 8 6                  |              | 1.500.15                            |                |                          | 640 da         |           |                  | <u> 10 10</u> |          | -         | 400 MW              |          |      |           |          | TALES AND AND AND AND AND AND AND AND AND AND                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| ŀ    | ***<br>*** |                           | -       |             |              |             |            | ÷              |                      |          |           |              |             |           |              | 6000 M      |                                        |                          |              |                                     |                |                          | 2414           | 4194      |                  | 10-00<br>     |          |           | 80 2/7              |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ŀ    | -          |                           | -       |             |              |             | 0.00       | ÷+             |                      |          | 6 10      |              |             |           |              | 60000 E     |                                        | 1100                     |              |                                     |                | 10-10 T CP4              | 24 1 10        | 1.1.1     | Brune .          | <u></u>       |          |           | NA 3172-300         |          |      |           |          | VI BELBA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| ŀ    |            | Contract and any sections | -       |             |              |             | 0.47       | ÷              |                      |          | 1000      |              |             |           |              |             |                                        |                          |              |                                     |                |                          |                | 1.1.1     |                  | 44            |          | -         |                     |          |      |           |          | VILCAP COMPAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| ŀ    |            |                           | 1       | -           | a l          |             | 047        | <del>.</del> † | <b>v</b> 0 <b>v</b>  |          | ante ante | 7 4 6 7      |             |           |              | -           |                                        | 4100                     |              | 100010                              | 30 975         |                          |                |           | -                | 0.07          | -        |           | 800 207             |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| - F  |            | AND DESCRIPTION OF LEASE  | 1       | -           | -            |             | (147)      | •              | -                    |          | 1000      | 7-101        |             | 1.51      |              |             |                                        | 1.07 2 10'0              |              |                                     | -              | #+++ 7 grvs              | -              | 1         | -                |               | 1 10     |           | 100 307P            |          |      |           |          | V Low same care.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| t t  |            |                           | 1.000   |             | -            |             | 0.00       | •              | -                    |          | 2.72      |              |             |           |              |             |                                        | 1.00 1 10 0              |              |                                     | - 2            |                          | concerna       | 1.75      | -                | 32            | 1 188    |           | 401 30 <sup>1</sup> |          |      |           |          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| L L  |            |                           |         | -           | ~            |             | -          | •              | <b>41 4</b>          |          | 122       | 1-445        |             | -         |              |             |                                        | 78 8 8,04                |              |                                     | - 25           | 19-10 <sup>7</sup> (2*11 | distant.       | 122       | an the           | 0-m           | -        |           | 809 3072            |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|      |            | initepagni sipri          |         | -           | -            |             | 04         | •              | <b>43 4</b>          |          | 22        |              |             |           | 1878 BE 14   |             |                                        | L# 1 8 <sup>4</sup> 9    |              |                                     | ** **          | 19-19 <sup>7</sup> (2*1  | 2.30 2.30'     |           | BALNE .          | 5.0           | 765      | -         | 903 (87)            |          |      |           |          | BAN MA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|      | 8-82       |                           |         |             | -            |             | 840        | •              | <b>N</b> 5 <b>N</b>  |          | 200       | -            |             |           |              |             |                                        | 746 X R <sub>3</sub> 0   | * 21 87* 28  | 1.000-1.1.0                         | - ".E          | 10-10-7 (294             | 2.31 1.00      |           | <b>BYANE</b>     | 5 40<br>50 20 | 1        | 9         | eca este            |          |      |           |          | Allina and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| l l  | 8-83       |                           |         |             | -            | ₹           | 0~11       | •              | <b>VE V</b>          | 1 0001   | 1.00      | 7407         |             | No.       | eta acada    |             | * E 11 <sup>1</sup> 074                | L.00 E 10 <sup>3</sup> 0 |              |                                     | - ". <u></u> " | 10-10 <sup>7</sup> 074   | and the second | ين و دو ا | -                | 25            | 468      |           | 808 3072            |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|      |            |                           |         |             |              |             |            |                |                      |          |           |              |             |           |              |             |                                        |                          |              |                                     |                |                          |                |           |                  |               |          |           |                     |          |      |           |          | · •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Γ    |            |                           | -       |             |              |             |            | -              |                      |          |           |              | RADIATI     | ION MC    | NITORIN      | G-KEWAL     | NEE-SY                                 | STEN 4                   |              |                                     | <u> </u>       |                          |                |           |                  |               |          | _         |                     |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ŀ    | - 1        |                           | <u></u> | <b>r</b>    |              |             | <u> </u>   | <u> </u>       |                      |          | <b>—</b>  | <u>г г</u> . |             | T 1       |              |             | T                                      | 1                        |              |                                     | 1              |                          | SHOLD BE       | r         |                  | <u> </u>      |          |           |                     |          |      |           |          | <b>۱</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Ľ    | -          | 0                         |         | ~~~         | NUMBER OF    |             | A a        |                |                      |          | 1.22      | acada i      |             | A 144 144 | 13010713     | SCHIETHETY  | N-ROE                                  |                          | N TOAL       | -2709 5041                          | Conners 1      |                          | -              | 2 24. 12  | 11               |               | =1       |           |                     |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|      |            |                           | -       | 98/R. M     |              |             |            |                | • -                  | - ~~     |           | -            | == 3.4      | -         | -            | ~~          |                                        |                          |              |                                     | -              |                          | 1.0.40.2 10    |           | 10-137 8-4R      | 80.80 801     | M        |           |                     |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| L    | ***        | 100 m 100                 | -       | -           | -            | 1.449       | <u> </u>   | -              |                      | - 743    | 10001     | <u> </u>     |             |           |              |             |                                        | ~ 0.0 ~~                 | 18.84        |                                     |                |                          | 0 1.000        | -         | **** <b>**</b> * | 90.901 (CA)   | <u> </u> |           |                     |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|      | -27        | DANCE TANK                |         | GREAL PH    | -            | 1-107       | -          | <u>-</u>       |                      |          | ·   ·     | = :          |             |           | at am Kale   | 61 alw      | 10.000                                 | ~ = ~                    | ***          |                                     |                | ****                     | 1.00.0         |           | 19-02 9-91       | 90.00 SCA     | 146      |           |                     |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| -    | 4-30       |                           |         | Giardi, Sul | -            | (-)30       | <u>-</u>   | -              |                      | - 1940   |           |              |             |           |              | EI 444      | 1                                      | ~                        | 8.8 ML       |                                     |                |                          | UKANLE NU      | -         | 90-000 0-98      | 80.80 87A     | ×4       |           |                     |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ŀ    | 8-24       |                           |         | fors of     |              | 1-100       | <u>-</u>   |                |                      | - 740    |           |              |             | 1         |              |             |                                        |                          |              |                                     |                |                          |                |           | 99-49 WEI-199    | 60.604 EU     |          |           |                     |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| }    |            |                           |         | Torn of     | <u>اتِ ا</u> |             | <u>+</u> + |                |                      |          |           |              |             |           |              |             |                                        |                          |              | N and a state                       |                |                          |                |           |                  |               |          |           | {                   |          |      |           |          | E-2021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| ŀ    |            | Annual                    |         |             | Ē            |             | ÷ŀ         |                |                      |          | +=        |              |             |           | <br>         | 184         |                                        |                          |              | -                                   | -              |                          |                |           |                  |               |          |           |                     |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ŀ    |            | N STLAN LINE AND THE LA   | 811.4M  | -           |              |             |            | -              |                      |          |           |              | 20 00 10    |           |              |             | 1 umm                                  |                          |              | -                                   | -              |                          |                |           |                  |               |          |           |                     |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ŀ    | 8-84       | B STLAN LINE HERETER HE   |         | -           | -            |             | -          |                |                      |          | 100       | 8883-63      |             |           | _130         | 1000        |                                        | ~ -                      | -            |                                     | -              | -                        |                |           |                  |               |          |           |                     |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| F    |            | MA. B. DL. Hart State     | 3       | -           | -            |             | -          | =              |                      |          | -         |              |             | -         | 2,128        | -           | -                                      |                          |              |                                     | -              |                          | 100004 100     | 1 10      |                  |               |          |           |                     |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| F    | +=         | AND B TOL MENT STACE      | 120     | face. M     | -            |             | -          | -              |                      |          | -         |              |             | , I       | F-133        | 1.000       |                                        |                          | -            |                                     | -              |                          |                | -         |                  | -             | 64       |           |                     |          |      |           |          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| t -  | *-10       | CONTINUENT STACK          |         | -           | -            |             | -          | -              |                      |          |           |              | 1300 Bi Ma  |           | 3-113        |             |                                        | -                        | 700 -A.A.,   |                                     |                |                          |                | -         |                  | -             |          |           |                     |          |      |           |          | ۱ <b>۰</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ľ    | R-36       | Continuent want State.    |         | -           |              |             | •          | -              |                      | nan 7407 | 1.44      |              |             |           | 1,130        | 1000        |                                        | ~                        |              |                                     | -              |                          |                | 1 7ES     |                  |               | **       |           |                     |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| L F  |            |                           | -       | -           | -            | E-081       | •          | -              |                      |          | 1         | <u> </u>     |             | -         | -            |             |                                        |                          |              |                                     | -              |                          | 10.00          | 713       | 99-80 \$-4E      | -             | -        |           |                     |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 1    | ***        | Cartel appe Angus Tiges   | -       | 8.44 MA     |              | -           | •          | •              |                      |          | -         | 43974        |             |           | -            | and have    | 10 <sup>0</sup> -0 <sup>0</sup> A      | ~ -                      |              | 10 <sup>0</sup> -10 <sup>0</sup> AA | -              |                          |                |           |                  |               | 1343/644 |           | ]                   |          |      |           |          | í í                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|      |            | Carried some Andrea Tidas | -       | 4 4 MA      | -            | —           |            | •              |                      |          | -         | 41100 -      |             |           | -            |             | <b>11<sup>8</sup>-10<sup>9</sup> 4</b> | ~ -                      |              | 110 m 1 m                           |                |                          | 10001 10       |           | 49-1207 10-082   | ACT ACA       | 279.44   |           |                     |          |      |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| [    | ***        | LA MARY STAR              | 1.000   | R.          | -            | 100         | -          | -              | -                    |          |           |              |             |           | <u>مي</u>    | Charles and |                                        |                          |              |                                     |                |                          | 1.040.0        |           |                  |               |          |           |                     |          |      |           |          | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| C    | 8-43       |                           |         | 1           | -            |             | 3          | •              | -                    |          |           | <u> - </u>   |             |           | -            | -           |                                        | - 14                     |              |                                     | -              | 1.01 M                   | 1846.1 10      | <u> </u>  | <u>***  —</u>    |               |          |           |                     |          | L    | en in d   |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|      |            |                           |         |             |              |             |            |                |                      |          |           |              |             |           |              |             |                                        |                          |              |                                     |                |                          |                |           |                  |               |          |           |                     |          | Ē    | INTEGRATE | DLOCIC   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|      |            |                           |         |             |              |             |            |                |                      |          |           |              |             |           |              |             |                                        |                          |              |                                     |                |                          |                |           |                  |               |          |           |                     |          |      | RADIATI   | ON MONIT | RING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|      |            |                           |         |             |              |             |            |                |                      |          |           |              |             |           |              |             |                                        |                          |              |                                     |                |                          |                |           |                  |               |          |           |                     |          | - H  |           |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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## USAR Chapter 14 Safety Analysis

