Indiana Michigan
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INDIANA MICHIGAN POWER

October 8, 2003

AEP:NRC:3004-02
10 CFR 50.4(b)(5)(iii)
10 CFR 50, Appendix E.V

Docket Nos: 50-315
50-316

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

Donald C. Cook Nuclear Plant Unit 1 and Unit 2
TRANSMITTAL OF EMERGENCY PLAN
IMPLEMENTING PROCEDURES

Pursuant to 10 CFR 50.4(b)(5)(iii), Indiana Michigan Power Company, the licensee for Donald C. Cook Nuclear Plant Unit 1 and Unit 2, is transmitting PMP-2080-EPP-100, Emergency Response, Revision 2, PMP-2080-EPP-101, Emergency Classification, Revision 4, and PMP-2080-EPP-107, Notification, Revision 18. A revision summary has been included for each of the procedures being transmitted.

This letter contains no new commitments. Should you have any questions, please contact me at (269) 697-5806.

Sincerely,

Brian A. McIntyre
Manager of Regulatory Affairs

DB/rdw

Attachment: Donald C. Cook Nuclear Plant Emergency Plan Implementing Procedures

A045

c: J. L. Caldwell, NRC Region III (2)
K. D. Curry – AEP Ft. Wayne, w/o attachment
J. T. King, MPSC, w/o attachment
MDEQ – WHMD/HWRPS, w/o attachment
NRC Resident Inspector
M. A. Shuaibi – NRC Washington DC

ATTACHMENT TO AEP:NRC:3004-02

DONALD C. COOK NUCLEAR PLANT EMERGENCY PLAN
IMPLEMENTING PROCEDURES

PMP-2080-EPP-100, Revision 2

PMP-2080-EPP-101, Revision 4

PMP-2080-EPP-107, Revision 18

REVISION SUMMARY

Number: PMP-2080-EPP-100 Revision: 2 Change: 0

Title: Emergency Response

Section or Step	Change/Reason For Change
3.2.3	Change: Add Note IF accountability and /or evacuation is (are) required at classifications other than a Site Area Emergency or General Emergency, THEN Accountability is performed only ONE time for the event in progress. Reason: Address personnel accountability and evacuation from site when Site Area Emergency or General Emergency do not exist.
3.2.4	Change: Add Note IF accountability and /or evacuation is (are) required at classifications other than a Site Area Emergency or General Emergency, THEN PA announcements may be made using the guidance in step 3.2.3. of PMP-2080-EPP-107, Notification. The announcement may be modified as necessary to fit existing plant and ERO status. Reason: CR 03099018 action 2 to address personnel accountability and evacuation from site when Site Area Emergency or General Emergency do not exist.
Step 3.2.6	Change: Add "or 1119" to the SAS phone extension parenthetical remark. Reason: Identify alternate telephone extension available for use.
NOTE prior to Step 3.2.7	Change: Add NOTE prior to step to caution the user not to change Protective Action Recommendation such that protection is reduced for Areas previously addressed in previous PARs Reason: CRA03178012-01; recommendation from OE/RIS to prevent modifying PARs for areas affected by previously-issued PARs.

TABLE OF CONTENTS

1 PURPOSE AND SCOPE

1.1 This procedure provides Instructions to the Shift Manager acting as the Site Emergency Coordinator (SEC), for implementing a response to an Unusual Event (UE), Alert, Site Area Emergency (SAE) and General Emergency (GE) after an emergency has been declared.

1.2 The steps in this procedure are listed in the preferred order of performance for maximum efficiency. However, the steps may be performed in a different sequence.

2 DEFINITIONS AND ABBREVIATIONS

Term	Meaning
AOP	Abnormal Operating Procedure
BCSD	Berrien County Sheriff Department
DAP	Dose Assessment Program
EMD-32	Nuclear Plant Accident Notification form
ENC	Emergency News Center
EOF	Emergency Operations Facility
EOP	Emergency Operating Procedure
ERDS	Emergency Response Data System
ERO	Emergency Response Organization
GE	General Emergency
JPIC	Joint Public Information Center
MSP	Michigan State Police
OSC	Operations Support Center
PAR	Protective Action Recommendation
PPC	Plant Process Computer
SAE	Site Area Emergency

SAS	Secondary Alarm Station
SEC	Site Emergency Coordinator
SM	Shift Manager
TSC	Technical Support Center
UE	Unusual Event

NOTE: All procedure steps are applicable to all Emergency Classification Levels EXCEPT when the applicable Emergency Classification Level(s) is(are) specified within a step. (Reference Figure 1, Procedure Flowchart.)

3 DETAILS

3.1 General

3.1.1 **IF** a classification upgrade is required at any time while the procedure is being performed or after it is completed, **THEN** return to step 3.2, Instructions, and proceed through the procedure again.

3.1.2 The Operations SM acting as the SEC shall implement this procedure until relieved of SEC duties.

3.1.3 The following actions shall not be delegated by the SEC:

- Classification of the emergency.
- Directing the notification of offsite officials.
- Approval of PAR to offsite emergency management agencies.

3.1.4 Declaration of an emergency requires the notification of the BCSD and MSP within 15 minutes. Notification of the NRC shall follow county and state notification and in all cases be completed within one hour.

3.1.5 Declaration of a GE requires that a PAR be made to the state. The PAR should be made immediately after the notification of a GE (i.e., during the same phone call).

3.1.6 The ERDS for the affected Unit must be operational and transmitting data to the NRC within one hour of an ALERT or higher declaration.

3.1.7 The OSC, TSC, and the EOF are required to be activated at an ALERT classification or higher.

3.2 Instructions

3.2.1 Inform Unit 1 and Unit 2 Control Room personnel of the event classification and that the SM has assumed the position of SEC.

3.2.2 Implement or direct the implementation of PMP-2080-EPP-107, Notification.

NOTE: **IF** accountability and/or evacuation is (are) required at classifications other than a Site Area Emergency or General Emergency, **THEN** accountability is performed only ONE time for the event in progress.

3.2.3 **IF** a SAE or GE has been declared, **THEN** notify the Security Shift Supervisor (x 2005 or 2731) to perform accountability.

a. **WHEN** evacuation is necessary, **THEN** inform the Security Shift Supervisor (x 2005 or 2731) to evacuate plant personnel.

b. **WHEN** evacuation of the beach is necessary, **THEN** direct an announcement to be made to evacuate the beach.

c. **IF** offsite agency personnel (e.g., National Guard, MSP, etc.) are stationed in the owner-controlled area, **THEN** determine if these personnel should be evacuated or if they will remain onsite.

- Take appropriate action (e.g., evacuate, shelter, relocate onsite, issue dosimetry, etc.) as necessary to protect the offsite agency personnel.

NOTE: IF accountability and/or evacuation is (are) required at classifications other than a Site Area Emergency or General Emergency, THEN PA announcements may be made using the guidance in Step 3.2.3 of PMP-2080-EPP-107, Notification. The announcement may be modified as necessary to fit existing plant and ERO status.

3.2.4 **IF** a hazard to plant personnel exists (e.g., fire, radiation or toxic gas), **THEN** perform one of the following steps:

a. **IF** the condition is local, **THEN** evacuate the area by page announcement.

b. **IF** the condition impacts significant portions of the plant, **THEN** direct the Security Shift Supervisor (x 2005 or 2731) to perform accountability in accordance with Security Post Orders and perform an evacuation.

NOTE: The presence of an offsite dose rate may require re-classification of the event in accordance with ECC R-1, Effluent Release, PMP-2080-EPP-101, Emergency Classification.

3.2.5 **IF** a gaseous release of radioactive material is occurring, **THEN** initiate use of the DAP, to determine the magnitude of offsite dose levels. The following Emergency Plan procedures should be used as appropriate:

- PMP-2080-EPP-108, Initial Dose Assessment (for use in the Control Room).
- RMT-2080-EOF-001, Activation and Operation of the EOF (for use in the EOF).

3.2.6 **IF** additional personnel are required to respond to an Unusual Event to support the emergency response, **THEN**:

a. Call the SAS (x1118 or 1119) and direct security to implement the Dialogic Emergency Response Notification System for an EMERGENCY.

b. Direct a Control Room Operator to make the following announcement for the appropriate ERO facility(s) to be activated, over the PA system. Have the announcement broadcast twice.

"Attention all personnel. The Unusual Event is still in effect, however report to and activate the *Operations Support Center/Technical Support Center/Emergency Operations Facility*. All other plant personnel be prepared for further announcements."

c. On any touch-tone telephone:

- Dial 1646
- Wait for the tone
- Repeat the above announcement twice

NOTE:	DO NOT revise protective actions such that protection is reduced for areas already addressed in previously issued PARs. For example, if ***evacuation*** was recommended for Area 1 in a previous PAR, do not revise this recommendation to ***sheltering*** in Area 1 in any subsequent PAR.

3.2.7 IF a GE has been declared, THEN direct the development of a Protective Action Recommendation using the following steps:

a. Prior to developing a PAR consider whether the following could have an effect on the PAR:

- Adverse weather conditions.
- A forecast of changing weather conditions.
- Release characteristics (Puff vs. Continuous).
- Evacuation times.

b. Obtain the following data:

- Wind direction

- AND -

- Offsite dose projection (if available) as calculated using DAP or actual offsite dose rate measurements.

c. Using Attachment 1, PAR Flowchart and Map, determine the appropriate PAR.

d. Include any deviations from the PAR flowchart, Attachment 1, based on step 3.2.7.a in the protective action recommendation that is provided to the state.

e. Enter the PAR on the EMD-32 form, Nuclear Plant Accident Notification, obtained from the Emergency Kit and notify the State of Michigan of the recommendation within 15 minutes, in accordance with PMP-2080-EPP-107, Notification.

f. Repeat Steps 3.2.7.a through 3.2.7.e every 30 minutes or within 15 minutes of a PAR change until relieved by the incoming ERO.

3.2.8 Perform mitigating actions in accordance with appropriate plant procedures.

3.2.9 **IF** the PPC is inoperable, **THEN**:

- Designate someone to complete Data Sheet 1, Technical Information Sheet, every 15 minutes.
- Forward the completed copy to the TSC.
- Continue this activity for the duration of the emergency or until the PPC is operable.

3.2.10 **IF** accountability results identify a missing person(s) AND the TSC and OSC are NOT activated, **THEN** have Security attempt to locate the missing person(s).

3.2.11 Determine if special directions to the Security Staff are required (e.g., security event, radiation release, etc.) in order to control incoming ERO and/or non-ERO plant staff.

- Provide directions as necessary to control incoming personnel.

3.2.12 Upon arrival of the oncoming SEC conduct a turnover as follows:

a. Obtain a copy of Data Sheet 2, Emergency Turnover Checklist.

b. Have the oncoming SEC complete the checklist as each item is verbally addressed.

3.3 Subsequent Instructions for the SM After Being Relieved of SEC Duties

3.3.1 **WHEN** relieved of SEC responsibilities, **THEN** resume the sole function of SM.

- Notify the Control Rooms that the SM has been relieved of SEC responsibilities.

3.3.2 Direct the continued implementation of the appropriate Emergency Operating Procedure (EOP) and/or Abnormal Operating Procedure (AOP) to return the unit to a safe condition.

3.3.3 Inform the TSC of changes in plant condition and equipment status.

3.3.4 Inform the TSC of mitigating actions to be taken or any that have been completed.

3.3.5 Direct plant announcements and sounding of the Nuclear Emergency Alarm, if required, for any change in classification made by the TSC or EOF.

3.3.6 **IF** additional personnel are required, **THEN** request assistance from the TSC.

3.3.7 Assemble all documentation associated with the emergency and forward it to the Emergency Planning Coordinator. This documentation should include:

- Complete notification forms
- Copies of pertinent log entries
- Copy of the Condition Report if generated
- Other documentation deemed appropriate by the Shift Manager

4 FINAL CONDITIONS

4.1 The emergency has been terminated and the plant has entered the recovery phase.

5 REFERENCES

5.1 Use References:

5.1.1 PMP-2080-EPP-101, Emergency Classification

5.1.2 PMP-2080-EPP-107, Notification

5.1.3 PMP-2080-EPP-108, Initial Dose Assessment

5.1.4 RMT-2080-EOF-001, Activation and Operation of the EOF.

5.2 Writing References:

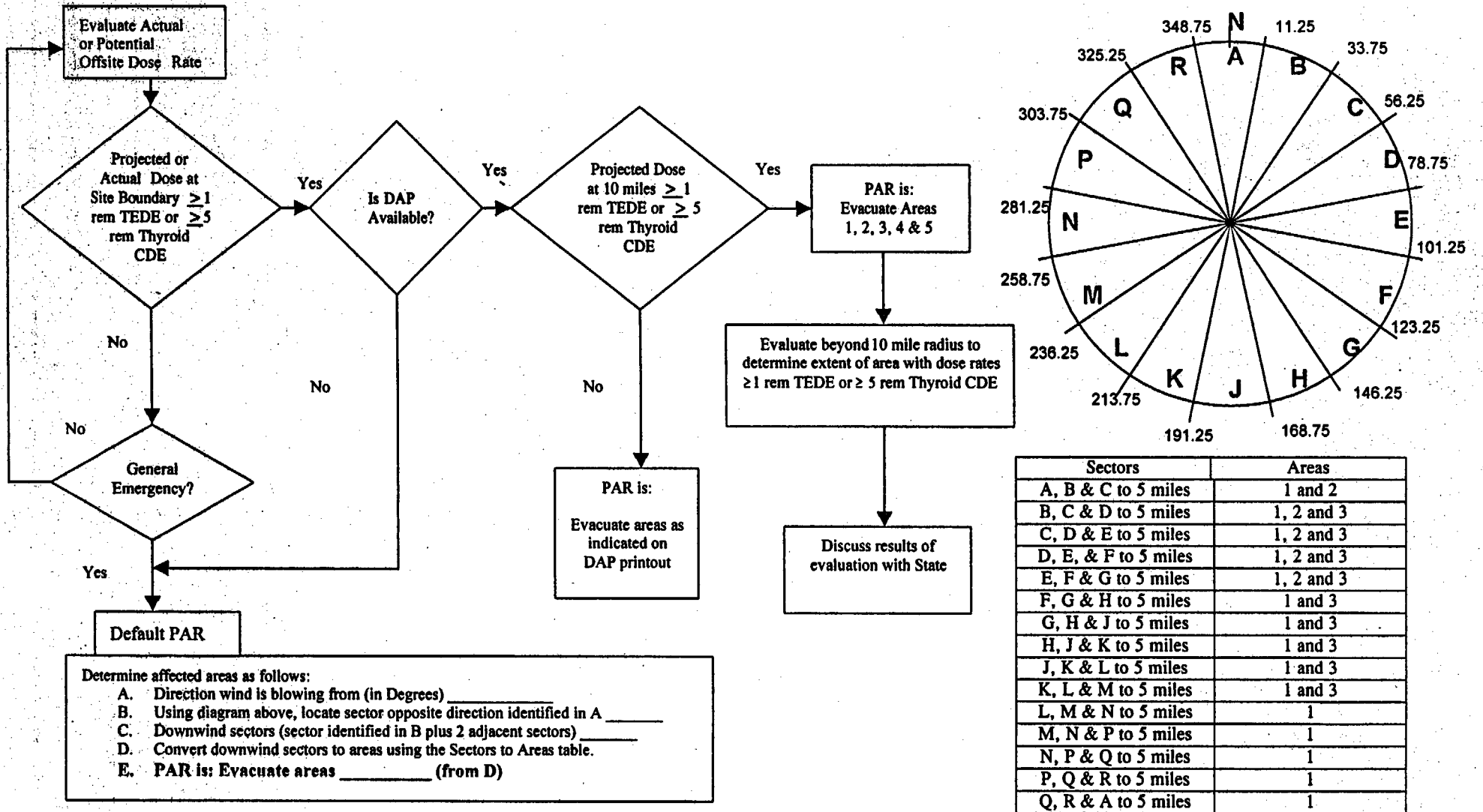
5.2.1 Source References:

a. Cook Nuclear Plant Emergency Plan

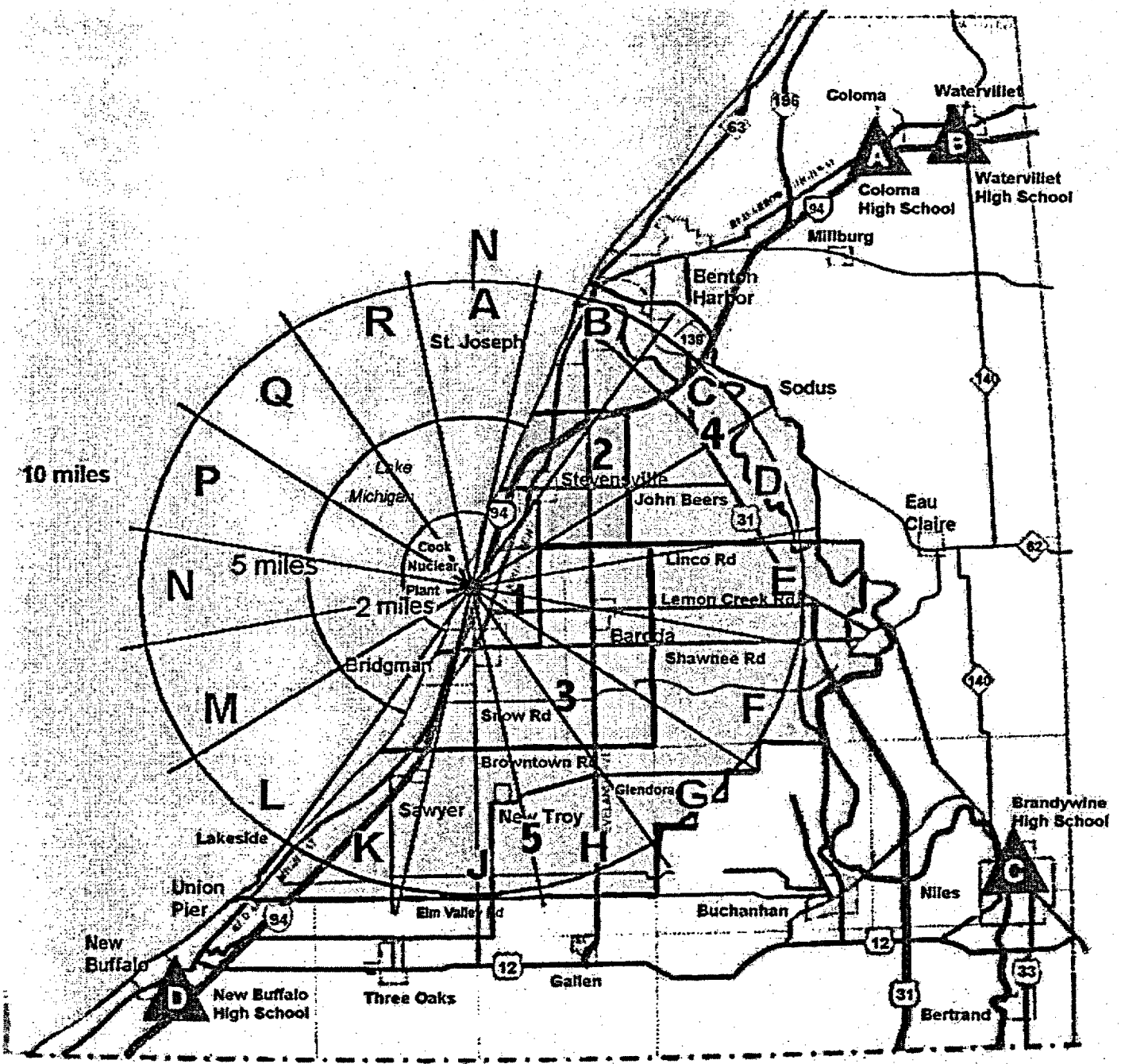
5.2.2 General References

a. Michigan Emergency Preparedness Plan

b. NRC Regulatory Issue Summary, RIS-2002-21



Sectors	Areas
A, B & C to 5 miles	1 and 2
B, C & D to 5 miles	1, 2 and 3
C, D & E to 5 miles	1, 2 and 3
D, E, & F to 5 miles	1, 2 and 3
E, F & G to 5 miles	1, 2 and 3
F, G & H to 5 miles	1 and 3
G, H & J to 5 miles	1 and 3
H, J & K to 5 miles	1 and 3
J, K & L to 5 miles	1 and 3
K, L & M to 5 miles	1 and 3
L, M & N to 5 miles	1
M, N & P to 5 miles	1
N, P & Q to 5 miles	1
P, Q & R to 5 miles	1
Q, R & A to 5 miles	1
R, A & B to 5 miles	1 and 2


10 miles
5 miles
2 miles
N
A
B
C
D
E
F
G
H
J
K
L
M
P
Q
R
1
2
3
4
5
Coloma
Watervliet
Coloma High School
Watervliet High School
Millburg
Benton Harbor
St. Joseph
Sodus
Stevensville
John Beers
Eau Claire
Cook Nuclear Plant
Linco Rd
Lemon Creek Rd
Bardda
Shawnee Rd
Bridgman
Snow Rd
Browntown Rd
Glendora
Sawyer
New Troy
Lakeside
Union Pier
New Buffalo
New Buffalo High School
Three Oaks
Galien
Elm Valley Rd
Buchanan
Niles
Brandywine High School
Bertrand
Lake Michigan
63
196
94
139
140
62
31
12
33

Unit No: _____ Date: _____ Time: _____

Data Taken By: _____ Data Reviewed By: _____

NOTE: When redundant indication exists, record most severe condition.

1.	Containment Temp.	_____ °F	5.	Intermediate Range	_____ AMPS
2.	Cont. H_2 Concentration	_____ %	6.	Containment Pressure	_____ PSIG
3.	RWST Level	_____ %	7.	Containment Sump Level	_____ %
4.	Source Range	_____ CPM	8.	Containment Level	_____ %
			9.	Containment High Range Radiation Level Upper/Lower	_____/_____ R/HR

9.	CTS Pumps	East ON / OFF			West ON / OFF		
10.	RHR Spray Flow	East _____ GPM			West _____ GPM		
11.	SI Flow	North _____ GPM			South _____ GPM		
12.	BIT Flow	LP1 _____ GPM	LP2 _____ GPM		LP3 _____ GPM	LP4 _____ GPM	
13.	Accum Pressure	LP1 _____ PSIG	LP2 _____ PSIG		LP3 _____ PSIG	LP4 _____ PSIG	
14.	RHR Injection Flow	East _____ GPM			West _____ GPM		
15.	RCP Status	LP1 ON / OFF	LP2 ON / OFF		LP3 ON / OFF	LP4 ON / OFF	

16.	RCS Pressure	_____ PSIG	22.	PRT Level	_____ %
17.	Charging Flow	_____ GPM	23.	PRT Pressure	_____ PSIG
18.	PZR Liquid Temp.	_____ °F	24.	PZR Cycling Htrs	ON / OFF
19.	PZR Steam Temp.	_____ °F	25.	PZR Backup Htrs	ON / OFF
20.	PZR Level	_____ %	26.	Letdown Flow	_____ GPM
21.	PRT Temp.	_____ °F	27.	Saturation Margin	_____ °F

NSSS LOOP PARAMETERS		Loop 1	Loop 2	Loop 3	Loop 4
28.	Wide Range T Hot	_____ °F	_____ °F	_____ °F	_____ °F
29.	Wide Range T Cold	_____ °F	_____ °F	_____ °F	_____ °F
30.	S / G Pressure	_____ PSIG	_____ PSIG	_____ PSIG	_____ PSIG
31.	S / G N. R. Level	_____ %	_____ %	_____ %	_____ %
32.	S / G W .R. Level	_____ %	_____ %	_____ %	_____ %
33.	Steam Flow (pph x 10^6)	_____	_____	_____	_____
34.	Feed Flow (pph x 10^6)	_____	_____	_____	_____
35.	Aux. Feed Flow (pph x 10^3)	_____	_____	_____	_____
36.	MSIV Status	OPEN / CLOSE	OPEN / CLOSE	OPEN / CLOSE	OPEN / CLOSE
37.	CST Level	_____ %	_____ Ft		
38.	Steam Dump	ATMOS / COND			

EQUIPMENT STATUS

		AVAILABLE / UNAVAILABLE			AVAILABLE / UNAVAILABLE
39.	East ESW	_____ / _____	49.	East CCP	_____ / _____
40.	West ESW	_____ / _____	50.	West CCP	_____ / _____
41.	East CCW	_____ / _____	51.	TDAFP	_____ / _____
42.	West CCW	_____ / _____	52.	EMDAFP	_____ / _____
43.	East CTS	_____ / _____	53.	WMDAFP	_____ / _____
44.	West CTS	_____ / _____	54.	AB Diesel	_____ / _____
45.	North SI	_____ / _____	55.	CD Diesel	_____ / _____
46.	South SI	_____ / _____	56.	Normal Res.	_____ / _____
47.	East RHR	_____ / _____	57.	12 EP	_____ / _____
48	West RHR	_____ / _____			

1. Emergency Classification

	Time Declared
_____ Unusual Event	_____
_____ Alert	_____
_____ Site Area Emergency	_____
_____ General Emergency	_____

2. Have notifications been completed?

a. Berrien County: yes / no / in progress Time: _____

b. Michigan: yes / no / in progress Time: _____

c. NRC: yes / no / in progress Time: _____

d. NGG Personnel: yes / no / in progress Time: _____

3. Protective Actions:

a. Local area evacuation yes / no Time: _____

b. Site evacuation yes / no Time: _____

c. Accountability yes / no Time: _____

d. Site closed to visitors yes / no Time: _____

e. Offsite protective action recommended:

- Evacuation: yes / no areas: _____ Time: _____
- Shelter: yes / no areas: _____ Time: _____

4. Plant Operational Status

a. Reactor trip: yes / no time: _____ Trip signal: _____

b. ESF Status: _____

_____

c. EOP Status: _____

_____

5. Plant Status

a. Chronology of Events

Time	Event
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

b. Current Plant Conditions

_____

_____

_____

_____

c. Potential for Plant Degradation

d. Mitigating Actions Taken or Underway

6. Plant Radiological Conditions

a. Inplant/Onsite Radiological Conditions

b. Potential for Offsite Release of Radioactivity

_____ Airborne _____ Water

_____

_____

_____

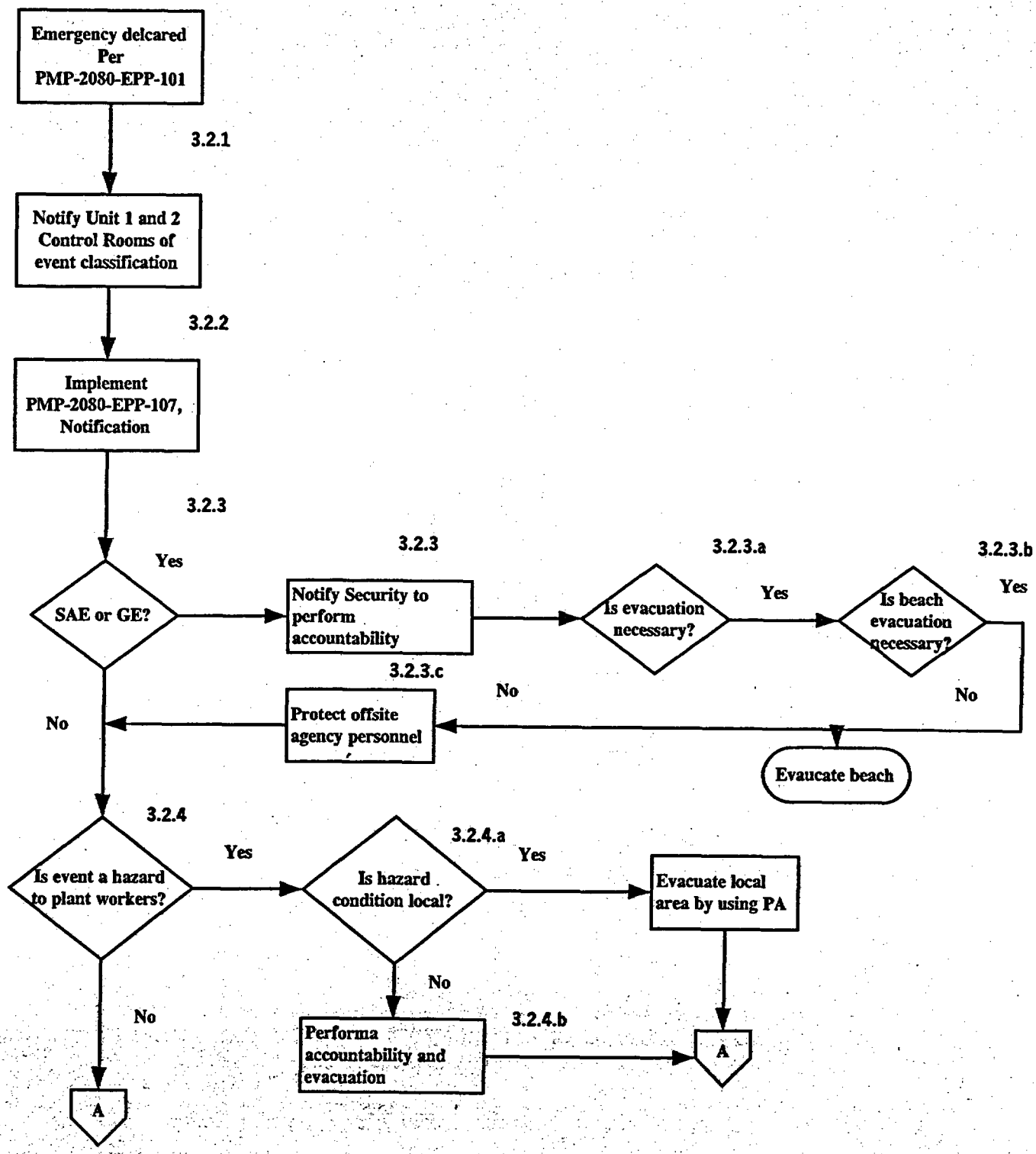
_____

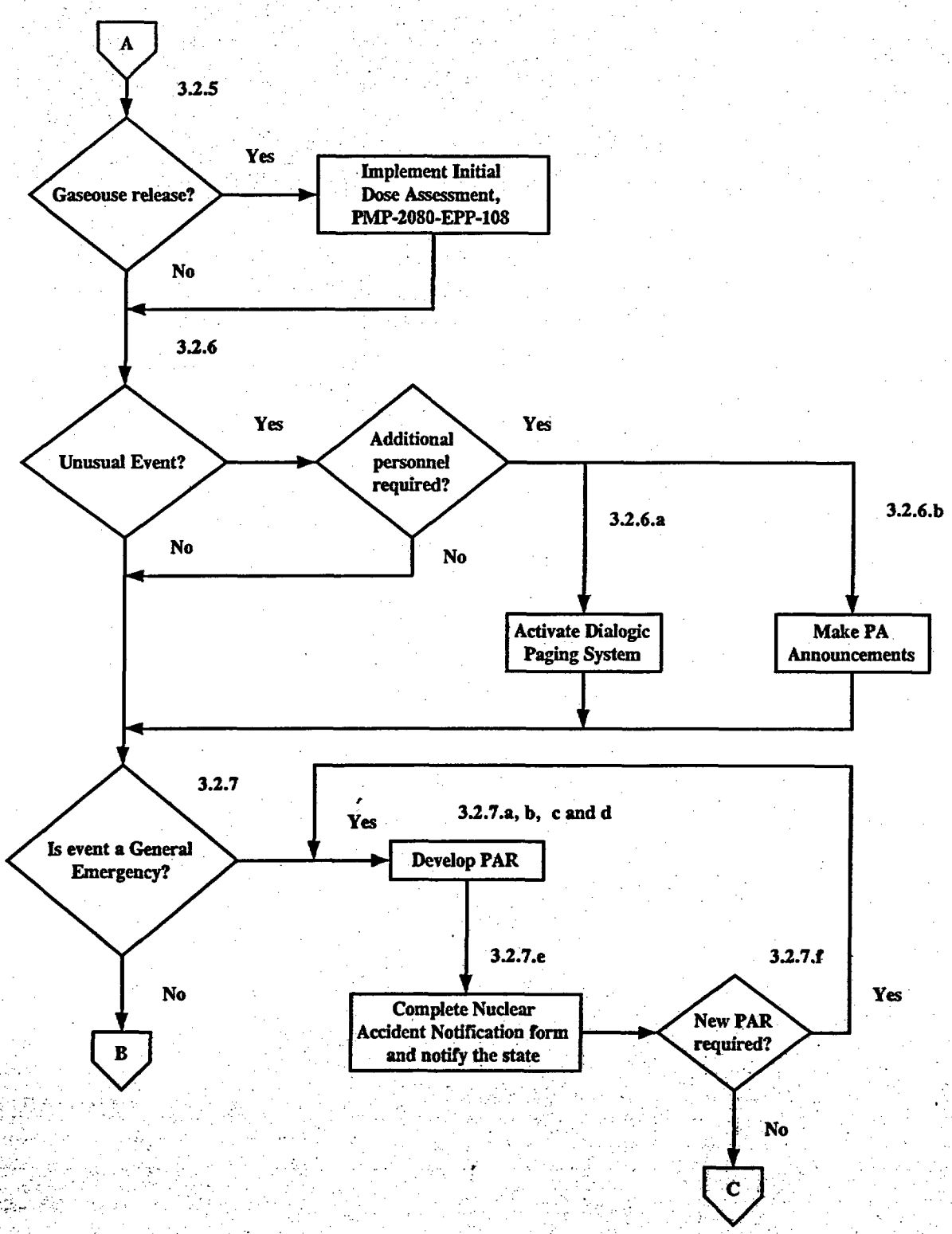
_____

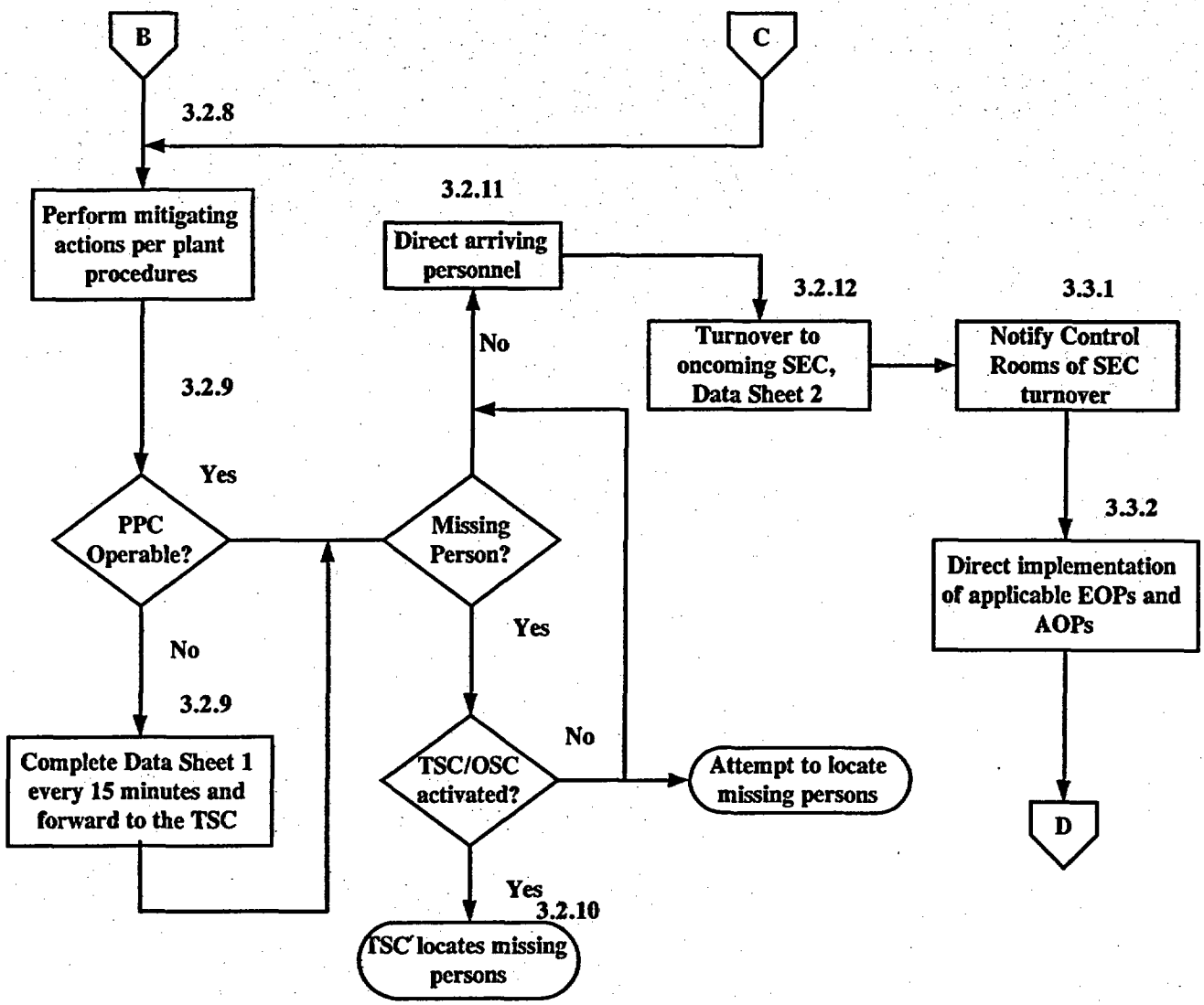
_____

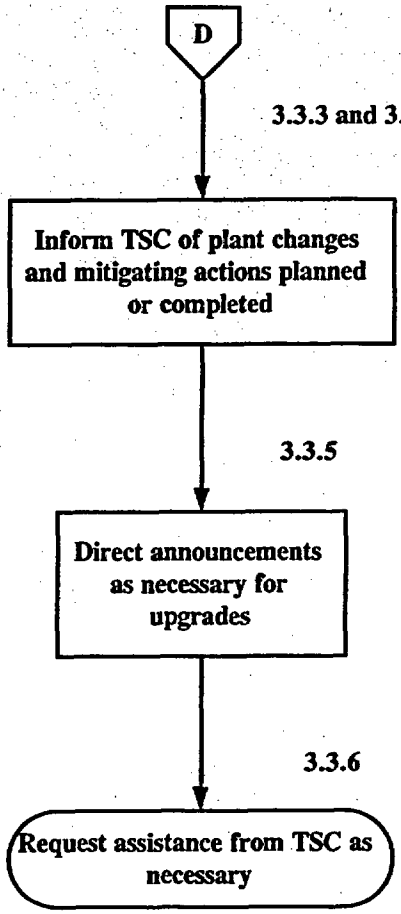
7. Injured or Contaminated Personnel:

Name	Employer	Status
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____


Emergency delcared Per PMP-2080-EPP-101
3.2.1
Notify Unit 1 and 2 Control Rooms of event classification
3.2.2
Implement PMP-2080-EPP-107, Notification
3.2.3
Yes
SAE or GE?
3.2.3
Notify Security to perform accountability
3.2.3.a
Is evacuation necessary?
Yes
3.2.3.b
Is beach evacuation necessary?
Yes
No
3.2.3.c
Protect offsite agency personnel
No
No
Evaucate beach
3.2.4
Is event a hazard to plant workers?
Yes
3.2.4.a
Is hazard condition local?
Yes
Evacuate local area by using PA
No
No
Performa accountability and evacuation
3.2.4.b
A
A


A
3.2.5
Gaseouse release?
Yes
Implement Initial Dose Assessment, PMP-2080-EPP-108
No
3.2.6
Unusual Event?
Yes
Additional personnel required?
Yes
No
No
3.2.6.a
3.2.6.b
Activate Dialogic Paging System
Make PA Announcements
3.2.7
Is event a General Emergency?
Yes
3.2.7.a, b, c and d
Develop PAR
3.2.7.e
3.2.7.f
No
Complete Nuclear Accident Notification form and notify the state
New PAR required?
Yes
No
B
C


B
C
3.2.8
Perform mitigating actions per plant procedures
3.2.9
Yes
PPC Operable?
No
3.2.9
Complete Data Sheet 1 every 15 minutes and forward to the TSC
3.2.11
Direct arriving personnel
No
Missing Person?
Yes
No
TSC/OSC activated?
Attempt to locate missing persons
Yes
3.2.10
TSC locates missing persons
3.2.12
Turnover to oncoming SEC, Data Sheet 2
3.3.1
Notify Control Rooms of SEC turnover
3.3.2
Direct implementation of applicable EOPs and AOPs
D


D
3.3.3 and 3.3.4
Inform TSC of plant changes and mitigating actions planned or completed
3.3.5
Direct announcements as necessary for upgrades
3.3.6
Request assistance from TSC as necessary

REVISION SUMMARY

Number: **PMP-2080-EPP-101** Revision: **4** Change: **0**

Title: **Emergency Classification**

Section or Step	Change/Reason For Change
Section 2	Change: Added new fuel vault and N-train battery rooms/chargers to list of vital areas. Added additional description of 4kVswitchgear room (D/G 4kV switchgear rooms) CR-02268025. Reason: Bring definition of vital area in line with the Security definition.
Step 3.1.1	Change: New step to describe actions needed if EAL has been exceeded for >15 minutes. Reason: To inform the user what to do in this situation, i.e., classify the event if the condition still exists, or do NOT classify but still make NRC notification. This is per the guidance of NUREG-1022 and PMP-7030-001-001, Prompt Notification.
Attachment 1 pg. 15 and 20 R-1 UE	Change: Rephrased "2X rad monitor high alarm setpoint" to "Rad monitor 2X high alarm setpoint." Reason: Clarification; ease of reading.
Attachment 1, pg. 10 and 11	Change: Added "RCS Integrity CSFST" to EAL 2.4, Potential Loss column; added "Heat Sink CSFST" to EAL 2.5, Potential Loss column; added "Containment CSDST" to EAL 3.4, Potential Loss column. Reason: For clarity and human factors; provides detail on which RED path is affected on CSFST.
Attachment 1	Change: Added Loss of Alarms to list of ECCs. Reason: Corrected omission.
Attachment 3	Change: Added a reference to NRC commitment #7991 to EAL basis for fuel clad barrier 1.3, Primary Coolant Activity. Reason: Comply with format.
Attachment 3	Change: Replaced the reference to the hot shutdown panel with 'outside the control room' in the note at the end of the basis for EAL H-3, Control Room Evacuation, for SAE. CR 03048023. Reason: Ability to shut down from more than one location.
Attachment 3	Change: Deleted reference to commitment 5572 in ECC H-5 basis for UE and Alert. Reason: Commitment is closed.

REVISION SUMMARY

Number: **PMP-2080-EPP-101** Revision: **4** Change: **0**

Title: **Emergency Classification**

Section or Step	Change/Reason For Change
Attachment 3, Termination/Recovery Criteria for N-1 to N-7 UE and Alert	Change: Replaced the reference to a specific event termination procedure with a general description of the event termination procedure in the basis for N-1 through N-7 UE and Alert. CR 02284029 Reason: Reduce the number of future procedure changes due to number changes.