USAR Chapter 14 includes information related to transient and accident safety analysis. In a NRC evaluation dated December 2, 1998, approving Technical Specification (TS) Amendment No. 142, the NRC reviewed and found acceptable changes to support Cycle 23 fuel and reload in the following areas: mechanical analyses of the design of Siemens Power Corporation (SPC) Heavy fuel, analytical methods for transient and accident analyses, departure from nucleate boiling ratio (DNBR) limits, transient and LOCA analyses, and the associated Technical Specification changes. USAR Chapter 14 was updated to incorporate these changes, as well as other previously approved changes, administrative changes, and numerous editorial changes. Many of the changes were identified during the USAR Assessment Project reviews. Specific changes included the following:

USAR Sections 14.0, 14.1, 14.2 [UCR #98-039] - Format changes included creating a new Section 14.0 containing general safety analysis overview, inputs, and assumptions, previously included in Section 14.1. Various other clearly administrative changes were made. In addition, Sections 14.1 and 14.2 were updated to reflect Cycle 23 changes to the transient and accident analysis.

USAR Section 14.2.7, Page B.9-4 [UCR:#98-038] - This change deleted Section 14.2.7, "Turbine Missile Damage to Spent Fuel Pool," and removed this analysis from the KNPP licensing basis. This change was approved by the NRC in TS Amendment No. 142.

USAR Section 14.3.1 [UCR #98-035] - This change updated the Small Break LOCA information to reflect model changes previously reported under 10 CFR 50.46 (the analysis did not change). Also, changes due to Cycle 23 fuel design changes were incorporated.

USAR Section 14.3.2 [UCR #98-034] - This change replaced Section 14.3.2 in its entirety to incorporate the new large break loss of coolant accident (LBLOCA) analysis provided by Westinghouse. The analysis used an emergency core cooling system (ECCS) evaluation model that included the effects of low pressure coolant injection to the upper plenum of the reactor vessel (UPI). The changes were reviewed by the NRC in conjunction with TS Amendment No. 142. The major change in the analysis was the transition from SPC 14x14 Standard Fuel Assemblies to the SPC Heavy Fuel design. Additionally, the Nomimal calculation was not performed since this was not the first time application; only the Appendix K and Superbounded calculations were required to be performed. The results of the analysis satisfied the acceptance criteria of 10 CFR 50.46.

Previously approved changes included UCR #98-029 / KAP 2011 [USAR Page 14.1-50 and Table 14.1.10-1]. This change removed references to the Westinghouse natural circulation model for the loss of power to Reactor Coolant Pump transient. In 1988, the NRC had reviewed and accepted WPSC Reload Safety Evaluation methodology which superseded the Westinghouse methodology.

Smaller columns, when impacted on top, are expected to fail by limited crushing and plastic deformation, but continue to furnish support. Columns impacted on the side by flying or ricochetting turbine missiles are not expected to stand.

# **B.9.4 CONCLUSIONS**

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The previous discussion has shown that the concrete Shield Building, although sustaining localized damage as a result of the turbine missile, provides complete protection for the Reactor Containment Vessel. Integrity of the Reactor Containment Vessel is therefore not jeopardized by any credible turbine missile.

The Auxiliary Building, Screenhouse, and Class I areas of the Turbine Building are all contained in concrete structures having thicknesses of 10 inches or more. Although these structures could sustain some damage and deformation, it is expected that any turbine missile would be retained in a membrane of reinforcing. The vast majority of Class I equipment is located below the operating floor of the Auxiliary Building, which means there are multiple barriers of heavily reinforced concrete protecting this equipment from potential turbine missiles.

In summary, it is concluded that the Kewaunce plant is adequately protected against credible turbine missiles. The great majority of equipment is totally protected from missiles. Although the spent fuel pool is not completely turbine missile proof, its vulnerability to a turbine missile is so remote as to require no further design consideration.

This position is consistent with the regulatory guidance provided in the Standard Review Plan (NUREG-0800, Rev.2) that states the risk from a high trajectory missile is insignificant unless the vulnerable target area is on the order of 10<sup>4</sup> square feet or more. The surface area of the Kewaunee spent fuel pools is an order of magnitude less than this guidance value.