Office Information For Form Tracking Only – Not Part of Form

This is a free-form as called out in PMP-2010-PRC-002, Procedure Correction, Change, and Review, Rev. 10a.

AEP: AMERICAN ELECTRIC POWER — AEP: America's Energy Partner	PMP-2080.EPP.101	Rev. 4	Page 1 of 112
Emergency Classification			
Reference		Effective Date: 9/18/03	
C. J. Graffenius Writer	S. M. Partin Owner	Site Protective Services Cognizant Organization	

TABLE OF CONTENTS

1 PURPOSE AND SCOPE

NOTE:	The operator aids located in the control rooms, simulator, Technical Support Center and Emergency Operations Facility are updated when changes are made to this procedure.

1.1 To ensure correct and timely classification of abnormal events into one of four emergency classification levels if appropriate. Attachments may be used as operator aids in a format different than the procedure provided the content remains the same.

2 DEFINITIONS AND ABBREVIATIONS

Term	Meaning
Alert	Events are in progress 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.
Control	Placing all local controls in position necessary for operation from remote panels and the shift supervisor has determined that the systems for controlling reactivity, RCS inventory, RCS temperature, and the heat sink functions have been established.
Critical Safety Function (CSF)	Subcriticality, core cooling, heat sink, pressure-temperature-stress (RCS integrity), containment, and RCS inventory as monitored in accordance with the Emergency Operating Procedures.
Critical Safety Function Status Tree (CSFST)	The method by which the level of challenge to each CSF is determined in accordance with the Emergency Operating Procedures.
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.
Emergency Condition Category (ECC)	A grouping of Initiation Conditions, recognizable to the Site Emergency Coordinator, applying to the same area of concern and that can logically lead to escalating the emergency class.
Emergency	These are taken from 10 CFR 50- Appendix E. They are in

Term	Meaning
Classification Level (ECL)	escalating order. (Notification of) Unusual Event (UE), Alert, Site Area Emergency (SAE), and General Emergency (GE).
Explosion	A rapid, violent, uncontained combustion or catastrophic failure of pressurized equipment that potentially imparts significant energy to nearby structures or equipment.
Fission Product Barrier	One of the three principal barriers to uncontrolled release of radionuclides, i.e., fuel clad, reactor coolant system (RCS), and the containment building (CNTMT).
General Emergency (GE)	Events are in progress 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.
Initiating Condition (IC)	One of a predetermined subset of nuclear power plant conditions where either the potential exists for a radiological emergency, or such an emergency has occurred.
Loss (of a fission product barrier)	Severe challenge to a fission product barrier sufficient to consider that barrier incapable of containing fission products.
Normal Charging Mode	The normal charging flow path through the volume control system including design and alternate flow paths, and flow to reactor coolant pump seals.
Potential Loss (of a fission product barrier)	Challenge to a fission product barrier sufficient to consider the barrier degraded in its ability to contain fission products.
Protected Area	The fenced area which requires a Cook security badge for unescorted access.
Recognition Category	A logical and convenient grouping of ECCs used to quickly eliminate non-applicable ICs from consideration during Emergency Classification.
Safe Shutdown Area	Selected areas within the Protected Area that may be occupied for the security or safe shutdown of the units. The safe shutdown areas are: • Control rooms • Central alarm station • Containment buildings in Modes 5 and 6 The following are Safe Shutdown areas, if a Control Room must be evacuated: • Diesel Generator rooms • 4 kV rooms • Vicinity of all Local Shutdown Stations

Term	Meaning
Safe Shutdown Equipment	Selected components deemed necessary to place and maintain a unit in Hot Shutdown with capability to establish and maintain Cold Shutdown as described in Safe-Shutdown Capability Assessment, Proposed Modifications and Evaluations (AEPSC), Rev. 1 1986. In brief, the safe shutdown equipment can be described as: • RCS makeup path from the Refueling Water Storage Tank (RWST) via the Centrifugal Charging Pumps (CCPs) and Boron Injection Tank (BIT) injection lines. • Secondary Heat Sink consisting of: – Condensate Storage Tank (CST) – all three Auxiliary Feed Water (AFW) pumps – Associated AFW valves – Steam Generators (SGs) – SG Main Steam Isolation Valves (MSIVs) – SG safeties and PORVs. • Component Cooling Water (CCW) system. • Essential Service Water (ESW) system including alternate supply to AFW. • Residual Heat Removal (RHR) system. • Diesel Generators and the emergency AC buses. • CRIDs and most CRID-powered instrumentation. • DC distribution system including batteries and battery chargers. • All Local Shutdown Stations. • Unit crossties for BIT flow, RCP seal injection, CSTs and AFW.
Site Area Emergency (SAE)	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 exposure levels except near the site boundary.
Toxic	Exposure to the worker in excess of limits specified in 29 CFR 1910.1000. in practice, this should be considered for concentrations which are capable of incapacitating the worker.
Transient	A condition (1) beyond the expected steady-state fluctuations in temperature, pressure, power level, or water level, (2) beyond the normal manipulations of the Control Room operating crew, and (3) that would be expected to require actuation of fast-acting automatic control or protection systems to bring the reactor to a new safe, steady-state condition.

Term	Meaning
Uncontrolled	A change that is not the result of a planned evolution.
Unisolable	A leak that cannot be isolated from the control room.
Unplanned	Any activity is unplanned if it is not being performed in accordance with the plan of the day, the outage schedule, the preventative maintenance schedule, a job order, or an approved procedure. In addition, the activity can be considered "unplanned" if resultant conditions exceed expected or authorized limits (e.g., a planned waste gas release should be considered "unplanned" if release conditions do not conform to values specified in the discharge permit).
Unusual Event (UE)	Unusual events are in progress 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 system occurs.
Valid	Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.
Vital Area	Selected areas within the Protected Area that contain equipment necessary for the security or safe shutdown of the units. The vital areas are: • Control rooms • Control room and auxiliary cable vaults • Containment buildings • Diesel Generator rooms • Auxiliary feedwater pump rooms • Essential service water pump rooms and switchgear • Spent fuel pool area and new fuel vault • 4 kV switchgear rooms (D/G 4kV switchgear rooms) • UPS battery and inverter rooms • Central alarm station • N-Train battery rooms and N-Train battery chargers

3 DETAILS

3.1 Using Attachment 1, determine which Recognition Category applies to the abnormal conditions.

NOTE:	It is likely that an event will have to be classified using more than one Recognition Category.

3.1.1 Classify the event within 15 minutes of when the classification criteria (EAL threshold value) exists.

a. **IF** the classification criteria is NOT recognized within 15 minutes AND the condition still exists, **THEN** classify the event.

b. **IF** the classification criteria is NOT recognized with 15 minutes AND the condition no longer exists, **THEN** do NOT classify the event. Make notifications in accordance with PMP-7030-001-001, Prompt NRC Notification.

3.1.2 Review ALL appropriate Initiating Conditions within the selected Recognition Categories starting in the left-most applicable column.

3.1.3 Determine whether the threshold values for Emergency Classification have been exceeded.

a. Attachment 2 may be needed in making a determination of emergency classification under ECC S-6: Loss of Alarms or Indications.

b. The appropriate basis pages (Attachment 3) may also be used if clarification is needed in making proper determination of emergency classification in any of the Recognition Categories.

3.1.4 The Initiating Conditions in Attachment 1 that are marked with an Σ do NOT have the entire EAL description listed in Attachment 1. In order to properly classify an event, the basis pages in Attachment 3 must be reviewed to insure the full description of the EAL is considered when making the classification. The page numbers listed in the Initiating Condition boxes in Attachment 1 refer to the appropriate section of the basis pages, Attachment 3.

3.1.5 If the threshold value has been exceeded, the higher Emergency Classification Levels within the associated ECC must be checked to ensure the highest ECL has been determined.

3.2 The Emergency Classification Level is the highest ECL determined in step 3.1 as appropriate – OR – any higher Emergency Classification Level as determined by Site Emergency Coordinator (SEC) judgement as described in Attachment 1 and Attachment 3.

3.3 The SEC shall evaluate plant conditions at least every 15 minutes to determine if conditions have deteriorated to the point that the Emergency Classification Level should be upgraded to a higher level until the event is terminated. The need to upgrade to a higher level could be indicated by:

- Critical Safety Function Status Trees
- Additional radiation monitor alarms
- Reports from plant personnel

4 FINAL CONDITIONS

4.1 Event Classified

5 REFERENCES

5.1 Use References:

5.1.1 None

5.2 Writing References:

5.2.1 Source References:

a. NUMARC/NESP-007, Rev. 2, "Methodology for Development of Emergency Action Levels"

b. NUMARC/NESP-007, Rev. 4, "Methodology for Development of Emergency Action Levels"

c. Regulatory Analysis: "Revision of Regulatory Guide 1.101 to Accept the Guidance in NUMARC/NESP-007, Rev. 2 as an Alternative Methodology for the Development of Emergency Action Levels"

d. NUMARC letter: "Methodology for the Development of Emergency Action Levels," NUMARC/NESP-007, Revision 2, Questions and Answers, June 1993 from Thomas E. Tipton, to NUMARC Administrative Points of Contact

5.2.2 General References

a. Donald C. Cook Nuclear Plant Emergency Plan

FISSION PRODUCT BARRIER MATRIX – Mode 1- 4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss of TWO Fission Product Barriers AND Potential Loss of Third Barrier.	Any TWO of the Following: 1. Loss or Potential Loss of Fuel Clad. 2. Loss or Potential Loss of RCS. 3. Loss of Containment Barrier.	Loss or Potential Loss of Either Fuel Clad or RCS Barrier.	Loss or Potential Loss of Containment Barrier.

1. FUEL CLAD BARRIER	LOSS (L)	POTENTIAL LOSS (P)
.1 Core Cooling CSFST	Core Cooling CSFST - RED	Core Exit Thermocouples > 752° **OR** RVLIS Level < 46% (Narrow Range) **OR** Heat Sink CSFST – RED
.2 Containment Radiation	> 200 R/hr.	None
.3 Primary Coolant Activity	>300 uCi/cc I-131 dose equivalent **OR** Core Damage > 5.0% clad failure	None

2. RCS BARRIER	LOSS (L)	POTENTIAL LOSS (P)
.1 RCS Leak Rate (unisolable)	> available makeup capacity as indicated by complete loss of RCS subcooling.	> capacity of one centrifugal charging pump in normal charging line up.
.2 Steam Generator Leakage	Entry into OHP 4023.E-3, SGTR **AND** Non-isolable secondary line break results in a Prolonged (>30 minutes) radioactive release to the environment from the affected SG. [1]	Ruptured SG with leak > capacity of one charging pump in normal charging line up.
.3 Containment Radiation	> 10 R/hr	None
.4 RCS Integrity CSFST	None	RCS Integrity CSFST - RED
.5 Heat Sink CSFST	None	Heat Sink CSFST - RED

[1] Does not include a release through the condenser air ejectors or the gland steam condenser vents for the purpose of declaration of a SITE AREA EMERGENCY.

FISSION PRODUCT BARRIER MATRIX – Mode 1 -4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss of TWO Fission Product Barriers AND Potential Loss of Third Barrier.	Any TWO of the Following: 1. Loss or Potential Loss of Fuel Clad. 2. Loss or Potential Loss of RCS. 3. Loss of Containment Barrier.	Loss or Potential Loss of Either Fuel Clad or RCS Barrier.	Loss or Potential Loss of Containment Barrier.

3. CONTAINMENT BARRIER	LOSS (L)	POTENTIAL LOSS (P)
.1 Containment Radiation	None	>1000 R/hr. **OR** Core damage > 20% clad failure.
.2 Containment Integrity	Unisolable breach of containment. **OR** Rapid unexplained containment pressure or sump level drop following pressure rise caused by a LOCA. **OR** Containment pressure/sump level NOT performing as expected for conditions. **OR** Entry into ECA-1.2, LOCA Outside Containment.	None
.3 SG Secondary Side Release	1a. Primary to secondary leak rate > Tech. Spec. limit. (p34) **AND** b. Secondary line break OUTSIDE Containment results in release (>30 min.) to the environment. **OR** 2. Release of secondary coolant from the affected SG to the environment with alert alarm on any SG PORV rad monitor.[1] Σ	None
.4 Containment CSFST	None	Containment CSFST - RED
.5 Containment Hydrogen	None	>4.0% **OR** Containment Hydrogen >0.5% AND any Hydrogen Control equipment inoperable.
.6 Containment Pressure Control	None	BOTH CTS trains OR BOTH containment air recirc fans inoperable OR fail to auto start on their containment pressure setpoint OR containment pressure > 12 psig.
.7 Core Exit Thermocouples	None	Core Cooling CSFST - RED **AND** Restoration procedures not effective within 15 minutes.

[1] Does not include a release through the condenser air ejectors or the gland steam condenser vents for the purpose of declaration of a SITE AREA EMERGENCY.

SEC Judgement: SEC Judgement may be used to determine that a Fission Product Barrier is LOST or POTENTIALLY LOST based on factors other than those listed in Attachment 1. Examples may include, but are not limited to, events such as loose parts in the core or loss of all ECCS pumps.

Once a barrier has been lost, the symptoms may disappear. SEC judgement may be used to determine whether to carry the barrier as lost. If the ability to monitor a barrier is lost or degraded, SEC judgement must be used to determine barrier status.

If escalation to Site Area Emergency or General Emergency is expected within 2 hours based on current trends, then IMMINENT barrier degradation should be assumed and the SEC should make the appropriate classification.

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT

SEC Judgement – All Modes

H-1 SEC Judgement (p.46) Conditions indicate actual or imminent substantial core damage with potential loss of containment or the potential exists for an uncontrolled radioactive release that may exceed EPA limits at the site boundary.	**H-1 SEC Judgement (p.45)** Conditions indicate likely or actual major failures of plant functions needed to protect the public.	**H-1 SEC Judgement (p.44)** Conditions indicate that plant safety systems may be degraded and additional personnel are needed for additional monitoring.	**H-1 SEC Judgement (p.42)** Conditions indicate a potential degradation of the level of safety of the plant.

Σ **EAL's in these tables are NOT complete. Refer to referenced basis page (Attachment 3) for complete description.**

INITIATING CONDITIONS – Mode 1 - 4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
HAZARDS AND OTHER CONDITIONS			
H-2 Security (p.50) Security Event resulting in loss of ability to reach and maintain Mode 5. 1.Loss of physical control of Control Room **OR** 2.Loss of physical control of remote SD capability.	**H-2 Security (p.49)** Security event in a Vital Area. 1.Intrusion by hostile force. **OR** 2.Loss of control of Vital Area (NOT Control Room). **OR** 3.Confirmed bomb in Vital Area.	**H-2 Security (p.48)** Security Event in the Protected Area. 1.Intrusion by hostile force. **OR** 2.Civil disturbance within Protected Area.	**H-2 Security (p.47)** Security Event that potentially degrades level of plant safety. 1.Bomb in Protected Area/outside vital area. **OR** 2.Credible bomb threat. **OR** 3.Credible attack threat. **OR** 4.Hostage/extortion potentially affecting plant operations.
	H-3 CR Evacuation (p.52) Control Room evacuated AND control not established in 15 minutes. Σ	**H-3 CR Evacuation (p.51)** Control Room evacuation initiated.	
		H-4 Fire (p.55) Fire OR explosion affecting plant operations. Σ	**H-4 Fire (p.54)** Fire in Protected Area NOT extinguished within 15 minutes of detection.
		H-5 Toxic Gas (p.58) Toxic OR flammable gas release that threatens lives OR affects ability to achieve and maintain Mode 5. Σ	**H-5 Toxic Gas (p.56)** Toxic OR flammable gas release affecting plant operation. Σ

INITIATING CONDITIONS – Mode 1- 4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
NATURAL/DESTRUCTIVE PHENOMENA			
		N-1 Seismic (p.62) Seismic event indicated by: 1.Seismic instrument activated **OR** 2.Ground motion detected by Control Room crew **AND** 1.Visble major damage in vital area. **OR** 2.Plant Trip. Σ	**N-1 Seismic (p.60)** Seismic event indicated by: 1.Seismic instrument activated **OR** 2.Ground motion detected by Control Room crew. Σ
		N-2 Tornado/wind (p.62) 1.Tornado strike in Vital Area **OR** 2.>90 mph wind for >15 minutes.	**N-2 Tornado/wind (p.60)** 1.Tornado strike within Protected Area.
		N-3 Structural (p.62) Visible damage to a structure containing systems required to achieve and maintain Mode 5.	
		N-4 Vehicle Collision (p.62) Vehicle collision affecting Vital Area.	**N-4 Vehicle Collision (p.60)** Vehicle collision affecting systems or strucures within the Protected Area.
		N-5 MT Failure (p.62) Main turbine generated missile penetrates Vital Area.	**N-5 MT Failure(p.60)** Main turbine rotating component failure causes visible damage or damages generator seals.
		N-6 Flooding (p.62) Flooding in Vital Area affects safety related equipment.	
			N-7 Explosion (p.60) Unanticipated explosion within Protected Area causes visible damage to permanent structures or equipment.

INITIATING CONDITIONS – Mode 1 - 4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
ABNORMAL RADIATION LEVELS/EFFLUENTS			
R-1 Effluent release (p.70) Site boundary dose > 1 REM TEDE or 5 REM CDE to thyroid based on: 1.Survey results **OR** 2.Dose assessment **OR** 3.Effluent monitor readings >15 minutes Σ	**R-1 Effluent release (p.68)** Site boundary dose > 100 mrem TEDE or 500 mrem CDE to thyroid based on: 1.Survey results **OR** 2.Dose assessment **OR** 3.Effluent monitor readings >15 minutes. Σ	**R-1 Effluent release (p.66)** Unplanned Rad release >200X ODCM limits for >15 min. based on: 1.200X rad monitor high alarm setpoint. **OR** 2.Gas or liquid sample results. Σ	**R-1 Effluent release (p.64)** Unplanned Rad release >2X ODCM limits for > 60 minutes based on: 1.Rad monitor 2X high alarm setpoint. **OR** 2.Gas or liquid sample results. Σ
		R-2 Plant Rad level (p.73) Rad levels that impede plant operations based on: 1.> 15 mR/hr in Control Rm(s) /CAS **OR** 2.>100 mR/hr at remote S/D areas. Σ	**R-2 Plant Rad level(p.72)** Unexpected reading on Area Monitor 1000X the 24 hr average.
		R-3 Loss of level (p.77) Major damage to irradiated fuel or loss of level that has or will uncover fuel outside of the reactor vessel based on: 1.Visual observation of levels. **OR** 2.Rad monitor alarms **OR** 3.Level < 632'4" SFP or Transfer Canal. Σ	**R-3 Loss of level (p.75)** Uncontrolled lowering in refueling cavity, SFP or Transfer Canal indicated by: 1.Inability to maintain > 643'4" in SFP or Transfer Canal with irradiated fuel present **OR** 2.Inability to maintain > 643'4" in the refueling cavity with irradiated fuel in containment.

INITIATING CONDITIONS – Mode 1 -4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
SYSTEM MALFUNCTIONS			
S-1 RPS failure (p.81) 1.Auto and manual Reactor Trip fails from Control Rm AND Subcriticality and Core Cooling CSFSTs are RED **OR** 2.Subcriticality and Heat Sink CSFSTs are RED.	**S-1 RPS failure (p.80)** Auto and manual Reactor Trip fails from Control room.	**S-1 RPS failure (p.79)** Auto Reactor Trip fails AND manual trip successful from Control Room.	
S-2 Loss of AC (p.86) 1.Prolonged loss of all AC (A and D -T buses) AND Core Cooling CSFST - ORANGE. **OR** 2.Loss of all AC (A and D – T buses) expected to last for > 4 hrs.	**S-2 Loss of AC (p.85)** Loss of all AC (A and D – T buses) for >15 minutes.	**S-2 Loss of AC (p.84)** AC power supply to T buses reduced to a single source for > 15 minutes. Σ	**S-2 Loss of AC (p.83)** Loss of ALL OFF-SITE power (Auxiliary, Reserve and 69kv Transformers) to the T Buses for > 15 minutes. Σ
	S-3 Loss of DC power (p.88) Loss of ALL vital DC buses AB AND CD for > 15 minutes (bus volts ≤ 220v)		
	S-5 Loss of Hot SD sys (p.89) Loss of ability to achieve or maintain hot shutdown based on entry into: 1.OHP 4023.FR-H.1, Response to Loss of Secondary Heat Sink **OR** 2.OHP 4023.FR-C.1, Response to Inadequate Core Cooling.		

INITIATING CONDITIONS – Mode 1 -4

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
SYSTEM MALFUNCTIONS			
	S-6 Loss of Alarms (p.95) Loss of ability to monitor alarms during a transient indicated by: 1.Loss of Safety System annunciator panel(s) for > 15 minutes. **AND** 2.Loss of Attachment 2 Critical Parameters for > 15 minutes. **AND** 3.Compensatory indications not available (PPC, SPDS). Σ	**S-6 Loss of Alarms (p.92)** Unplanned loss of most or all Safety System annunciators or Attachment 2 indicators for >15 minutes with transient in progress or compensatory indicators unavailable and additional monitoring is required. Σ	**S-6 Loss of Alarms (p.90)** 1.Unplanned loss of Safety System annunciators or indicators or Attachment 2 parameters for > 15 minutes. **AND** 2.Additional monitoring required. **AND** 3.Compensatory indications for lost annunciators are available. Σ
			S-7 Degraded Clad (p.97) 1.RCS activity > 1.0 uCI/gram I-131 dose equivalent for > 48 hrs. **OR** 2.RCS activity > 100/E uCi/gram.
			S-8 RCS Leakage (p.98) RCS leakage exceeds 10 gpm pressure boundary leakage, SG tube leakage or unidentified leakage OR > 25 gpm identified leakage.
			S-9 Tech Spec (p.99) Unit not in required mode within LCO time limits.
			S-10 Loss of Comm. (p.100) Unplanned loss of all on or off-site communications Σ

INTIATING CONDITIONS – Mode 5 & 6 and Defueled

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
HAZARDS AND OTHER CONDITIONS			
H-2 Security (p.50) Security Event resulting in loss of ability to reach/ maintain Mode 5. 1. Loss of physical control of Control Room **OR** 2. Loss of physical control of remote SD capability.	**H-2 Security (p.49)** Security event in a Vital Area. 1. Intrusion by hostile force. **OR** 2. Loss of control of Vital Area (NOT Control Room). **OR** 3. Confirmed bomb in Vital Area.	**H-2 Security (p.48)** Security Event in the Protected Area. 1. Intrusion by hostile force. **OR** 2. Civil disturbance within Protected Area.	**H-2 Security (p.47)** Security Event that potentially degrades level of plant safety. 1. Bomb in Protected Area. **OR** 2. Credible bomb threat. **OR** 3. Credible attack threat. **OR** 4. Hostage/extortion potentially affecting plant operations.
	H-3 CR Evacuation (p.52) Control Room evacuated AND control not established within 15 minutes. Σ	**H-3 CR Evacuation (p.51)** Control Room evacuation initiated.	
		H-4 Fire (p.55) Fire OR explosion affecting plant operations. Σ	**H-4 Fire (p.54)** Fire in Protected Area NOT extinguished within 15 minutes.
		H-5 Toxic Gas (p.58) Toxic OR flammable gas release that threatens lives OR affects ability to achieve and maintain Mode 5. Σ	**H-5 Toxic Gas (p.56)** Toxic OR flammable gas release affecting plant operation. Σ

INITIATING CONDITIONS – Mode 5 & 6 and Defueled

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT

NATURAL/DESTRUCTIVE PHENOMENA

		N-1 Seismic(p.62) Seismic event indicated by: 1.Seismic instrument activated. **OR** 2.Ground motion detected by Control Room crew. **AND** a.Visble major damage in vital area. **OR** b.Plant Trip. Σ	**N-1 Seismic (p.60)** Seismic event indicated by: 1.Seismic instrument activated. **OR** 2.Ground motion detected by Control Room crew. Σ
		N-2 Tornado/wind (p.62) 1.Tornado strike in Vital Area **OR** 2.>90 mph wind for >15 minutes.	**N-2 Tornado/wind(p.60)** 1.Tornado strike in Protected Area.
		N-3 Structural (p.62) Visible damage to a structure containing systems required to achieve and maintain Mode 5.	
		N-4 Vehicle Collision (p.62) Vehicle collision affecting Vital Area.	**N-4 Vehicle Collision(p.60)** Vehicle collision affects systems or structures in the Protected Area.
		N-5 MT Failure (p.62) Main turbine generated missile penetrates Vital Area.	**N-5 MT Failure (p.60)** Main turbine rotating component failure causes visible damage or damages generator seals.
		N-6 Flooding (p.62) Flooding in Vital Area affects safety related equip.	
			N-7 Explosion (p.60) Unanticipated explosion within Protected Area causes visible damage to permanent structures or equipment.

INITIATING CONDITIONS – Mode 5 & 6 and Defueled

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
ABNORMAL RADIATION LEVELS/EFFLUENTS			
R-1 Effluent release (p.70) Site boundary dose > 1 REM TEDE or 5 REM CDE to thyroid based on: 1.Survey results **OR** 2.Dose assessment **OR** 3.Effluent monitor readings >15 minutes. Σ	**R-1 Effluent release (p.68)** Site boundary dose > 100 mrem TEDE or 500 mrem CDE to thyroid based on: 1.Survey results **OR** 2.Dose assessment **OR** 3.Effluent monitor readings >15 minutes. Σ	**R-1 Effluent release (p.66)** Unplanned Rad release >200X ODCM limits for >15 minutes based on: 1.200X rad monitor high alarm setpoint. **OR** 2.Gas or liquid sample results. Σ	**R-1 Effluent release (p.64)** Unplanned Rad release >2X ODCM limits for > 60 minutes based on: 1. Rad monitor 2X high alarm setpoint. **OR** 2.Gas or liquid sample results. Σ
		R-2 Plant Rad level (p.73) Rad levels that impede plant operations based on: 1. > 15 mR/hr in Control Room(s) or CAS **OR** 2. >100 mR/hr at remote S/D areas. Σ	**R-2 Plant Rad level (p.72)** Unexpected reading on Area Monitor 1000X the 24 hr average.
		R-3 Loss of level (p.77) Major damage to irradiated fuel or loss of level that has or will uncover fuel outside of the reactor vessel based on: 1.Visual observation of levels. **OR** 2.Rad monitor alarms **OR** 3.Level < 632'4" SFP or Transfer Canal. Σ	**R-3 Loss of level (p.75)** Uncontrolled lowering in refueling cavity, SFP or Transfer Canal indicated by: 1.Inability to maintain > 643'4" in SFP or Transfer Canal with irradiated fuel present. **OR** 2.Inability to maintain > 643'4" in the refueling cavity with irradiated fuel in containment.

INITIATING CONDITIONS – Mode 5 & 6 and Defueled

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTIONS

		C-3 Loss of AC(p.103) Loss of ALL AC power to A and D T-buses for > 15 minutes. Mode 5,6 and defueled	**C-3 Loss of AC (p.101)** Loss of ALL OFF-SITE power (Auxiliary, Reserve and 69kv transformers) to the T buses for > 15 minutes. Mode 5,6
	C-4 Loss of Water Level in the Reactor Vessel that has or will Uncover Fuel in the Reactor Vessel (p.107) 1.Loss of shutdown cooling as evidenced by entry into OHP 4022.017.001, "Loss of RHR Cooling" **AND** 2.Core uncovery as indicated by: a. RVLIS NR <46% - 0 RCPs **OR** b. Reactor Vessel Water Level <614 feet Mode 5,6	**C-4 Inability to Maintain a Unit in Cold Shutdown (p.105)** 1.Loss of shutdown cooling as evidenced by entry into OHP 4022.017.001, "Loss of RHR Cooling" **AND** 2.Temperature rise that either: a. Exceeds T/S cold shutdown limit of 200°F . **OR** b. Results in an UNCONTROLLED RCS temperature rise approaching the cold shutdown T/S limit of 200°F Mode 5,6	
			C-5 Degraded Clad (p.108) 1.RCS activity >1.0μCi/grams I-131 dose equivalent for > 48 hrs. **OR** 2.RCS activity > 100/E uCi/gram. Mode 5,6
			C-6 Loss of Comm. (p.109) Unplanned loss of all on or off-site communications. Mode 5,6
			C-7 Loss of DC power (p.111) Unplanned loss of ALL vital DC buses AB AND CD for >15 minutes (bus volts ≤220v) Modes 5,6

PARAMETERS	INSTRUMENTATION
Neutron Flux – (Gammametrics)	NRI-21, 23
Reactor Coolant Pressure (Wide Range)	NPS-121, 122
Reactor Coolant Outlet Temperature THOT (Wide Range)	NTR-110, 130
Reactor Coolant Outlet Temperature TCOLD (Wide Range)	NTR-210, 230
Incore Thermocouples (Core Exit Thermocouples)	T/S 1-65
Reactor Coolant System Subcooling Margin Monitor	SUBCOOL MAR
Reactor Coolant Inventory System (Reactor Vessel Level Indication)	NLI-110, 111, 120, 121, 130, 131
Pressurizer Water Level	NLP-151, 152, 153
Charging Pump Flow	IFI-51, 52, 53, 54
Charging Pump Breaker Status	1E, 1W, 2E, 2W Control Room Position Indicating Lights for Breakers
Safety Injection Pump Breaker Status	1N, 1S, 2N, 2S Control Room Position Indication Lights for Breakers
Safety Injection Flow	IFI-260 – 266
Refueling Water Storage Tank Water Level	ILS-950, 951
Containment Water Level	NLA-320, NLT-321
Containment Pressure (Wide Range)	PPA-310, 312
Containment Pressure (Narrow Range)	PPP-300, 301, 302, 303
Containment Hydrogen Monitoring	ESR-1 thru 9
Containment Isolation Valve Position Monitoring	Control Room Position Indicating Lights
Containment Area Radiation Monitor (High Range)	Unit 1 VRA-1310, 1410, Unit 2-2310, 2410
Steam Line Pressure	MPP-210, 211, 212, 220, 221, 222, 230, 231, 232, 240, 241, 242
Steam Generator Water Level (Wide Range)	BLI-110, 120, 130, 140
Steam Generator Water Level (Narrow Range)	BLP-110, 111, 112, 120, 121, 122, 130, 131, 132, 140, 141, 142
Auxiliary Feedwater Flow Rate	FFI-210, 220, 230, 240
Condensate Storage Tank Level	CLI-113, 114, CLR-110, 111

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

FUEL CLAD BARRIER 1.1: CRITICAL SAFETY FUNCTION STATUS TREES

MODE APPLICABILITY

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Core Cooling Critical Safety Function Status Tree – RED

POTENTIAL LOSS:

Core Exit Thermocouples > 752°

-OR-

RVLIS level < 46% (Narrow Range)

-OR-

Heat Sink Critical Safety Function Status Tree – RED.

BASIS (References)

LOSS – The core cooling critical safety function RED path indicates significant superheating and core uncovery and is considered to indicate a loss of the fuel clad barrier. One of the indicators of the core cooling critical safety function red is when the core exit thermocouple temperature is equal to or greater than 1200 degrees Fahrenheit.

POTENTIAL LOSS – Core exit thermocouple temperature equal to or greater than 752 degrees Fahrenheit or RVLIS level <46% (Narrow Range) corresponds to a loss of subcooling and is indicative of a potential loss of the fuel clad barrier. The Heat Sink Critical Safety Function – RED path indicates that the heat sink is under extreme challenge and is indicative of a potential loss of the fuel clad barrier.

DEVIATION FROM NUMARC: None

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

FUEL CLAD BARRIER 1.2 - CONTAINMENT RADIATION

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Containment area radiation greater than 200 R/hr.

POTENTIAL LOSS:

None

BASIS (References)

LOSS – The 200 R/hr value is based on a reasonable assessment of a single number representing the expected monitor reading on the upper containment area radiation monitors VRA 1310/1410 (Unit 1) or VRA 2310/2410 (Unit 2). This represents the expected reading for loss of coolant accidents with fuel failure in the range between 2 and 5% (depending on core inventory which will vary with the time after reactor shutdown).

The 200 R/hr value was determined on the basis of the D. C. Cook Core Damage Assessment Methodology, taking into account that the radiation levels resulting from the release of noble gases from failed fuel will vary as a function of core shutdown time. Typically, these curves show that for noble gases the containment radiation monitors will read 1325 R/hr after 10 hours of core shutdown, and assuming 100% fuel cladding damage based on noble gas release only. This would correspond to 200 R/hour for 5% cladding damage and noble gas release 90 minutes after the reactor is shut down. The reading is based on noble gas reading alone, and does not include the instantaneous release and dispersal of the reactor coolant iodine inventory associated with a concentration of 300 microcuries per gram 1-131 equivalent into the containment atmosphere as suggested by Revision 2 of NUREG/NESP 007. The addition of the iodine activity from the reactor coolant would result in higher monitor readings, thus making the 200 R/hr value a conservative threshold value.

This assumption is appropriate since it is consistent with the current dose assessment methodology of the Donald C. Cook Nuclear Plant, an ice condenser containment plant.

POTENTIAL LOSS – None

DEVIATION FROM NUMARC:

Calculation of radiation monitor reading is based on dispersal of noble gases only (iodine inventory not included) from the reactor coolant.

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

FUEL CLAD BARRIER 1.3: PRIMARY COOLANT ACTIVITY

MODE APPLICABILITY

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Reactor Coolant System activity level greater than 300 microcuries per cc 1-131 dose equivalent.

-OR-

Assessment of core damage greater than 5% clad failure.
(NRC commitment #7991)

POTENTIAL LOSS: None

BASIS (References)

LOSS – 300 microcuires per cc 1-131 dose equivalent corresponds to a value which is cited in Revision 2 of NUMARC/NESP 007 as being well above that expected for iodine spikes and corresponding to 2 to 5% fuel clad damage. This amount of cladding damage indicates significant clad heating and thus the Fuel Clad Barrier is considered lost. This value will be determined from Cook Nuclear Plant procedure PMP 2081 EPP.105, "Core Damage Assessment".

Assessment may be performed by authorized shift personnel prior to TSC activation or the TSC after TSC has been activated.

POTENTIAL LOSS – None

DEVIATION FROM NUMARC: None

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

RCS BARRIER 2.1: RCS LEAK RATE

MODE APPLICABILITY

Modes 1, 2, 3, 4

EAL THRESHOLD VALUES:

LOSS:

UNISOLABLE RCS leak rate greater than available makeup capacity as indicated by a complete loss of RCS subcooling.

POTENTIAL LOSS:

UNISOLABLE RCS leakage greater than capacity of one centrifugal charging pump in normal charging lineup.

BASIS (References)

UNISOLABLE – A leak that cannot be isolated from the control room.

NORMAL CHARGING LINEUP – The normal charging flow path through the volume control system including design and alternate flow paths, and flow to reactor coolant pump seals.

LOSS – Leakage that results in complete loss of subcooling is a fundamental indication that the inventory control systems are inadequate for maintaining RCS pressure and inventory.

POTENTIAL LOSS – Unisolable leakage in excess of the capacity of one centrifugal charging pump in the normal charging mode is considered to be the inability to maintain normal liquid inventory in the RCS and assures that any event that results in a significant inventory loss or shrinkage will result in an ALERT classification.

This leak is NOT isolable from the control room OR an attempt for isolation from the control room has been made and was unsuccessful. An attempt for isolation should be made prior to the accident classification. If isolable upon identification, this initiating condition is not applicable.

DEVIATION FROM NUMARC: None

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

RCS BARRIER 2.2: STEAM GENERATOR LEAKAGE

MODE APPLICABILITY

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Entry into OHP-4023.E-3, "Steam Generator Tube Rupture" AND a non-isolable secondary line break resulting in a prolonged release (>30 minutes) radioactive release to the environment from the affected steam generator.

POTENTIAL LOSS:

Ruptured steam generator with primary to secondary leak rate greater than capacity of one charging pump in normal charging mode.

BASIS (References)

NORMAL CHARGING MODE – The normal charging flow path through volume control system including design and alternate flow paths, and flow to reactor coolant pump seals.

LOSS – This is intended to address the full spectrum of steam generator tube rupture events and addresses the direct release of radioactive material to the environment. Dose assessment is required when there is indication that the fuel matrix/clad is potentially lost. This EAL encompasses steam breaks, feed breaks, and stuck open safety or relief valves. The assumed break flow termination time period in our steam generator tube rupture dose consequence analysis is 30 minutes; therefore, 30 minutes is used to define prolonged.

POTENTIAL LOSS – Unisolable leakage in excess of the capacity of one centrifugal charging pump in the normal charging mode is considered to be the inability to maintain normal liquid inventory in the RCS and assures that any event that results in a significant inventory loss or shrinkage will result in an ALERT classification.

DEVIATION FROM NUMARC: None

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

RCS BARRIER 2.3: CONTAINMENT RADIATION

MODE APPLICABILITY

Modes 1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

Containment radiation greater than 10 R/hr.

POTENTIAL LOSS:

None

BASIS (References)

LOSS - A value of 10 R/hr as indicated on VRA 1310/1410 (Unit 1) and VRA02310/2410 (Unit 2) was chosen because it is above the ambient background radiation and represents a detectable radiation level above allowed Technical Specification radiochemistry limits but less than the 2-5% fuel clad damage used in the fuel clad fission product barrier threshold value.

The 10 R/hr value was determined on the basis of the Donald C. Cook Core Damage Assessment methodology, taking into account that the radiation levels resulting from noble gases released from the coolant will vary as a function of core shutdown time. The reading is based on noble gas reading alone approximately 90 minutes after reactor shutdown. This assumption is consistent with the current core damage assessment methodology for the Donald C. Cook Nuclear Plant.

The use of noble gases alone for a EAL threshold is conservative since if iodine or other radioactive materials were present, the doses would be higher. The use of a value reflecting a plant shutdown of one hour was selected as a reasonable reflection of the phenomena being considered without concern about setting the threshold too high or too low. The actual fission product barrier threshold will be declared at any time the value indicated is exceeded.

POTENTIAL LOSS - None

DEVIATION FROM NUMARC:

Calculation of radiation monitor reading is based on dispersal of noble gases only (iodine inventory not included) from the reactor coolant.

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

RCS BARRIER 2.4: RCS INTEGRITY CSFST

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUUE

LOSS: None

POTENTIAL LOSS:

RCS Integrity Critical Safety Function Status Tree - RED

BASIS (References)

LOSS – None

POTENTIAL LOSS –

The RCS Integrity Critical Safety Function RED indicates an extreme challenge to the safety function and a potential loss of the RCS barrier.

DEVIATION FROM NUMARC: None

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

RCS BARRIER 2.5: HEAT SINK CSFST

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUES

LOSS: None

POTENTIAL LOSS:

Heat Sink Critical Safety Function Status Tree - RED

BASIS (References)

LOSS - None

POTENTIAL LOSS -

The Heat Sink Critical Safety Function – RED path indicates that the heat sink is under extreme challenge and is indicative of a potential loss of the RCS barrier.

DEVIATION FROM NUMARC: None

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.1 – CONTAINMENT RADIATION

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

None

POTENTIAL LOSS:

Containment Radiation greater than 1000 R/hr.
-OR-
Assessment of core damage greater than 20% clad failure

BASIS (References)

LOSS – None

POTENTIAL LOSS – The 1000 R/hr value is based on a reasonable assessment of a single number representing the expected monitor reading on the upper containment high range area radiation monitors VRA 1310/1410 (Unit 1) or VRA 2310/2410 (Unit 2). The reading represents the expected reading for loss of coolant accidents with 20% fuel clad damage.

The 1000 R/hr value was determined on the basis of the Donald C. Cook Core Damage Assessment Methodology, taking into account that the radiation levels resulting from the release of noble gases from failed fuel will vary as a function of core shutdown time. As with the RCS and Fuel Clad barriers containment radiation EALs, this reading is based on release of noble gases only, approximately 90 minutes after shutdown.

DEVIATION FROM NUMARC;

Calculation of radiation monitor reading is based on dispersal of noble gases only (iodine inventory not included) from the reactor coolant.

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.2: CONTAINMENT INTEGRITY

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUES

LOSS:

1. UNISOLABLE breach or bypass of containment

-OR-

2. Rapid unexplained containment pressure or sump level drop following pressure rise caused by LOCA

-OR-

3. Pressure/Sump level NOT performing consistent with expected conditions

-OR-

4. Entry into ECA-1.2, "LOCA OUTSIDE CONTAINMENT"

POTENTIAL LOSS:

None

BASIS (References)

UNISOLABLE – A breach that cannot be isolated from the control room.

LOSS – An unisolable breach of containment includes any open unisolable containment penetration. A breach of containment has occurred if an inboard and outboard pair of isolation valves fails to close on an automatic activation signal or from a manual action in the control room and opens a release path to the environment. Plant procedure OHP 4023.E-0, "Reactor Trip or Safety Injection," provides lists of containment isolation valves required to close on high or HI HI containment pressure.

The breach is considered unisolable if it cannot be isolated from the control room or an attempt for isolation was made from the control room and was unsuccessful. An attempt for isolation should be made prior to accident classification. If isolable upon identification this initiating condition is not applicable.

The rapid pressure drop following an initial pressure rise indicates a failed containment. Failure of containment pressure to elevate or containment sump level to rise is also indicative of containment bypass or a loss of containment scenario. ECA-1.2 is entered when there is evidence of excessive auxiliary building radiation while a loss of reactor or secondary coolant is occurring.

POTENTIAL LOSS – None

DEVIATION FROM NUMARC: None

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.3 – STEAM GENERATOR SECONDARY SIDE RELEASE

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

1a. Primary to secondary leakage rate greater than technical specification limit.

AND

b. Secondary line break outside containment results in release (>30 minutes) to the environment.

OR

2. Release of secondary coolant from the associated steam generator to the environment is occurring with an alert alarm on any SG PORV radiation monitor.

POTENTIAL LOSS:

None

BASIS (References)

NORMAL CHARGING LINEUP – The normal charging flow path through the volume control system including design and alternate flow paths, and flow to reactor coolant pump seals.

LOSS – Secondary side release paths to the environment include atmospheric relief valves and main steam safety valves. Site Area Emergency declaration will be based on evidence of elevated RCS activity as indicated by SG PORV radiation monitor alert alarm. The SG PORV radiation monitor alert alarm setpoint corresponds to SAE site boundary dose rate.

For smaller breaks, not exceeding the capacity of one charging pump in the NORMAL CHARGING MODE, an UNUSUAL EVENT classification will result if the ruptured steam generator is isolated. For larger breaks, if the steam generator remains unisolated, this EAL will be a discriminator for SITE AREA AND GENERAL EMERGENCIES. The threshold for Site Area Emergency is based on elevated RCS activity indicated by an alert alarm on a SG PORV radiation monitor.