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Rev. 14 11/01/97

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#### UNITED STATES NUCLEAR REGULATORY COMMISSION WASHINGTON, D.C. 200001

December 2, 1998

Mr. M. L. Marchi Site Vice President-Kewaunee Plant Wisconsin Public Service Corporation P.O. Box 19002 Green Bay, WI 54307-9002

### SUBJECT: AMENDMENT NO. 142-TO FACILITY OPERATING LICENSE NO. DPR-43 -KEWAUNEE NUCLEAR POWER PLANT (TAC NO. MA1557)

Dear Mr. Marchi:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 142 to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant. This amendment revises the Technical Specifications in response to your application dated April 15, 1998, as supplemented by letters dated July 27, 1998, August 13, 1998, two different letters dated September 28, 1998, and by letter dated November 24, 1998.

The amendment revises the power distribution peaking factor limits and limits operating parameters related to the Minimum Departure from Nucleate Boiling Ratio (MDNBR) in support of Cycle 23 fuel and reload changes. A change associated with the fuel and reload changes, is the removal, from the current licensing basis, of the fuel pool turbine missile hazards analysis.

As proposed in your letter dated November 24, 1998, the amendment conditions the license for a maximum rod average burnup of 60 GWD/MTU, for any rod, until such time as the staff has completed an environmental assessment supporting a greater limit.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's next regular biweekly <u>Federal Register</u> notice.

Sincerely,

William U. F

William O. Long, Senior Project Manager Project Directorate III-1 Division of Reactor Projects III/IV Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosures: 1. Amendment No. 142 to License No. DPR-43 2. Safety Evaluation

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## 2.1.3 CONCLUSION REGARDING REVISED PEAKING FACTOR LIMITS

The staff has reviewed the licensee's reload application and the proposed TS changes with the supporting analyses to allow operations of Cycle 23 and future cycles at the KNPP plant. Based on this review, the staff concludes that the supporting safety analyses are acceptable, and the proposed TS changes adequately reflect the results of the acceptable supporting analyses and are, therefore, acceptable for reload applications.

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### 2.2.2 RADIOLOGICAL ASSESSMENT

Operation at higher peaking factors results in an increase in the total activity and associated gap activity of the limiting fuel assembly, but no increase in the corewide inventory of noble gases and halogens. Thus, the only accidents for which the calculated radiological consequences would be affected are the fuel handling accident inside containment and the fuel handling accident outside containment. The licensee provided a reanalysis of these events in conjunction with Amendment No. 132. Amendment No. 132 was issued on May 28, 1998, with a supplement dated September 3, 1998. The Amendment No. 132 evaluation bounds the effects of the new fuel and found the radiological consequences of fuel handling accidents to be acceptable. The staff finds that any postulated release and radiological doses from a large break loss of coolant accident are not affected by the proposed changes.

#### 2.2 TURBINE MISSILES HAZARDS ANALYSIS

## 2.2.1 LICENSEE'S REQUEST

General Design Criterion 4 requires that structures, systems, and components important to safety shall be appropriately protected against environmental and dynamic effects, including the effects of missiles, that may result from equipment failure. Because turbine rotors have large masses and rotate at relatively high speeds during normal reactor operation, failure of a rotor may result in the generation of high energy missiles potentially impacting and damaging safety related structures, systems and components.

Consistent with the staff's position taken on existing turbine rotor designs, the probability of turbine missile generation should be kept to no greater than 10<sup>5</sup> per reactor-year (RY) for an unfavorably oriented turbine and 10<sup>4</sup> per RY for a favorably oriented turbine.

The Kewaunee Nuclear Power Plant (KNPP) has an unfavorable turbine generator placement and orientation, and the plant is committed to keep the probability of turbine missile generation to no greater than 10<sup>-5</sup> per reactor-year.

On April 15, 1998, Wisconsin Public Service Corporation (hereafter referred to as the licensee) submitted Proposed Amendment 152 to the KNPP technical specifications (TS). The purpose of the amendment was to document improvements realized by the new fuel design and reflect changes to the KNPP conditions. The amendment also proposes the elimination of high trajectory turbine missiles as a design event impacting the spent fuel. On July 27, 1998, the licensee provided additional information to justify the removal of high trajectory turbine missiles as a design event fuel.