Σ If the MSIV on the affected SG is stuck open, the classification is not upgraded to a Site Area Emergency unless there are other complicating factors present. Any complicating factors present should be considered in order to determine if the tube rupture should be classified as a Site Area Emergency. These factors may include, but are not limited to, elevated RCS activity (300 µc/cc I-131 dose equivalent indicates significant failed fuel, >1%), or significant unisolable steam leakage downstream of the MSIV.

SEC judgement should be used when evaluating the steam leak size and any other complicating factors that are not specifically addressed in the EAL, when making the determination to classify the tube rupture as a Site Area Emergency.

POTENTIAL LOSS

None

DEVIATION FROM NUMARC:

NUMARC does not use the elevated RCS activity as discriminator for Site Area Emergency.

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.4 - CONTAINMENT CRITICAL SAFETY FUNCTION STATUS TREE

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

LOSS:

None

POTENTIAL LOSS:

Containment critical safety function status tree - RED

BASIS (References)

LOSS - None

POTENTIAL LOSS - The RED path indicates an extreme challenge to the containment and represents a potential loss of containment.

In addition to a containment isolation system, the Cook Nuclear Plant design includes an ice condenser system, containment air recirculation hydrogen skimmer fans, containment spray system, and an RHR system. The lower containment high pressure setpoint is 1.1 psig at which a partial containment isolation will occur and the containment air recirculation fans are automatically started after a short time delay. Containment spray is automatically started when containment pressure reaches its HI HI pressure of 2.9 psig. RHR spray will be initiated if both containment spray trains are not running and 50 minutes has elapsed since the reactor trip. This 12 psig value is also the containment pressure which indicates Containment Critical Safety Function Status Tree - RED, this EAL indicates the potential of the containment exceeding its design pressure of 12 psig, hence the potential of loss of containment.

DEVIATION FROM NUMARC: None

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.5: CONTAINMENT HYDROGEN

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUES

LOSS:

Initiating conditions for LOSS included under initiating conditions for loss of FPB 3.2, CONTAINMENT INTEGRITY.

POTENTIAL LOSS:

1. Hydrogen greater than 4.0%

-OR-

2. Containment hydrogen concentration greater than 0.5% AND any hydrogen control equipment (Containment air recirculation/hydrogen skimmer systems, electric hydrogen recombiner OR igniters) inoperable.

BASIS (References)

LOSS - None

POTENTIAL LOSS - Cook Nuclear Plant is a Westinghouse plant with an ice condenser containment. Due to its smaller volume than comparable plants with dry containments, it relies more heavily on engineered safety features for overpressure protection than do dry containments. Overpressure may be caused by buildup of steam or noncondensibles in containment, or the consequences associated with ignition of hydrogen gas in the containment.

The potential for loss of containment may be caused by the accumulation of hydrogen gas and the inability of at least one train of required safety components required for the control of hydrogen gas to be inoperable. A 0.5% or greater volume percent is indicative that significant hydrogen gas has formed in containment, and control measures are warranted. Equipment to limit accumulation of hydrogen includes the containment air recirculation fans and the containment air recirculation/hydrogen skimmer system. Failure of this equipment is indicative of accumulating percentages of hydrogen until 4 volume percent, the lower flammability limit for hydrogen gas is exceeded. Above this percentage, the hydrogen igniters are the principal equipment relied on to reduce hydrogen gas concentration to below 4 percent.

DEVIATION FROM NUMARC:

A threshold value has been added for hydrogen concentration greater than 0.5% and key hydrogen control equipment inoperable.

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.6 – CONTAINMENT PRESSURE CONTROL

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUES

LOSS:

Initiating conditions for LOSS included under initiating conditions for loss of FPB 3.3, CONTAINMENT INTEGRITY.

POTENTIAL LOSS:

1. Both containment spray systems both inoperable OR fail to automatically actuate on HI-HI containment pressure.

-OR-

2. Both containment air recirculation fans inoperable OR fail to automatically actuate on HI containment pressure.

-OR-

3. Containment pressure exceeds 12 psig.

BASIS (References)

LOSS – None

POTENTIAL LOSS - Cook Nuclear Plant is a Westinghouse plant with an ice condenser containment. Due to its smaller volume than comparable plants with dry containments, it relies more heavily on engineered safety features for overpressure protection than do dry containments. Overpressure may be caused by buildup of steam or noncondensibles in containment, or the consequences associated with ignition of hydrogen gas in the containment.

Containment pressure control is achieved through the Containment Spray system and the Containment Air Recirculation/hydrogen skimmer system. Total failure of both these systems may allow steam to build up within containment, and, unabated, this steam buildup may cause the internal containment pressure buildup to exceed the design pressure of 12 psig. Studies have shown that the containment can withstand pressures well above this value.

Both the recirculation fans and the containment spray pumps are actuated atuomatically following receipt of a HI or HI HI containment pressure signal, respectively. However, rapid startup of these systems is not required, since the ice condenser will serve as a passive steam pressure reduction device until the ice has melted. Therefore, if these systems should fail, it is permissible to start both these

systems manually without being overly concerned about the potential loss of containment due to overpressure. However, the failure of automatic startup of redundant equipment is considered symptomatic of potentially degraded key safety equipment. Thus the potential loss categorization will remain until it can be determined that the failure to start automatically was not symptomatic of major system degradation.

DEVIATION FROM NUMARC:

None.

FISSION PRODUCT BARRIER NAME, LOSS/POTENTIAL LOSS, & DESCRIPTION

CONTAINMENT BARRIER 3.7 – CORE EXIT THERMOCOUPLES

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUES

LOSS:

None

POTENTIAL LOSS:

Core Cooling Critical Safety Function Status Tree – RED

-AND-

Restoration procedures not effective within 15 minutes.

BASIS (References)

LOSS – None

POTENTIAL LOSS – The conditions in this EAL represent imminent fuel melt sequence which, if not corrected could lead to vessel failure and an increased potential for containment failure. Severe accident analysis has concluded that functional restoration procedures can arrest core damage within the reactor vessel in many core damage scenarios, and that the likelihood of containment failure is small for these events. Whether or not the procedures will be effective should be apparent within 15 minutes of taking action as directed by the procedure. The SEC should make the declaration as soon as it is determined that the procedure appears to be ineffective.

The core cooling status tree – RED is indicative that major fuel damage has occurred, and radioactive release can be expected. The conditions which indicate this condition are either 1) core exit thermocouples greater than 1200 degrees F or core exit thermocouples greater than 752 degrees F and RVLIS (Reactor Vessel Level Indication System) narrow range less than 46% with no reactor coolant pump running. This represents a more conservative position than recommended in Revision 2 of NUMARC/NESP 007, but is taken to be consistent with the guidance afforded by the Westinghouse Owners Group as to the indication of when core cooling may be considered to be lost.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-1: UNUSUAL EVENT – SEC JUDGEMENT

INITIATING CONDITION

Other conditions existing which in the judgement of the Site Emergency Coordinator (SEC) warrant declaration of an Unusual Event.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

In the judgement of the SEC, conditions indicate a potential degradation of the level of safety of the plant.

BASIS (References)

This ECC 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 SEC to fall under the Unusual Event emergency class.

From a broad perspective, one area that may warrant SEC judgement 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 analyses, or insufficient availability of equipment and/or support personnel.

Specific examples of actual events that may require SEC judgement for Unusual Event declaration are listed here for consideration. However, this list is by no means all inclusive and is not intended to limit the discretion of the SEC.

- Aircraft crash on –site but, outside the protected area.
- Train derailment on-site but, outside the protected area.
- Near-site explosion which may adversely affect normal site activities but, doesn't directly affect activities required to maintain safe operation of the plant.
- Near-site releases of toxic or flammable gas which may adversely affect normal site activities but, doesn't directly affect activities required to maintain safe operation of the plant.

It is also intended that the SEC's judgement not be limited by any lists of events as defined here. This list is provided solely as examples for consideration and it is recognized that actual events may not always follow a pre-conceived description.

TERMINIATION/RECOVERY CRITERIA

The condition which caused the declaration to be made no longer exists, or in the SEC's judgement, the condition will not cause a degradation of the level of safety of the plant.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-1: ALERT - SEC JUDGEMENT

INITIATING CONDITION

Other conditions existing which in the judgement of the Site Emergency Coordinator (SEC) warrant declaration of an Alert.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

In the judgement of the SEC:

1. conditions indicate that plant safety systems may be degraded,

-AND-

2. increased monitoring of plant functions is needed.

BASIS (References)

This ECC 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 SEC to fall under the Alert emergency class.

TERMINIATION/RECOVERY CRITERIA

The condition which caused the declaration to be made no longer exists, or in the SEC's judgement, the condition will not cause a degradation of the level of safety of the plant.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-1: SITE AREA EMERGENCY – SEC JUDGEMENT

INITIATING CONDITION

Other conditions existing which in the judgement of the Site Emergency Coordinator (SEC) warrant declaration of a Site Area Emergency.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

In the judgement of the SEC:

Conditions indicate likely or actual major failures of plant functions needed for the protection of the public.

BASIS (References)

This ECC 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 SEC to fall under the Site Area Emergency, emergency classification.

TERMINIATION/RECOVERY CRITERIA

The condition which caused the declaration to be made no longer exists, or in the SEC's judgement, the condition no longer indicates likely or actual major failures of plant functions needed for the protection of the public health and safety.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-1: GENERAL EMERGENCY - SEC JUDGEMENT

INITIATING CONDITION

Other conditions existing which in the judgement of the Site Emergency Coordinator (SEC) warrant declaration of a General Emergency.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

In the judgement of the SEC:

1. Condition indicate an actual or imminent substantial core degradation with potential loss of affected unit's containment.

-OR-

2. Potential exists for an uncontrolled radioactive release that may exceed EPA limits at the site boundary.

BASIS (References)

The ECC 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 SEC to fall under the General Emergency, emergency classification.

TERMINIATION/RECOVERY CRITERIA

In the SEC's judgement, a General Emergency no longer exists and entry into recovery procedures is appropriate. The affected unit has achieved a cold shutdown.

DEVIATION FROM NUMARC: None

D ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-2: UNUSUAL EVENT - SECURITY EVENTS

INITIATING CONDITION

Confirmed Security Event which indicates a potential degradation in the level of safety of the plant.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. Bomb device discovered within the protected area and outside the vital area.

-OR-

2. Credible bomb threat.

-OR-

3. Credible attack threat.

-OR-

4. Hostage/Extortion incident potentially affecting plant operations.

BASIS (References)

This EAL is based on the Modified Amended Security Plan (MASP). Security events which do not represent at least 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. The plant protected area boundary is the area within the security isolation zone as defined in the Modified Amended Security Plan. Bomb devices discovered within the plant vital area would result in EAL escalation.

TERMINIATION/RECOVERY CRITERIA

The hazard to the level of safety of the plant no longer exists.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-2: ALERT – SECURITY EVENTS

INITIATING CONDITION

Security Event in a Plant Protected Area.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. Intrusion into protected area by a hostile force.

-OR-

2. Civil disturbance within the protected area.

BASIS (References)

This class of security events represent an escalated threat to plant safety above that contained in the Unusual Event. Intrusion into a vital area by a hostile force will escalate this event to a Site Area Emergency.

TERMINIATION/RECOVERY CRITERIA

Challenge to the safety of the plant no longer exists.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-2: SITE AREA EMERGENCY - SECURITY EVENTS

INITIATING CONDITION

Security event in a plant vital area.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. Intrusion into any vital area by a hostile force.

-OR-

2. A security event which results in the loss of control of any vital area (other than the control room).

-OR-

3. A confirmed bomb device discovered in a vital area.

BASIS (References)

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.

TERMINIATION/RECOVERY CRITERIA

The condition causing the event has been eliminated.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-2: GENERAL EMERGENCY - SECURITY EVENTS

INITIATING CONDITION

Security Event resulting in loss of ability to reach and maintain cold shutdown.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. Loss of physical control of the control room due to a security event.

-OR-

2. Loss of physical control of a unit's remote shutdown capability due to a security event.

BASIS (References)

This Initiating Condition encompasses conditions under which a hostile force has taken physical control of either the control room or all remote shutdown capabilities resulting in a loss of physical control of the facility. This EAL is an escalation of the Site Area Emergency declaration for a hostile force intrusion into a vital area.

TERMINIATION/RECOVERY CRITERIA

The security threat has been eliminated and cold shutdown can be maintained.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-3: ALERT - CONTROL ROOM EVACUATION

INITIATING CONDITION

Control room evacuation has been initiated.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

Control room evacuation has been initiated.

BASIS (References)

CONTROL – Placing all local controls in position necessary for operation from remote panels and the shift supervisor has determined that the systems for controlling reactivity, RCS inventory, RCS temperature, and the heat sink functions have been established.

Evacuation of the control room represents a potential for substantial degradation in the level of safety of the plant and, therefore, requires an ALERT declaration. Additional support, monitoring, and direction is required and accomplished by activation of the Technical Support Center at the Alert classification level. Inability to establish plant CONTROL from outside the control room will escalate the event to a Site Area Emergency.

Cook Nuclear Plant has separate control rooms for each unit. The Cook Nuclear Plant procedure governing control room evacuation and establishing plant control outside the control room is (01-for Unit 1, 02-for Unit 2) OHP 4025.001.001, "Emergency Remote Shutdown".

TERMINIATION/RECOVERY CRITERIA

Control of the plant has been reestablished from the control room.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-3: SITE AREA EMERGENCY – CONTROL ROOM EVACUATION

INITIATING CONDIITON

Control room evacuation has been initiated and plant CONTROL cannot be established.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

The following conditions exist:

1. Control Room evacuation has been initiated.

-AND-

2. CONTROL of any one of the following processes is not established within 15 minutes:

   - Reactivity
   - RCS inventory
   - RCS temperature
   - SG heat sink

BASIS (References)

CONTROL – Placing all local control switches in local control necessary for operation from remote panel and the shift supervisor has determined that the systems for controlling reactivity, RCS inventory, RCS temperature, and the heat sink functions have been established.

Cook Nuclear Plant has separate control rooms for each unit. The Cook Nuclear Plant procedure governing control room evacuation and establishing plant control outside the control room is (01-for Unit 1, 02-for Unit 2) OHP 4025.001.001, "Emergency Remote Shutdown",. * The 15 minute time for CONTROL being established outside of the control room is taken from Revision 2 of NUMARC/NESP 007.

TERMINIATION/RECOVERY CRITERIA

Control of the plant has been reestablished from the control room.

DEVIATION FROM NUMARC: None

* The inability to establish control of RCS inventory, RCS temperature, reactivity and heat sink functions outside of the control room within 15 minutes requires the declaration of a site area emergency.

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-4: UNUSUAL EVENT - FIRE

INITIATING CONDITION

Fire in protected area boundary not extinguished within 15 minutes of detection.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

Fire within the protected area boundary not extinguished within 15 minutes of detection.

BASIS (References)

The purpose of this EAL is to address only fires which are potentially significant precursors to safety system damage. This excludes such items as fires within office buildings, waste basket fires, and other small fires of no consequence. This EAL applies to buildings and areas contiguous to plant vital areas or other significant buildings and areas. The intent is not to include buildings (or warehouses) that are not contiguous or immediately adjacent to areas where safety system performance would be adversely affected or there could be an uncontrolled release of radioactive material.

Areas of concern at the Cook Nuclear Plant for this initiating condition (H-1: UNUSUAL EVENT) include the protected area. The radioactive material building (RMB) is not included since it is outside the protected area, and not required to safely shutdown the plant. In the unlikely event that a fire were to occur where 100% of the RMB contained radioactive material were released, it could result in an offsite dose of 2.5 rem. If a fire or explosion were to occur that could result in an offsite radioactive release, the SEC would initially declare as unusual event under the classification requirements of H-5, SEC judgment. The classification could be escalated in accordance with the requirement of R-1, if field measurements show large offsite releases have actually occurred.

TERMINIATION/RECOVERY CRITERIA

Fire Extinguished.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-4: ALERT – FIRE OR EXPLOSION AFFECTING OPERABILITY OF SAFETY EQUIPMENT

INITIATING CONDITION

Fire or explosion affecting OPERABILITY of plant safety systems required to establish or maintain safe shutdown.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. Fire or explosion that affects the OPERABILITY of systems required for the current operating mode OR for safe shutdown.

-OR-

2. Fire or explosion that causes visible damage to any of the following structures: containments, auxiliary buildings, essential service water system enclosures, auxiliary feedwater pump rooms, refueling water storage tank, or condensate storage tank.

BASIS (References)

EXPLOSION – A rapid, violent, uncontained combustion or catastrophic failure of pressurized equipment that potentially imparts significant energy to nearby structures or equipment.

If a fire affects operability of only one of two redundant systems, then this EAL is not applicable.

The purpose of this EAL is to address only fires which are potentially significant precursors to safety system damage. This excludes such items as fires within office buildings, waste basket fires, and other small fires of no consequence. This EAL applies to building and areas contiguous to plant vital areas or other significant buildings and areas. The intent is not to include buildings (or warehouses) that are not contiguous or immediately adjacent to areas where the safety system performance would be adversely affected.

Only explosions of significant force to cause damage (deformation, scorching) to structures or equipment required for safe operation should be considered.

TERMINIATION/RECOVERY CRITERIA

Plant capability to operate safety no longer affected by the event.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-5: UNUSUAL EVENT – TOXIC OR FLAMMABLE GASES

INITIATING CONDITION

Release of toxic or flammable gases deemed detrimental to safe operation of the plant.

MODE APPLICABILITY

All

NOTE:	1 or 2 OHP-4021-028-014, Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter System contains instructions for control room isolation in the event of a toxic gas release.

EAL THRESHOLD VALUE

1. Release of toxic or flammable gases within or near site boundary that may affect normal operation of the plant.

-OR-

2. Report by local, county, or state officials of potential evacuation of site personnel based on offsite event.

BASIS (References)

TOXIC – Exposure to the worker in excess of limits specified in 29 CFR 1910.1000. in practice, this should be considered for concentrations which are capable of incapacitating the worker.

This initiating condition is based on release in concentrations within the site boundary that will affect the health and safety of plant personnel or affect safe operation of the plant.

The potential for the degradation in the level of safety of the plant through the affect of toxic OR flammable gas on the health of personnel or operation of the plant is to be considered for declaration of the UNUSUAL EVENT. The source of the toxic or flammable gas could be from inside or outside the site.

Although carbon dioxide (CO2) concentrations can be lethal, it is not considered a toxic gas for the purpose of classification unless access is required and cannot be made in an area where equipment needed for the safe shutdown of the plant is maintained.

TERMINIATION/RECOVERY CRITERIA

The release of toxic material is terminated and the operational impact of the release has been eliminated.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

H-5: ALERT – TOXIC OR FLAMMABLE GASES

INITIATING CONDITION

Release of toxic of flammable gases within a facility structure which jeopardizes operation of systems required to maintain safe operations or to establish or maintain cold shutdown.

MODE APPLICABILITY

All

NOTE:	1 or 2 OHP-4021-028-014, Operation of the Control Room Air Conditioning and Pressurization/Cleanup Filter System contains instructions for control room isolation in the event of a toxic gas release.

EAL THRESHOLD VALUE

1. Report or detection of toxic gases within a facility structure in concentrations that will be life threatening to plant personnel.

-OR-

2. Report or detection of flammable gases within a facility structure in concentrations that will affect the safe operation of the plant.

BASIS (References)

TOXIC – Exposure to the worker in excess of limits specified in 29 CFR 1910.1000. In practice, this should be considered for concentrations which are capable of incapacitating the worker.

This EAL is based on gases that have entered plant structures that will affect the safe operation of the plant. These structures include buildings and areas contiguous to plant vital areas and other significant buildings or area. The intent of this EAL is not to include buildings that are not contiguous or immediately adjacent to plant vital areas. The source of the toxic or flammable gas could be from inside or outside the site.

The source of the release is not of immediate concern for these threshold values. The concern is for the health and safety of plant personnel and their ability to maintain the plant in a safe operating condition.

This EAL is reached whenever the shift manager determines that protective gear is required to be worn by plant personnel required to safely operate the unit.

Although carbon dioxide (CO2) concentrations can be lethal, it is not considered a toxic gas for the purpose of classification unless access is required and cannot be made in an area where equipment needed for the safe shutdown of the plant is maintained.

TERMINIATION/RECOVERY CRITERIA

Plant operations are no longer affected.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

N-1 to N-7: UNUSUAL EVENT – NATURAL OR DESTRUCTIVE PHENOMENA INSIDE THE PROTECTED AREA

INITIATING CONDITION

Natural or destructive phenomena inside protected area.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. CONFIRMED seismic event as indicated by seismic instrument activation or based on ground motion felt at the nuclear plant and recognized as an earthquake based on consensus of control room operators on duty at the time.

-OR-

2. Report of a tornado strike within the protected area.

-OR-

3. Vehicle collision affecting structures or systems within the protected area.

-OR-

4. Main turbine rotating component failure causing visible damage or damage to the generator seals.

-OR-

5. Report by plant personnel of an unanticipated explosion within the protected area boundary resulting in visible damage to permanent structures or equipment.

BASIS (References)

These threshold values are natural or destructive phenomena which represent potential degradation of the level of safety of the plant. The affects of the phenomena should also be evaluated on a system or component basis in relation to the Technical Specifications and evaluated for further classification via either site emergency coordinator (SEC) judgement or plant procedures as appropriate.

Threshold Value 1 – Seismic events at the lowest instrument activation, 0.02g (or based on ground motion felt at the nuclear plant and recognized as an earthquake based on consensus of control room operators on duty at the time) may cause damage to systems and represent a potential degradation of the level of safety of the plant. A confirmation call to the National Earthquake Center will confirm that an earthquake has occurred and may provide an estimate of the magnitude of the earthquake in the vicinity of Cook Nuclear Plant. Further information regarding anticipated actions may be found in plant procedures OHP 4022.001.007, "Earthquake".

A call to one of the following may be used to verify/confirm a seismic event. National Earthquake Center (phone number (303) 273-8500 or 1-800-525-7848), Local television stations, or, University monitoring stations.

Threshold Value 2 – Any report that a tornado has touched down within the protected area.

Threshold Value 3 – A collision of any vehicle on land, from the air, or on water (plane, train, barge, etc.) which affects structures or equipment within the protected area may potentially damage plant structures containing functions and systems required for safe shutdown of the plant. If the crash is confirmed to affect a plant vital area, the event may be escalated to Alert.

Threshold Value 4 – Failure of the rotating components has the potential for leakage of flammable fluids (oil and hydrogen) into the turbine building.

Threshold Value 5 – Only those explosions of sufficient force to damage permanent structures or equipment within the protected area should be considered. As used here an explosion is a rapid, violent, unconfined combustion, or a catastrophic failure of pressurized equipment, that potentially imparts significant energy to near-by structures and materials. No attempt is made in the EAL to assess the actual magnitude of the damage. The occurrence of the explosion with reports of evidence of damage (e.g., deformation, scorching) is sufficient for declaration. The SEC also needs to consider any security aspects of the explosion, if applicable.

TERMINIATION/RECOVERY CRITERIA

No further hazard exists, and damage assessment is complete, and termination is allowed in accordance with the requirements of the event termination procedure.

DEVIATION FROM NUMARC:

A separate ECC category name was established for these "Natural or Destructive Phenomena". They are included in the "Hazards And Other Conditions" Category in NUMARC/NESP 007.

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

N-1 to N-7: ALERT – NATURAL OR DESTRUCTIVE PHENOMENA INSIDE A VITAL AREA

INITIATING CONDITION

Natural or destructive phenomena inside vital areas.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. CONFIRMED seismic event as indicated by seismic instrument activation or based on ground motion felt at the nuclear plant and recognized as an earthquake based on consensus of control room operators on duty at the time AND which causes visible major damage to structures, systems, and components in the vital area or causes a plant trip to occur.

-OR-

2. Report of a tornado strike in a plant vital area or SUSTAINED high wind (>15 min.) greater than 90 miles per hour.

-OR-

3. Report of visible structural damage to a structure containing systems required to establish and maintain cold shutdown.

-OR-

4. Vehicle collision affecting a vital area.

-OR-

5. Turbine failure generated missiles penetrating a vital area.

-OR-

6. Flooding in a vital area affecting safety related equipment.

BASIS (References)

These threshold values are natural or destructive phenomena which represent actual or potential substantial degradation of the level of safety of the plant. The affects of the phenomena should also be evaluated on a system or component basis in relation to the Technical Specifications and evaluated for further classification via either Site Emergency Coordinator (SEC) judgement or plant procedures as appropriate.

Threshold Value 1 – Seismic events at the lowest instrument activation (0.02g ground acceleration) or ground motion felt at the nuclear plant and recognized as an earthquake based on consensus of control room operators on duty at the time. The effect of the earthquake has significantly affected plant operations (up to and including manual or automatic plant trip) or has caused visible damage that has the potential for major degradation of systems required to maintain the plant in a safe shutdown condition. A call to the National Earthquake Center will confirm that an earthquake has occurred and may provide an estimate of the magnitude of the earthquake in the vicinity of the Cook Nuclear Plant.

Operator walkdowns of plant systems, structures and components will be performed to assess potential damage levels.

A call to one of the following may be used to verify/confirm a seismic event: National Earthquake Center (phone number (303) 273-8500 or 1-800-525-7848), local television stations, or university monitoring stations.

Threshold Value 2 - A tornado strike must include an affect on systems or components that affects the operability or integrity of the system or structure within a vital area. The threshold value of 90 mph is the FSAR design basis wind load.

Threshold Value 3 - Should be used in conjunction with investigation of threshold values 1 and 2, or on a stand alone basis. A detailed description or assessment of damage is not intended to meet the intent of this threshold value. The list of critical structures is the same as that included under H-4 ALERT (containments, auxiliary buildings, ESW system enclosures, auxiliary feedwater pump rooms, refueling water storage tank, condensate storage tank).

Threshold Value 4 - A collision by any vehicle on land, from the air, or on water (plane, train, barge, etc.) which affects structures or equipment within a vital area.

Threshold Value 5 - This threshold value addresses the threat to safety equipment imposed by missiles generated by main turbine rotating component failures. This includes all areas classified as vital areas of the plant.

Threshold Value 6 - Flooding in vital areas which affect OPERABILITY of safety related systems or components. The source of the flooding need not be known.

The word "OPERABLITY" refers to the definition in the Technical Specifications where required redundant safety equipment will be made inoperable. The only types of floods anticipated to trigger this threshold are major catastrophic pipe ruptures in the plant that have not been previously evaluated or floods caused by severe external phenomena such as seiches.

TERMINIATION/RECOVERY CRITERIA

No further hazard exists, damage assessment is complete, and termination is allowed in accordance with the requirements of the event termination procedure.

DEVIATION FROM NUMARC:

A separate ECC category name was established for these "Natural or Destructive Phenomena." They are included in the "Hazards And Other Conditions" category in NUMARC/NESP 007.

The EAL for earthquakes does not include a real time seismic instrumentation reading. Cook Nuclear Plant seismic instrumentation does not provide indication of the level of earthquake as an Operations Basis Earthquake (OBE) or Design Basis Earthquake (DBE). This EAL is written using the operator assessment method specified in NUMARC/NESP 007.

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-1: UNUSUAL EVENT – RADIOACTIVE EFFLUENT RELEASE

INITIATING CONDITION

Unplanned release of gaseous or liquid radioactivity to the environment that exceeds two times the ODCM release limits for 60 minutes or longer.

MODE APPLICABILITY

All

NOTE:	The term "one or more of the following monitors" in the EAL means that the total of all monitors is to be considered when classifying an event. [Commitment 5116]

EAL THRESHOLD VALUE

1. A valid reading on one or more of the following monitors that exceeds 2 times the high alarm setpoint for 60 minutes of longer.

   - VRS-1500/2500 (Noble Gas)
   - SRA-1800/2800 (Noble Gas)
   - SRA-1900/2900 (Noble Gas)
   - R-20
   - R-28

-OR-

2. A VALID radiation monitor reading 2 times the high alarm setpoint for any monitored release pathway for > 60 minutes.

-OR-

3. Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates exceeding 2 times the ODCM maximum instantaneous release limit for > 60 minutes.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

UNPLANNED – Means the release occurred without a discharge permit or the conditions specified on the discharge permit have been exceeded.

Environmental release limits for effluent radiation monitor alarms are calculated using methods specified in the offsite dose calculation manual (ODCM). An UNPLANNED release in excess of two times the ODCM release limit for 60 minutes, or longer, represents an uncontrolled situation, and hence, a potential degradation in the level of safety. Although the final integrated dose is very low in the Unusual Event emergency class, the degradation in plant control implied by the fact that the release cannot be terminated in 60 minutes is the primary concern.

Declaration of an Unusual Event should be made as soon as it is determined that the release duration has or will likely exceed 60 minutes. A dose assessment should be performed to ensure that a higher classification is not warranted. If the monitor reading(s) is sustained for longer than 60 minutes and the required assessments cannot be completed within this period, then the declaration must be made based on the valid reading.

Radioactive gaseous release pathways are monitored by either the unit vent monitor (VRS-1500/2500), the gland steam condenser exhaust effluent monitors (SRA-1800/2800), the steam jet air ejector vent effluent monitors (SRA-1900/2900), or the steam generator relief monitors. The first three monitors are included in threshold 1. Steam generator relief monitors are excluded. The reason is that radioactive gas release via the steam generator PORVs and safety valves is believed to be a pathway that could not, under normal operating conditions, lead to release of radioactive gases to the environment in sufficient amounts so as to cause exceeding the technical specification limits. The steam generator relief monitors are included as an EAL threshold in the site area emergency classification for abnormal release of radioactive materials.

With the exception of possible releases from the essential water system (monitored by R-20 and R-28) release of radioactive liquids to the environment are planned and controlled. Before a batch of radioactive liquid is released to the environment, the sample is analyzed. If the radioactivity of the sample is within acceptable limits, the liquid will be released, monitored, and recorded. The alarm on the monitor is set in accordance with ODCM limits. To cover the potential that something may go wrong with the liquid release process, threshold 2 addresses any valid radiation monitor reading.

TERMINIATION/RECOVERY CRITERIA

The source of the release is determined and isolated (terminated). Environmental field team samples have been taken and the environmental impact assessment is in progress.

DEVIATION FROM NUMARC:

Example EALs from NUMARC/NESP 007 numbers 3 and 4 (i.e., perimeter radiation monitoring and real time dose assessment) were not used because Cook Nuclear Plant does not have those capabilities.

The initiating condition is stated in terms of exceeding ODCM limits rather than exceeding radiological technical specifications.

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-1: ALERT – RADIOACTIVE EFFLUENT RELEASE

INITIATING CONDITION

Any unplanned release of gaseous or liquid radioactivity to the environment, greater than 200 times ODCM release limits, which lasts for 15 minutes or longer.

MODE APPLICABILITY

All

NOTE:	The term "one or more of the following monitors" in the EAL means that the total of all monitors is to be considered when classifying an event. [Commitment 5116]

EAL THRESHOLD VALUE

1. A valid reading on one or more of the following monitors which is greater than 200 times high alarm setpoint for > 15 minutes.

   - VRS-1500/2500 (Noble Gas)
   - SRA-1800/2800 (Noble Gas)
   - SRA-1900/2900 (Noble Gas)
   - R-20
   - R-28

-OR-

2. A valid radiation monitor reading indicating 200 times the high alarm setpoint for any monitored release pathway for > 15 minutes.

-OR-

3. Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates exceeding 200 times the ODCM maximum instantaneous release limit for > 15 minutes.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

UNPLANNED – Means the release occurred without a discharge permit or the conditions specified on the discharge permit have been exceeded.

This event escalates from the Unusual Event by escalating the magnitude of the release by a factor of 100. Prorating the 500 mR/yr criterion for both time (8766 hr/yr and the 200 multiplier, the associated site boundary dose rate would be 10 mR/hr. The required release duration was reduced to 15 minutes in recognition of the increased severity.

Declaration of an Alert should be made as soon as it is determined that the release duration has or will likely exceed 15 minutes. A dose assessment should be performed to ensure that a higher classification is not warranted. If the monitor reading(s) is sustained for longer than 15 minutes and the required assessments cannot be completed within this period, then the declaration must be made based on the valid reading.

Further information on the basis of EAL threshold 1 cited above may be found in the basis document for the Unusual Event associated with R-1.

TERMINIATION/RECOVERY CRITERIA

The source of the release is determined and isolated (terminated). Environmental field team samples have been taken and the environmental impact assessment is in progress.

DEVIATION FROM NUMARC:

Example EALs from NUMARC/NESP 007 numbers 3 and 4 (i.e., perimeter radiation monitoring and real time dose assessment) were not used because Cook Nuclear Plant does not have those capabilities.

The initiating condition is stated in terms of exceeding ODCM limits rather than exceeding radiological technical specifications.

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-1: SITE AREA EMERGENCY - RADIOACTIVE EFFLUENT RELEASE

INITIATING CONDITION

Site boundary 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 APPLICABILITY

All

NOTE:	The term "one or more of the following monitors" in the EAL means that the total of all monitors is to be considered when classifying an event. [Commitment 5116]

EAL THRESHOLD VALUE

1. Field survey results indicate site boundary dose rates exceeding 100 mR/hr ß-γ or a CDE thyroid exceeding 500 mrem for 1 hour of inhalation at the site boundary.

-OR-

2. A valid dose assessment indicates greater than 100 mrem TEDE or 500 mrem CDE thyroid at the site boundary.

-OR-

3. A valid reading on one or more of the following monitors (noble gas channels) that exceeds or is expected to exceed the value shown indicates that the release may have exceeded the above criterion and indicates the need to assess the release in accordance with appropriate plant procedures.

   - VRS-1500/2500 > 1.07 E-1 µci/cc (Unit Vent)
   - VRS-1800/2800 > 7.90 E0µci/cc (Steam Packing Exhauster)
   - SRA-1900/2900 > 1.95 E+3 µci/cc (Air Ejector)
   - MRA-1600/2600 > 1.00 E+2 µci/cc (SG PORV)
     1700/2700

NOTE: The above monitor readings are based on an assumed 1 hour event duration. If the monitor reading(s) is sustained for longer than 15 minutes and the required assessments cannot be completed within this period, then the declaration must be based on the valid monitor reading. The monitor ranges should be selected in accordance with guidance in PMP 2081 EPP.106.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Radiation readings can be confirmed by redundant instrumentation, local readings, or grab samples.

The 100 mrem integrated dose in this initiating condition, is based on the 10 CFR 20 annual average population exposure. This value also provides a desirable gradient (one order of magnitude) between the Alert, Site Area Emergency and General Emergency classes. The 500 mrem CDE thyroid dose is consistent with the 1.5 ratio of the EPA Protective Action Guidelines for Total Effective Dose Equivalent and Committed Dose Equivalent to the thyroid.

A release duration of 1 hour is assumed. For analysis of longer or shorter duration releases, the 100 mrem/hr TEDE and 500 mrem/hr CDE thyroid dose rates should be adjusted accordingly.

The releases on the monitors in threshold #3 above are calculated using the Cook Nuclear Plant Dose Assessment Program (DAP) and are based on average plant meteorology, the assumption that the release is one hour duration, and a site boundary dose of 100 mrem/hour. Details may be found in AEP Radiological Support Section calculation RS-C-283. Analysis of gaseous releases shorter or longer duration or different meteorologic conditions is performed during the dose assessment. If the monitor release is sustained for greater than 15 minutes and the dose assessment cannot be completed in this time period, then emergency classification will be solely on whether the monitor readings are valid and whether they exceed the values cited in threshold #3 above.

TERMINIATION/RECOVERY CRITERIA

The source of the release has been determined and isolated (terminated) Environmental field samples have been taken and environmental impact assessment is in progress.

DEVIATION FROM NUMARC:

NUMARC/NESP 007 example EAL number 2 (i.e., perimeter radiation monitoring system) was not used because Cook Nuclear Plant does not have that capability.

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-1: GENERAL EMERGENCY – RADIOACTIVE EFFLUENT RELEASE

INITIATING CONDITION

Site boundary dose resulting from an actual or imminent release of gaseous radioactivity exceeds 1000 mrem TEDE or 5000 mrem CDE thyroid for the actual or projected duration of the release.

MODE APPLICABILITY

All

NOTE:	The term "one or more of the following monitors" in the EAL means that the total of all monitors is to be considered when classifying an event. [Commitment 5116]

EAL THRESHOLD VALUE

1. Field survey results indicate site boundary dose rates exceeding 1000 mR/hr β - γ or a CDE thyroid exceeding 5000 mrem for 1 hour of inhalation at the site boundary.

-OR-

2. A valid dose assessment indicates greater than 1000 mrem TEDE or 5000 mrem CDE thyroid at the site boundary.

-OR-

3. A valid reading on one or more of the following monitors (noble gas channels) that exceeds or is expected to exceed the value shown indicates that the release may have exceeded the above criterion and indicates the need to assess the release in accordance with the appropriate plant procedures.
   - VRS-1500/2500 > 1.07 E+0 µci/cc (Unit Vent)
   - SRA-1800/2800 > 1.57 E+2 µci/cc (Steam Packing Exhauster)
   - SRA-1900/2900 > 5.78 E+3 µci/cc (Air Ejector)

NOTE: The above monitor readings are based on an assumed 1 hour event duration. If the monitor reading(s) is sustained for longer than 15 minutes and the required assessments cannot be completed within this period, then the declaration must be based on the valid monitor reading. The monitor ranges should be selected in accordance with guidance in PMP 2081 EPP.106.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

The 1000 mrem TEDE and 5000 mrem CDE thyroid values are based on the EPA protective action guidance which indicates that public protective actions are indicated if those values are exceeded. This is consistent with the emergency class description for a General Emergency.

A release duration of 1 hour has been assumed for analysis if longer or shorter duration, releases, the 1000 mrem/hr TEDE and 5000 mrem/hr thyroid CDE dose rates should be adjusted accordingly.

The release on the monitors in threshold #3 above are calculated using the Cook Nuclear Plant Dose Assessment Program (DAP) and are based on average plant meteorology, the assumption that the release is one hour duration, and a site boundary dose of 1000 mrem. Details may be found in AEP Radiological Support Section calculation RS-C-283. Analysis of gaseous releases shorter or longer duration or different meteorologic conditions is performed during the dose assessment. If the monitor release is sustained for greater than 15 minutes and the dose assessment cannot be completed in this time period, then emergency classification will be solely on whether the monitor readings are valid and whether they exceed the values cited in threshold #3 above.

TERMINIATION/RECOVERY CRITERIA

The source of the release has been determined and isolated (terminated). Environmental field samples have been taken and environmental impact assessment is in progress.

DEVIATION FROM NUMARC:

NUMARC/NESP 007 example EAL number 2 (i.e., perimeter radiation monitoring system) was not used because Cook Nuclear Plant does not have that capability.

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-2: UNUSUAL EVENT - RISING IN-PLANT RADIATION LEVELS

INITIATING CONDITION

Unexpected higher in plant radiation levels.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

A valid unexpected reading on an area monitor 1000 times higher than the 24-hour average.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

This event has a long lead time relative to potential radiological release outside the site boundary, thus impact to public health and safety is very low. It represents a degradation in the control of radioactive material, and represents a potential degradation in the level of safety of the plant.

TERMINIATION/RECOVERY CRITERIA

The source of the higher radiation levels has been determined and levels have decreased to below the threshold values. Radiological controls have been implemented and are effective.

DEVIATION FROM NUMARC:

NUMARC/NESP 007 AU2 example EALs numbers 1 and 2 are included under R-3, Unusual Event, "Loss of Water Level in Any Area Holding Irradiated Fuel." Example EAL number 3 was not used because Cook Nuclear plant does not have a dry storage area for irradiated spend fuel.

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-2: ALERT - RISING IN-PLANT RADIATION LEVELS

INITIATING CONDITION

Release of radioactive material or higher in-plant radiation levels within the facility that impede operation of systems required to maintain safe operation or to establish or maintain cold shutdown.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. Unexpected radiation levels > 15 mR/hr in any of the following areas.
   - U1 Control Room
   - U2 Control Room
   - Central Alarm Station

-OR-

2. Radiation level of > 100 mR/hr at any station required by plant procedure OHP 4025.001.001, "Emergency Remote Shutdown", and associated subtier procedures.

BASIS (References)

This IC addresses higher radiation levels that impede necessary access to operating stations, or other areas containing equipment that must be operated manually, in order to maintain safe operation or performing a safe shutdown. It is 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 higher in radiation levels is not a concern of this IC. The SEC must consider the source or cause of the higher levels and determine if any other ICs may be involved. For example, a dose rate of 15 mR/hr in the control room may be a problem in itself. However, the higher reading may also be indicative of high dose rates in the containment due to LOCA. In this latter case, an SAE or GE may be indicated based on the fission product barrier matrix ICs.

These 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 higher levels impair operations at the operating unit. This IC is not meant to apply to higher levels in the containment dome radiation monitor as these are events which are addressed in the fission product barrier matrix ICs, nor is it intended to apply to anticipated temporary higher levels due to planned events (e.g., incore detector movement, radwaste container movement, depleted resin transfer, etc.).

Procedure OHP 4025.001.001 refers to the emergency remote shutdown procedures for the Donald C. Cook Nuclear Plant. The procedure provides an alternate method of achieving safe shutdown with and

without offsite power available in the event that control of plant equipment is not available from the control room or hot shutdown panel. The procedure gives priority to achieving reactor and turbine trip, establishing auxiliary feedwater for heat removal, and establishing charging for the reactor coolant pump seal injection and reactivity control. Special consideration is given to establishing primary and secondary system isolation and preventing fire induced spurious operation of plant equipment. In event that CVCS, AFW, CCW, and ESW crossties are utilized to achieve safe shutdown, special consideration is given to maintaining the opposite unit in safe configuration.

Threshold 2 refers to the specific locations throughout the plant that are necessary to man to perform the functions cited in procedure OHP 4025.001.001, and related subtier procedures.

TERMINIATION/RECOVERY CRITERIA

The source of the higher radiation levels is determined and levels have dropped to below their threshold values. Radiological controls have been implemented and are effective.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-3: UNUSUAL EVENT – LOSS OF WATER LEVEL IN ANY AREA HOLDING IRRADIATED FUEL

INITIATING CONDITION

An UNCONTROLLED water level drop in the reactor refueling cavity, the spent fuel pool, and/or the fuel transfer canal with all irradiated fuel assemblies covered by water.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. Inability to maintain water level in the spent fuel pool and/or transfer canal at > 643' 4" with irradiated fuel present.

-OR-

2. Inability to maintain refueling cavity level > 643' 4" with irradiated fuel in containment.

BASIS (References)

VALID – Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications or related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

UNCONTROLLED – A change that is not the result of a planned evolution.

The above EALs indicate events which have long lead times relative to potential for radiological release outside the site boundary, thus impact to public health and safety is very low. Classification as an Unusual Event is warranted as a precursor to a more serious event.