The proposed amendment would change the KNPP Technical Specifications to document improvements realized by the new fuel design and reflects changes to the KNPP operating conditions. It also proposes the elimination of high trajectory turbine missiles as credible design events impacting the spent fuel.

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The licensee's basis for proposing an amendment to eliminate high trajectory turbine missile as a design event impacting spent fuel is:

The Kewaunee USAR identifies the potential for a high trajectory turbine missile to damage fuel assemblies stored in the spent fuel pool. Because of the loss of energy in perforating through intervening walls and barriers and the travel distance after penetration, the probability of low trajectory missiles striking the spent fuel pool is negligible. Although acknowledged as low probability, the high trajectory analysis identifies the potential for 12 assemblies to be impacted by a turbine missile with the subsequent release of the assemblies' gap activity.

Since initial licensing in 1973, additional NRC guidance has been developed for assessing the potential for, and consequences of, turbine missiles including NUREG-0800 and R.G. 1.115. This guidance states that the risk from a high trajectory missile is insignificant unless the vulnerable target area is on the order of 10<sup>4</sup> square feet or more. The Kewaunee spent fuel pool surface is approximately 10<sup>3</sup> or an order of magnitude below the guidance value.

Additionally, more detailed probabilistic studies have been completed by the turbine generator manufacturer on the likelihood of a turbine missile. This information was reviewed by the NRC as part of Technical Specification Amendment 121 establishing the frequency for turbine control and stop valve testing and established a performance requirement of  $10^{-5}$ /year as the probability of a turbine missile ejection. This is also consistent with the NRC guidance for an unfavorably oriented turbine-generator.

In conclusion, the probability of a turbine missile impacting the spent fuel is sufficiently low that this event and the associated radiological consequences are no longer required to be evaluated as design basis for the Kewaunee Plant.

## 2.2.2 EVALUATION AND CONCLUSION REGARDING TURBINE MISSILES

The NRC staff has reviewed the licensee's basis for proposing to eliminate the high trajectory turbine missile as a design event impacting spent fuel and finds it acceptable. This acceptance is based on staff positions stated in Standard Review Plan (SRP) 3.5.1.3, "Turbine Missiles" and review of the turbine manufacturer's methodology for assessing the probability of turbine missile generation. Paragraph III.5 of SRP 3.5.1.3 acknowledges that the probability of a high

trajectory turbine missile hitting targets is low (10<sup>-7</sup> per square foot of target area) and states that risk from high trajectory turbine missiles is insignificant unless the vulnerable target area is in the order of 10<sup>4</sup> square feet or more. The Kewaunee spent fuel pool surface is substantially less about 10<sup>3</sup> square feet.

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Based on its evaluation, the staff finds that amending the KNPP TS to eliminate consideration of high trajectory turbine missiles as a design event impacting spent fuel is acceptable. The staff concludes that the risk for the proposed modification of the plant TS is acceptable and meets the relevant requirements of GDC 4. This conclusion is based on the licensee having sufficiently demonstrated to the staff that the probability of turbine missile damage to structures, systems, and components important to safety is acceptably low and within the limits specified in SRP Section 3.5.1.3, "Turbine Missiles."

## STATE CONSULTATION

In accordance with the Commission's regulations, the Wisconsin State official was notified of the proposed issuance of the amendment. The State official had no comments.

# 4.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.21, 51.32, and 51.35, an environmental assessment and finding of no significant impact has been prepared and published in the <u>Federal Register</u> on December 2, 1998 (63 FR 66589). Accordingly, based upon the environmental assessment, the Commission has determined that the issuance of this amendment will not have a significant effect on the quality of the human environment.

## 5.0 <u>CONCLUSION</u>

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The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding (63 FR 25120).

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

# Principal Contributors: Summer Sun, George Georgiev

Date: December 2, 1998