The level of 643' 4" refers to the water level that is 23 feet above the top of the spent fuel, the plant technical specification limit. Prior to that water level being reached, the operators will be warned that the level decrease is occurring via the spent fuel pool low level alarm (RLA-500 at 644'9" or 24'-5 ½" above the top of the fuel) and low level alarm (RLA-501 644'-2 ½" or 23'-11" above the top of the fuel). Local visual confirmation that the level has dropped below the technical specification limit is possible since much less water than 23 feet is needed for protection of the plant staff from excessive radiological doses. Twenty-three feet of water is required to protect members of the public from the anticipated radiological consequences of a fuel handing accident.

TERMINIATION/RECOVERY CRITERIA

The cause of the loss of water inventory is identified and actions to recover water level are successful.

DEVIATION FROM NUMARC:

NUMARC/NESP 077 AU2 example EAL number 3 (radiation reading for irradiated spent fuel in dry storage) was not included because Cook Nuclear Plant does not have irradiated fuel in dry storage.

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

R-3: ALERT - LOSS OF WATER LEVEL IN ANY AREA HOLDING IRRADIATED FUEL

INITIATING CONDITION

Major damage to irradiated fuel or loss of water level that has or will uncover irradiated fuel outside of the Reactor Vessel.

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. Report of visual observation of irradiated fuel uncovered in the spent fuel pool, transfer canal, or refueling cavity.

-OR-

2. An UNPLANNED VALID alarm on one of the following radiation monitors.
   - VRS - 1101.1201 (Unit 1) (Upper Containment)
   - VRS - 2101/2201 (Unit 2) (Upper Containment)
   - R-5 (SFP)
   - Portable radiation monitors

-OR-

3. Water level <632'4" in the spent fuel pool, transfer canal or reactor cavity that will result in fuel uncovery.

BASIS (References)

UNPLANNED - Not anticipated as part of a scheduled testing, surveillance, or maintenance activity.

VALID - Readings are assumed valid unless circumstances cause the reading to be suspect. Verification can be obtained by a) an instrument channel check, or b) indications on related or redundant indicators, or c) by direct observation by plant personnel. Implicit in this definition is the need for timely assessment, i.e., within 15 minutes.

This IC applies to spent fuel requiring water coverage and is not intended to address spent fuel which is licensed for dry storage.

There is time available to take corrective actions, and there is little potential for substantial fuel damage. In addition, NUREG/CR-4982 indicates that even if corrective actions are not taken, no prompt fatalities are predicted, and that risk of injury is low. Thus, an Alert classification for this event is appropriate.

632'4" refers to the water level that is 12 feet above the top of the spent fuel pool. Prior to that water level being reached, the operators will be warned that the level drop is occurring via the spent fuel pool

low level alarm (RLA-500 at 644'9" or 24'-5 ½" above the top of the fuel) and low level alarm (RLA-501 644'-2 ½" or 23'-11" above the top of the fuel). Local visual confirmation that the level has dropped below 632'4" is possible since 12 feet of water provides adequate radiation shielding for staff personnel from excessive radiation doses in the area of the spent fuel pool.

VRS 1101/1201 and 2101/2202 are the upper containment area radiation monitors, and are set to alarm at 54 mR/hr. R-5 (RCC-330) is a monitor in the spent fuel pool area. R-5 is set to alarm at 15 mR/hr.

In addition to the above radiation monitors, during refueling operations, portable area radiation monitors are located on the manipulator crane inside containment and on the spent fuel bridge crane. These monitors are set to alarm at radiation levels equal to about twice the background radiation, and thus provide early warning of any fuel uncovery problems.

Due to the potential of high personal radiation exposure, actual observation of an irradiated fuel assembly without benefit of shielding is not considered likely. If (as indicated under threshold #1 above) this should occur, it is appropriate that an ALERT be declared.

TERMINIATION/RECOVERY CRITERIA

The cause of the loss of water inventory is identified and actions to recover water level are successful. Radiological controls have been implemented and are effective.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-1: ALERT - FAILURE OF REACTOR PROTECTION SYSTEM

INITIATING CONDITION

Failure of Reactor Protection System (RPS) instrumentation to complete or initiate an automatic reactor trip once an RPS setpoint has been exceeded. A manual reactor trip was successful.

MODE APPLICABILITY

1, 2, and 3

EAL THRESHOLD VALUE

An anticipated transient without scram (ATWS) was terminated by a manual reactor trip from the control room.

BASIS (References)

Anticipated Transient Without Scram (ATWS) – An anticipated operational occurrence followed by the failure of the reactor trip portion of the protection system. Anticipated operational occurrences are those occurrences of normal operation which are expected to occur one or more times during the life of the plant and include, but are not limited to, loss of power to all reactor coolant pumps, tripping of the turbine generator set, isolation of the main condenser, and loss of all offsite power.

Reactor Protection System Instrumentation – All equipment associated with the measurement of process variables, and generation and implementation of trip signals.

This condition indicates failure of the automatic reactor 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, 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 reactor trip is any set of actions by the reactor operator(s) in the control room which cause control rods to be rapidly inserted into the core and brings the reactor subcritical (e.g., reactor trip switches). Failure of manual trip would escalate the event to a Site Area Emergency.

TERMINIATION/RECOVERY CRITERIA

Hot shutdown conditions established, an investigation as to the cause is in progress, and an assessment of any significant damage to the fuel or RCS has been completed.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-1: SITE AREA EMERGENCY – FAILURE OF REACTOR PROTECTION SYSTEM

INITIATING CONDITION

Failure of Reactor Protection System (RPS) instrumentation to complete or initiate an automatic reactor trip once an RPS setpoint has been exceeded. A manual reactor trip was NOT successful.

MODE APPLICABILITY

1 and 2

EAL THRESHOLD VALUE

An anticipated transient without scram (ATWS) was NOT terminated by a manual reactor trip from the control room.

BASIS (References)

Anticipated Transient Without Scram (ATWS) – An anticipated operational occurrence followed by the failure of the reactor trip portion of the protection system. Anticipated operational occurrences are those occurrences of normal operation which are expected to occur one or more times during the life of the plant and include, but are not limited to, loss of power to all reactor coolant pumps, tripping of the turbine generator set, isolation of the main condenser, and loss of all offsite power.

Reactor Protection System Instrumentation – All equipment associated with the measurement of process variables, and generation and implementation of trip signals.

Automatic and manual trips are not considered successful if action away from the reactor control console 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.

TERMINIATION/RECOVERY CRITERIA

Hot shutdown conditions established, an investigation as to the cause is in progress, and as assessment of any significant damage to the fuel or RCS has been completed.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-1: GENERAL EMERGENCY – FAILURE OF REACTOR PROTECTION SYSTEM

INITIATING CONDITION

Failure of Reactor Protection System (RPS) to complete an automatic trip and manual trip was NOT successful and there is indication of an extreme challenge to the ability to cool the core.

MODE APPLICABILITY

1 and 2

EAL THRESHOLD VALUE

1. ATSW was NOT terminated by manual reactor trip from the control room.

-AND-

2. Subcriticality AND Core Cooling CSFSTs are RED.

-OR-

Subcriticality AND Heat Sink CSFSTs are RED.

BASIS (References)

Anticipated Transient Without Scram (ATWS) – An anticipated operational occurrence followed by the failure of the reactor trip portion of the protection system. Anticipated operational occurrences are those occurrences of normal operation which are expected to occur one or more times during the life of the plant and include, but are not limited to, loss of power to all reactor coolant pumps, tripping of the turbine generator set, isolation of the main condenser, and loss of all offsite power.

Reactor Protection System Instrumentation – All equipment associated with the measurement of process variables, and generation and implementation of trip signals.

Automatic and manual 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 EAL, 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 console, 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°F or that the reactor vessel water level is at approximately three feet and the core exit thermocouples are greater than 700°F. This GE EAL equates to a Core Cooling RED condition.

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 as represented by a RED condition on the subcriticality CSFST), 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.

TERMINIATION/RECOVERY CRITERIA

Hot shutdown conditions established, an investigation as to the cause is in progress, and an assessment of any significant damage to the fuel or RCS has been completed.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-2: UNUSUAL EVENT – LOSS OF AC POWER

INITIATING CONDITION

Loss of all offsite power to essential buses for greater than 15 minutes.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

1. ALL of the OFFSITE power sources indicated by the following list of transformers are LOST to the T-buses for > 15 minutes. NOTE: Evaluate each units' power supply separately.

   a. Normal Auxiliary Power Source (Auxiliary Transformer)
   - TR 1AB / TR 2AB
   - TR 1CD / TR 2CD

   b. Preferred Offsite Power Sources (Reserve Transformer)
   - TR 101AB / TR 201AB
   - TR 101CD / TR 201CD

   c. Emergency Offsite Power Source (69Kv Transformer)
   - T-12-EP-1

2. At least two diesel generators per unit are supplying power to the emergency buses.

BASIS (References)

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 (Station Blackout). Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Offsite power can be supplied via the 69Kv emergency feed lines or from the switchyard via the reserve transformers. Backfeed through the unit auxiliary transformers is also considered an adequate source of offsite power.

TERMINIATION/RECOVERY CRITERIA

A reliable power supply to ESF buses from offsite sources is re-established.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-2: ALERT – LOSS OF AC POWER

INITIATING CONDITION

AC Power capability to essential buses reduced to a single power source for greater than 15 minutes such that any additional single failure would result in a station blackout.

MODE APPLICABILITY

1,,2, 3, 4

EAL THRESHOLD VALUE

Power to the T-buses has been degraded to a single source of AC power consisting of only one of the following transformers or diesel generators for greater than 15 minutes. NOTE: Evaluate each units' power supply separately.

- TR-101AB/TR-201AB
- TR-101CD/TR-201CD
- TR-1AB/TR-2AB
- TR-1CD/TR-2CD
- EDG 1AB/EDG 2AB
- EDG 1CD/EDG 2CD
- TR-12-EP-1

BASIS (References)

In Modes 1, 2, 3, and 4, 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 all offsite power with a concurrent failure of one emergency generator to supply power to its emergency buses or failure of emergency diesels and four of the five offsite power transformers. The subsequent loss of another single power source would escalate the event to a Site Area Emergency.

TERMINIATION/RECOVERY CRITERIA

Restore power from at least one additional source.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-2: SITE AREA EMERGENCY - LOSS OF AC POWER

INITIATING CONDITION

Loss of ALL offsite power and loss of ALL onsite AC power to essential buses.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

1. Loss of both of the following T-buses for > 15 minutes

   a. T11A, T11D (Unit 1)

   -OR-

   b. T21A, T21D (Unit 2)

NOTE: Evaluate each units' power supply separately.

BASIS (References)

Loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal and ESW. Prolonged loss of all AC power will cause core uncovering and loss of containment integrity, thus this event can escalate to a General Emergency.

Per ECA-0.0, "Loss of All AC Power", no specific time limitation is given for restoration of power to the emergency buses. Therefore, Cook uses the NUMARC/NESP 007 generic limit of 15 minutes.

Escalation to General Emergency is via Fission Product Barrier Degradation or IC S-2A, "Prolonged Loss of All Offsite Power and Prolonged Loss of All Onsite AC Power."

TERMINIATION/RECOVERY CRITERIA

Cold shutdown is established or a reliable power supply to the ESF buses is established.

DEVIATION FROM NUMARC:

This EAL is specified by loss of essential pump buses rather than loss of transformers and emergency generators.

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-2: GENERAL EMERGENCY – LOSS OF AC POWER

INITIATING CONDITION

Prolonged loss of ALL offsite power and ALL onsite AC power to essential buses.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

1. Loss of both of the following T-buses on a unit AND Core Cooling CSFST is ORANGE

   a. T11A, T11D (Unit 1)

   -OR-

   b. T21A, T21D (Unit 2)

-OR-

2. Loss of both of the following T-buses that is expected to last for > 4 hours

   a. T11A, T11D (Unit 1)

   -OR-

   b. T21A, T21D (Unit 2)

   NOTE: Evaluate each units' power supply separately.

BASIS (References)

PROLONGED – Restoration of at least one emergency bus within four (4) hours is not likely.

Loss of all AC power compromises all plant safety systems requiring electric power including RHR ECCS, Containment Heat Removal and ESW. Prolonged loss of all AC power could lead to loss of fuel clad, RCS, and containment. In accordance with letters AEP:NRC:0537D, dated April 14, 1989, and AEP:NRC:0537E, dated March 30, 1990, Cook Nuclear Plant falls within the four hour station blackout (SBO) coping category.

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. 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.

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.

TERMINIATION/RECOVERY CRITERIA

Cold shutdown is established or a reliable power supply to the ESF buses is established and other initiating conditions requiring maintenance of the general alert status are not present.

DEVIATION FROM NUMARC:

This EAL is specified by loss of essential pump buses rather than loss of transformers and emergency generators.

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-3: SITE AREA EMERGENCY - LOSS OF DC POWER

INITIATING CONDITION

Loss of all vital DC power for greater than 15 minutes.

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

Loss of DC buses AB AND CD as indicated by bus voltage < 220 volts DC for greater than 15 minutes.

BASIS (References)

VITAL – All 250 volt DC power.

The loss of all vital DC power compromises the ability to monitor and control plant functions required for the protection of the public and is considered a loss of these functions. A prolonged loss of control power may result in core uncovering and loss of containment integrity if there is sufficient decay heat generated by the core and sensible heat in the RCS.

The threshold value was chosen to recognize a loss of DC power at a voltage level low enough to be indicative of a severe control system problem. This value is high enough to provide reasonable assurance that the 250 volt batteries will last at least 15 minutes prior to reaching a designed minimum voltage of 210 volts.

The N Train battery supplies TDAFW control bus and the AMSAC inverter. Since these are backup systems, this bus is not included in this EAL.

TERMINIATION/RECOVERY CRITERIA

Power is restored to at least one 250 volt DC bus and an investigation as to the cause is underway.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-5: SITE AREA EMERGENCY – LOSS OF SYSTEMS NEEDED TO ACHIEVE OR MAINTAIN HOT SHUTDOWN

INITIATING CONDITION

Complete loss of function needed to achieve or maintain Hot Shutdown.

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

Entry into one of the following procedures has occurred:

OHP 4023.FR-H1, "Response to Loss of Secondary Heat Sink"

-OR-

OHP 4023.FR-C1, "Response to Inadequate Core Cooling"

BASIS (References)

This EAL addresses complete loss of functions, including ultimate heat sink and reactivity control, required for hot shutdown with the reactor at pressure and temperature. 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, Site Emergency Coordinator Judgement, or Fission Product Barrier Degradation ICs.

TERMINIATION/RECOVERY CRITERIA

Hot Shutdown operation is capable of being maintained.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-6: UNUSUAL EVENT – LOSS OF ALARMS OR INDICATION

INITIATING CONDITION

Unplanned loss of safety system annunciators and/or indications in the Control Room for greater than 15 minutes.

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

1. Loss of one of the following:

   a. Loss of one or more safety system annunciator panels in a unit for > 15 minutes:

      - Panels 104-114, 119, 120 (Unit 1)
      - Panels 204-214, 219, 220 (Unit 2)

   b. A known loss of indications associated with the following parameters for > 15 minutes (See Attachment 2):

      - Neutron Flux – Gammametrics)
      - Reactor Coolant Pressure (Wide Range)
      - Reactor Coolant Outlet Temperature Thot (Wide Range)
      - Reactor Coolant Outlet Temperature Tcold (Wide Range)
      - Incore Thermocouples (Core Exit Thermocouples)
      - Reactor Coolant System Subcooling Margin Monitor
      - Reactor Coolant Inventory System (Reactor Vessel Level Indication)
      - Pressurizer Water Level
      - Charging Pump Flow
      - Charging Pump Breaker Status
      - Safety Injection Pump Breaker Status
      - Safety Injection Flow
      - Refueling Water Storage Tank Water Level
      - Containment Water Level
      - Containment Pressure (Wide Range)
      - Containment Pressure (Narrow Range)
      - Containment Hydrogen Monitoring
      - Containment Isolation Valve Position Monitoring
      - Containment Area Radiation Monitors (High Range)
      - Steam Line Pressure

- Steam Generator Water Level (Wide Range)
- Steam Generator Water Level (Narrow Range)
- Auxiliary Feedwater Flow Rate
- Condensate Storage Tank Level

-AND-

2. In the opinion of the Shift Supervisor, the loss of annunciators or indications requires additional surveillance to safely operate the unit.

-AND-

3. Annunciator/Indicator loss does not result from PLANNED action.

-AND-

4. Compensatory Non-Alarming Indications for the above annunciator panels are available.

BASIS (References)

Compensatory Non-Alarming Indication – Computer-based information (SPDS, plant process computer, etc.) which could be monitored by control room operators.

PLANNED – Loss of annunciators or indicators that is the result of scheduled maintenance or testing.

This EAL is intended to recognize the difficulty associated with operating the plant safely without major groups of safety annunciators or indications. Compensatory non-alarming indications may include local process indications, or control room indicators/recorders/computer points in the event of an annunciator-system-only failure. Two types of failures are considered; the failure of redundant panels of indications important to safety, and the loss from all sources of any of the key safety indications as to the status of the nuclear steam supply system.

PLANNED maintenance or surveillance activities associated with annunciators or indicators are excluded from the EALs indicated herein.

TERMINIATION/RECOVERY CRITERIA

The minimum number of required annunciators are restored to operability and an investigation of the cause of the problem is in progress.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-6: ALERT – LOSS OF ALARMS OR INDICATION

INITIATING CONDITION

Unplanned loss of most or all safety system annunciators or indications in the Control Room with either (1) a significant transient in progress, or (2) compensatory non-alarming indicators are unavailable.

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

1. Loss of one of the following:

   a. Loss of one or more safety system annunciator panels in a unit for > 15 minutes:

      - Panels 104-114, 119, 120 (Unit 1)
      - Panels 204-214, 219, 220 (Unit 2)

   b. A known loss of indications associated with the following parameters for > 15 minutes (See Attachment 2):

      - Neutron Flux – Gammametrics)
      - Reactor Coolant Pressure (Wide Range)
      - Reactor Coolant Outlet Temperature Thot (Wide Range)
      - Reactor Coolant Outlet Temperature Tcold (Wide Range)
      - Incore Thermocouples (Core Exit Thermocouples)
      - Reactor Coolant System Subcooling Margin Monitor
      - Reactor Coolant Inventory System (Reactor Vessel Level Indication)
      - Pressurizer Water Level
      - Charging Pump Flow
      - Charging Pump Breaker Status
      - Safety Injection Pump Breaker Status
      - Safety Injection Flow
      - Refueling Water Storage Tank Water Level
      - Containment Water Level
      - Containment Pressure (Wide Range)
      - Containment Pressure (Narrow Range)
      - Containment Hydrogen Monitoring
      - Containment Isolation Valve Position Monitoring
      - Containment Area Radiation Monitors (High Range)

- Steam Line Pressure
- Steam Generator Water Level (Wide Range)
- Steam Generator Water Level (Narrow Range)
- Auxiliary Feedwater Flow Rate
- Condensate Storage Tank Level

-AND-

2. In the opinion of the Shift Supervisor, the loss of annunciators or indications requires additional surveillance to safely operate the unit.

-AND-

3. Annunciator/Indicator loss does not result from PLANNED action.

-AND-

4. Either

   a. A significant transient is in progress,

   -OR-

   b. Compensatory Non-Alarming Indications from the plant process computer or safety parameter display system are NOT available.

BASIS (References)

Compensatory Non-Alarming Indication – Computer based information (SPDS, plant process computer, etc.) which could be monitored by control room operators.

PLANNED – Loss of annunciators or indicators that is the result of scheduled maintenance or testing.

This EAL is intended to recognize the difficulty associated with operating the plant safety without major groups of safety annunciators or indications. Compensatory non-alarming indications may include local process indicators, or control room indicators/recorders/computer points in the event of an annunciator-system-only failure.

Examples of significant transients include: 1) reactor trips, 2) unanticipated power changes of greater than 10%, and 3) valid ESF actuations.

PLANNED maintenance or surveillance activities associated with annunciators or indicators are excluded from the EALs indicate herein.

TERMINIATION/RECOVERY CRITERIA

The minimum number of required annunciators is restored to operability and an investigation of the cause of the problem is in progress.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-6: SITE AREA EMERGENCY – LOSS OF ALARMS OR INDICATION

INITIATING CONDITION

Inability to monitor a significant transient in progress.

MODE APPLICABILITY

1, 2, 3, and 4

EAL THRESHOLD VALUE

Loss of one of the following:

1. Loss of one or more safety system annunciator panels in a unit for > 15 minutes:

   - Panels 104-114, 119, 120 (Unit 1)
   - Panels 204-214, 219, 220 (Unit 2)

2. A known loss of indications associated with the following parameters (See Attachment 2) for > 15 minutes which in the opinion of the Shift Supervisor significantly affects the ability to safely operate or shutdown the unit.

   - Neutron Flux – Gammametrics)
   - Reactor Coolant Pressure (Wide Range)
   - Reactor Coolant Outlet Temperature Thot (Wide Range)
   - Reactor Coolant Outlet Temperature Tcold (Wide Range)
   - Incore Thermocouples (Core Exit Thermocouples)
   - Reactor Coolant System Subcooling Margin Monitor
   - Reactor Coolant Inventory System (Reactor Vessel Level Indication)
   - Pressurizer Water Level
   - Charging Pump Flow
   - Charging Pump Breaker Status
   - Safety Injection Pump Breaker Status
   - Safety Injection Flow
   - Refueling Water Storage Tank Water Level
   - Containment Water Level
   - Containment Pressure (Wide Range)
   - Containment Pressure (Narrow Range)
   - Containment Hydrogen Monitoring
   - Containment Isolation Valve Position Monitoring
   - Containment Area Radiation Monitors (High Range)
   - Steam Line Pressure

- Steam Generator Water Level (Wide Range)
- Steam Generator Water Level (Narrow Range)
- Auxiliary Feedwater Flow Rate
- Condensate Storage Tank Level

-AND-

3. Compensatory Non-Alarming Indications from the plant process computer or safety parameter display system are NOT available.

-AND-

4. A significant transient is in progress.

BASIS (References)

Compensatory Non-Alarming Indication – Computer based information (SPDS, plant process computer, etc.) which could be monitored by control room operators.

This EAL is intended to recognize the difficulty associated with operating the plant safely without major groups of safety annunciators or indications. Compensatory non-alarming indications may include local process indications, or control room indicators/recorders/computer points in the event of an annunciator-system-only failure. A significant transient is not intended to be strictly defined, however, the following examples are provided: 1) reactor trips; 2) unanticipated power changes of $>10\%$, and 3) valid ESF actuations. NUREG 0737 instruments are included in this EAL to provide a redundant means for monitoring the plant should annunicators become unavailable. To prevent overclassifying an event to a Site Area Emergency, Shfit Supervisor discretion has been provided for. This allows the Shift Supervisor to decide if the specific indications which are unavailable are needed to monitor the transient in progress.

TERMINIATION/RECOVERY CRITERIA

Transient is terminated and ability to monitor plant parameters is restored.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-7: UNUSUAL EVENT - FUEL CLAD DEGRADATION

INITIATING CONDITION

Indication of Fuel Clad Degradation in Active Fuel

MODE APPLICABILITY

All

EAL THRESHOLD VALUE

1. Activity > 1.0 µCi/gram 1-131 dose equivalent for >48 hours in the RCS.

-OR-

2. RCS activity > 100/Ë µCi/gram

BASIS (References)

This IC is included as an Unusual Event 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.

Per Cook Technical Specification 3.4.8, "Reactor Coolant System Activity", fuel clad degradation is indicated if dose equivalent I-131 levels are greater than 1 µCi/gram for greater than 48 hours, dose equivalent I-131 levels are greater than the limits of technical specifications Figure 3.4-1, or gross radioactivity levels are > 100/Ë µCi/gram.

The coolant sample activity values indicate fuel clad degradation greater than technical specification allowable limits.

TERMINIATION/RECOVERY CRITERIA

Technical specification 3.4.8 limit or action requirements are met.

DEVIATION FROM NUMARC:

Cook Plant does not have failed fuel monitors.

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-8: UNUSUAL EVENT - ESCESSIVE RCS LEAKAGE

INITIATING CONDITION

Reactor Coolant System Leakage

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

Reactor coolant system leakage exceeds one of the following values:

1. Pressure boundary leakage > 10 gpm
   -OR-
2. SG tube leakage > 10 gpm
   -OR-
3. Identified leakage >25 gpm
   -OR-
4. Unidentified leakage >10 gpm

BASIS (References)

This IC is included as an Unusual Event 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. The 10 gpm value for unidentified or pressure boundary leakage was selected because it is observable with normal control room indications. Lesser values must generally be determined through time-consuming surveillance test (e.g., mass balances). The generic EAL for identified leakage is set at a higher value (25 gpm) due to the lesser significance of identified leakage in comparison to unidentified or pressure boundary leakage.

Only operating modes in which there is fuel in the reactor coolant system and the system is pressurized are specified.

TERMINIATION/RECOVERY CRITERIA

Leakage is isolated OR Cold Shutdown (Mode 5) is established.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-9: UNUSUAL EVENT - TECHNICAL SPECIFICATION TIME LIMIT EXPIRED

INITIATING CONDITION

Inability to reach required shutdown within Technical Specification time limits.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

Unit is NOT placed in required MODE within Technical Specification LCO action time limit.

BASIS (References)

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 technical specification requires a four hour report under 10 CFR 50.72 (b) Non-emergency events. The plant is within its safety envelope when being shutdown within the allowable action statement time in the technical specifications. An immediate Notification of an Unusual Event 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 an Unusual Event 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.

TERMINIATION/RECOVERY CRITERIA

Unit has reached cold shutdown (Mode 5) or other mode as specified in the limiting condition for operation action statement.

-OR-

Unit has been placed in a Mode where the LCO no longer applies.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

S-10: UNUSUAL EVENT - LOSS OF COMMUNICATION SYSTEMS

INITIATING CONDITION

Unplanned loss of all onsite or offsite communications.

MODE APPLICABILITY

1, 2, 3, 4

EAL THRESHOLD VALUE

1. UNPLANNED loss of ALL onsite electronic communication capabilities:

   Telephone
   Page System
   Radios

-OR-

2. UNPLANNED loss of ALL offsite electronic communication capabilities:

   Telephone (offsite)
   Microwave transmission
   NRC phone
   State Police/Sheriff Department Emergency Radios

BASIS (References)

UNPLANNED - The loss of communication is not a result o planned testing, maintenance or surveillance activities.

The purpose of this IC and its associated generic EALs is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks or the ability to communicate problems with offsite authorities. The loss of offsite communications capability is expected to be significantly more comprehensive than that addressed by 10 CFR 50.72. The loss of offsite communications capability is applicable when no direct means is available to communicate with or makes notifications to the load dispatcher or state and federal authorities.

TERMINIATION/RECOVERY CRITERIA

At least one form of onsite and offsite communications has been established.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-3 UNUSUAL EVENT – LOSS OF AC POWER ALL OFFSITE POWER TO ESSENTIAL BUSES FOR GREATER THAN 15 MINUTES

INITIATING CONDITION

Loss of all offsite power to essential buses for greater than 15 minutes.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

1. ALL of the following OFFSITE power sources indicated by the following list of transformer are LOST to the T-buses for > 15 minutes.

   a. Normal Auxiliary Power Source (Auxiliary Transformer)

   - TR 1AB / TR 2AB
   - TR 1CD / TR 2CD

   b. Preferred Offsite Power Sources (Reserve Transformer)

   - TR 101AB / TR 201AB
   - TR 101CD / TR 201CD

   c. Emergency Offsite Power Source (69Kv Transformer)

   - T-12-EP-1

-AND-

2. At lease one diesel generator per unit is supplying power to the emergency buses.

BASIS (References)

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 (Station Blackout). Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Offsite power can be supplied via the 69Kv emergency feed lines or from the switchyard via the reserve transformers. During outages, switchyard power may be supplied via the normal transformers

aligned for "backfeed". During outages, the backfeed alignment should be considered equivalent to reserve feed for the purpose of emergency classification level determinations.

TERMINIATION/RECOVERY CRITERIA

A reliable power supply to ESF buses from offsite sources is re-established.

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-3 ALERT – LOSS OF AC POWER ALL OFFSITE POWER AND LOSS OF ALL ONSITE AC POWER TO ESSENTIAL BUSES

INITIATING CONDITION

Loss of ALL offsite power and loss of ALL onsite AC power to essential buses.

MODE APPLICABILITY

5, 6 or defueled

EAL THRESHOLD VALUE

1. Loss of both of the following T-buses for > 15 minutes when fuel is in the reactor.

   a. T11A, T11D (Unit 1)

   -OR-

   b. T21A, T21D (Unit 2)

2. Loss of power to all the following buses when defueled T11A, T11D, T21A, T21D

BASIS (References)

In Modes 5 and 6, loss of all AC power compromises all plant safety systems requiring electric power including RHR, ECCS, Containment Heat Removal, Spent Fuel Heat Removal, and ESW. 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. An Alert is declared in these modes due to the less severe threat to the protection of the health and safety of the public because of the much longer time available to restore power and decay heat removal systems. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses. Escalating to Site Area Emergency, if appropriate, is by Abnormal Rad Levels/Radiological Effluent, or SEC Judgement ICs.

When a unit is defueled, power from an essential bus on either unit will be sufficient to provide emergency power to required plant safety systems.

TERMINIATION/RECOVERY CRITERIA

Restore power to at least one T-bus.

DEVIATION FROM NUMARC:

This EAL is specified by loss of essential pump buses rather than loss of transformers and emergency generators.

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-4: ALERT – INABILITY TO MAINTAIN A UNIT IN COLD SHUTDOWN

INITIATING CONDITION

Inability to maintain plant in Cold Shutdown.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

1. Loss of shutdown cooling as evidenced by entry into OHP 4022.017.001, "Loss of RHR Cooling."

-AND-

2. Temperature increase that either

   a. exceeds Technical Specification cold shutdown limit of 200°F

   -OR-

   b. results in an UNCONTROLLED increase in RCS temperature rise approaching the cold shutdown technical specification limit of 200°F.

BASIS (References)

UNCONTROLLED – means a temperature increase that is not the result of a planned evolution. It is included to preclude the declaration of an emergency for circumstances where decay head removal is intentionally removed from service and is controlled within the requirements of the technical specifications.

The threshold value indicates a substantial degradation in the level of safety of the plant by indicating a potential complete loss of the ability to removal decay heat in the Cold Shutdown and Refueling modes. NRC concerns expressed in Generic Letter 88-17, "Loss of Decay Heat Removal" are the basis for the threshold value as an anticipatory sequence leading to core uncovery and clad damage.

The threshold related to an uncontrolled temperature rise is necessary to preserve the anticipatory philosophy of NUREG-0654 for events starting from temperatures much lower than 200°F. The inability to reach cold shutdown is to include instances where decay heat removal capability is lost prior to reaching the cold shutdown mode.

TERMINIATION/RECOVERY CRITERIA

Cold shutdown conditions have been established and can be maintained.

DEVIATION FROM NUMARC

None.

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-4: SITE AREA EMERGENCY – INABILITY TO MAINTAIN A UNIT IN COLD SHUTDOWN

INITIATING CONDITION

LOSS of water level in the reactor vessel that has or will uncover fuel in the reactor vessel.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

Loss of reactor vessel water level as indicated by:

1. LOSS of shutdown cooling as evidenced by entry into OHP 4022.017.001, "Loss of RHR Cooling."

-AND-

2. Core uncovery as indicated by:

   a. RVLIS NR < 46% - 0 RCPs

   -OR-

   b. Reactor Vessel Water Level < 614'

BASIS (References)

LOSS – Inability to restore RHR operability (e.g., restart the RHR pumps) when required.

The threshold values indicate that severe core damage can occur and RCS integrity may not be assured and thus indicate failures of functions needed for the protection of the public.

These conditions address prolonged boiling as a result of loss of decay heat removal.

TERMINIATION/RECOVERY CRITERIA

Restoration of lost core inventory is in progress, level is above the top of the active fuel, and decay heat removal capability has been restored.

DEVIATION FROM NUMARC:

None.

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-5: UNUSUAL EVENT - FUEL CLAD DEGRADATION

INITIATING CONDITION

Fuel clad degradation.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

1. (Site-specific) radiation monitor readings indicating fuel clad degradation greater than Technical Specification allowable limits.

OR

2. RCS sample activity value indicating fuel clad degradation greater than Technical Specification allowable limits.

BASIS (References)

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. EAL #1 addresses site-specific radiation monitor readings that provide indication of fuel clad integrity. EAL #2 addresses coolant samples exceeding coolant technical specification for iodine spike.

TERMINIATION/RECOVERY CRITERIA

DEVIATION FROM NUMARC:

Cook Plant does not have failed fuel monitors.

[redacted]

DEVIATION FROM NUMARC: None

ECC CATEGORY NAME, EMERGENCY CLASS, AND DESCRIPTION

C-7 UNUSUAL EVENT – UNPLANNED LOSS OF DC POWER FOR GREATER THAN 15 MINUTES

INITIATING CONDITION

Unplanned loss of required DC power during cold shutdown or refueling mode for greater than 15 minutes.

MODE APPLICABILITY

5, 6

EAL THRESHOLD VALUE

UNPLANNED loss of 250 volt DC buses AB AND CD as indicated by bus voltage < 220 volts DC for greater than 15 minutes.

BASIS (References)

The purpose of this IC and its associated generic EAL 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 equipment needed to respond to the loss.

The threshold value was chosen to recognize a loss of DC power at a voltage level low enough to be indicative of a severe control system problem. This value is high enough to provide reasonable assurance that the 250 volt batteries will last at least 15 minutes prior to reaching a designed minimum voltage of 210 volts.

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 Alert will be per C-4, "Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the Reactor Vessel."

Plant Specific Information

DC systems are not shared between Cook Units 1 and 2.

The Cook 250 VDC system includes three major battery groups for each unit.

- Station or Plant Battery Train A (supplies 250 Bus CD)
- Station or Plant Battery Train B (supplies 250 Bus AB)
- N Train Battery

The N train battery supplies TDAFW control bus and the AMSAC inverter. Since these are backup systems, this bus is not included in this EAL.

The above symptoms include equipment which may be used to monitor and control the removal of decay heat during Cold Shutdown or Refueling operations (i.e., annunciators, PZ PORVs, steam dumps, SG PORVs).

TERMINIATION/RECOVERY CRITERIA

Power is restored to at least one 250 volt DC bus and an investigation as to the cause is underway.

DEVIATION FROM NUMARC: None

REVISION SUMMARY

Number: **PMP-2080-EPP-107** Revision: **18** Change: **0**
Title: **NOTIFICATIONS**

Section or Step	Change/Reason For Change
3.2.3	Change: Add Note IF accountability and /or evacuation is (are) required at classifications other than a Site Area Emergency or General Emergency, THEN PA announcements may be made using the guidance in step 3.2.3. Reason: CR 03099018 action 2 to address personnel accountability and evacuation from site when Site Area Emergency or General Emergency do not exist.
3.2.3	Change: Add "Note Directions to activate the ERO facilities are only given ONE time for the event in progress" and remove bullet with same statement from 3.2.3. Reason: CR 03099018 action 2 to address personnel accountability and evacuation from site when Site Area Emergency or General Emergency do not exist.
3.2.3 and 3.2.3.c	Change: Add "Note Accountability is performed only ONE time for the event in progress", and remove bullet with same statement from 3.2.3. Reason: CR 03099018 action 2 to address personnel accountability and evacuation from site when Site Area Emergency or General Emergency do not exist.
3.2.3	Change: Add "Note Announcements may be modified as necessary to fit existing plant and ERO status." Reason: CR 03099018 action 2 to address personnel accountability and evacuation from site when Site Area Emergency or General Emergency do not exist.
3.2.3	Change: Add bulleted item **IF** ERO Facility activation is desirable at other than Alert, Site Area Emergency, or General Emergency Classification, **THEN** announce the following **"Attention all personnel. Activate the _____Name of Facility(ies) to be activated_____. All other personnel continue with your work and be prepared for future announcements.".** Reason: CR 03099018 action 2 to address personnel accountability and evacuation from site when Site Area Emergency or General Emergency do not exist.

REVISION SUMMARY

Number: PMP-2080-EPP-107 Revision: 18 Change: 0
Title: NOTIFICATIONS

Section or Step	Change/Reason For Change
3.2.3	Change: Add bulleted item **IF** evacuation of areas of the plant, or evacuation of the plant site is desirable at other than Alert, Site Area Emergency, or General Emergency Classification, **THEN** announce the following **"Attention all personnel. Evacuate the _____ Area(s) of the plant to be evacuated_____. All other personnel continue with your work and be prepared for future announcements.".** Reason: CR 03099018 action 2 to address personnel accountability and evacuation from site when Site Area Emergency or General Emergency do not exist.
3.2.3	Change: Add bulleted item **IF** Personnel Accountability is desirable at other than Site Area Emergency, or General Emergency Classification, **THEN** notify the Security Shift Supervisor to perform accountability. Reason: CR 03099018 action 2 to address personnel accountability and evacuation from site when Site Area Emergency or General Emergency do not exist.
3.2.3	Change: Delete sentence "Modify the announcements in steps 3.2.3.a, 3.2.3.b, and 3.2.3.c as necessary to ensure that:" Reason: CR 03099018 action 2 to address personnel accountability and evacuation from site when Site Area Emergency or General Emergency do not exist.
3.2..10 Bullet	Change: Delete word "Offsite". Reason: "Offsite" is not included in the title for Data Sheet 1.
Attachment 2	Change: Pages block numbering from 10 – 11 to 11-12 on both pages of Attachment 2. Reason: Correct pagination.

Notification

Reference		Effective Date: 9/18/03
D. A. Schroeder	S. M. Partin	Site Protective Services
Writer	Owner	Cognizant Organization

TABLE OF CONTENTS

1 PURPOSE AND SCOPE

1.1 This procedure specifies the actions for notification of offsite personnel and activation of plant emergency response personnel for emergency conditions, drills, exercises and communication system tests.

1.2 The steps in this procedure are listed in the preferred order of performance for maximum efficiency. However, the steps may be performed in a different sequence.

2 DEFINITIONS AND ABBREVIATIONS

Term	Meaning
Drill/Exercise	An Emergency Response Organization (ERO) test that uses the Dialogic pager system to page ERO members in order to activate the Emergency Response Facilities.
EMD-32	Nuclear Plant Accident Notification form
Emergency	An actual plant condition that requires an Emergency Plan classification.
ENC	Emergency News Center
EOF	Emergency Operations Facility
ERO	Emergency Response Organization
JPIC	Joint Public Information Center
MSP	Michigan State Police
OSC	Operations Support Center
PA	Public Address
PAR	Protective Action Recommendation
SAS	Secondary Alarm Station
SEC	Site Emergency Coordinator
SM	Shift Manager
TSC	Technical Support Center

Turnover	A Dialogic Emergency Response Organization pager activation that signals a change in the on-duty team.

3 DETAILS

3.1 General

3.1.1 The SM shall assume the duties of the SEC and initiate this procedure.

3.1.2 **IF** an Emergency Classification upgrade is required, **THEN** re-perform section 3.2 of this procedure.

- Activation of ERO pagers is only required once.

NOTE: The SEC may implement this procedure in full or partially at any time should the need for additional personnel be recognized.

3.2 Actions

CAUTION: Do not use the 911 or 007 code for drills, exercises or training.

NOTE: SEC judgement will be used to determine which of the following codes will be used. The 007 code will be used if it is determined to be unsafe to report to the plant site.

3.2.1 **IF** an Alert, Site Area Emergency, or a General Emergency has been declared or an Unusual Event has been declared and ERO facility staffing is desired, **THEN** determine where the ERO should respond.

- Code '911' will direct ERO responders to their respective facilities in the TSC, OSC, EOF, ENC/JPIC.
- Code '007' will direct all ERO responders reporting from offsite to the Buchanan Office Building. The EOF will activate and the back-up TSC will be manned. Personnel will remain in Buchanan pending further instructions by the SEC.

3.2.2 IF a pager code was identified in step 3.2.1, THEN call the SAS at extension 1118 or 1119 and direct Security to implement the Dialogic Emergency Response Organization pager system for the selected response code.

a. IF conditions at the plant are such that personnel reporting to the plant would be at risk (e.g., security event, radiation release, toxic spill, etc.), THEN direct Security to close access to the plant until the SEC determines that the condition no longer exists.

NOTE: IF accountability and/or evacuation is (are) required at classifications other than a Site Area Emergency or General Emergency, THEN PA announcements may be made using the guidance in Step 3.2.3.

NOTE: Directions to activate the ERO facilities are only given ONE time for the event in progress.

NOTE: Accountability is performed only ONE time for the event in progress.

NOTE: Announcements may be modified as necessary to fit existing plant and ERO status.

3.2.3 Direct a Control Room Operator to perform ONE of the following, depending on the current classification. Include a brief description of the incident. Have the announcement broadcast twice.

- IF ERO Facility activation is desirable at other than Alert, Site Area Emergency or General Emergency Classification, THEN announce the following:

  "Attention all personnel. Activate the ___Name of Facility(ies) to be activated____. All other personnel continue with your work and be prepared for future announcements."

- IF evacuation of areas of the plant or evacuation of the plant site is desirable at other than Alert, Site Area Emergency or General Emergency Classification, THEN announce the following:

"Attention all personnel. Evacuate the ___Area(s) of the plant ot be evauated___. All other personnel continue with your work and be prepared for future announcements."

- **IF** Personnel Accountability is desirable at other than Site Area Emergency or General Emergency Classification, **THEN** notify the Security Shift Supervisor to perform accountability.
- **IF** an Unusual Event exists, **THEN** perform step 3.2.3.a.
- **IF** an Alert exists, **THEN** perform step 3.2.3.b.
- **IF** a Site Area Emergency or General Emergency exists, **THEN** perform step 3.2.3.c.
- Other contingencies are addressed as determined by the SEC (e.g., security concerns, radiation release, etc.).

a. FOR AN UNUSUAL EVENT:

"Attention all personnel. An Unusual Event has been declared due to ____(brief description)___. Continue with your work and be prepared for future announcements."

b. FOR AN ALERT:

"Attention all personnel. An Alert has been declared due to ____(brief description)___. Activate the Operations Support Center, Technical Support Center, Emergency Operations Facility and the Emergency News Center. All other personnel stand by for further announcements."

c. FOR A SITE AREA EMERGENCY OR GENERAL EMERGENCY:

NOTE:	Accountability is performed only ONE time for the event in progress.

1. Sound the Nuclear Emergency Alarm from the Control Room and broadcast the following:

"Attention all personnel. A __(Site Area Emergency or General Emergency)__ has been declared due to ___(brief description)___. Activate the Technical Support Center, Operations Support Center, Emergency Operations Facility, and Joint Public Information Center. All other personnel report for accountability."

2. Actuate the Unit 1 and Unit 2 Containment Evacuation Alarm.

3.2.4 On any touch-tone telephone, dial 1646 to access the Training Center and Buchanan Office Building PA and repeat the announcement that was made in step 3.2.3 twice.

3.2.5 Within 15 minutes of the classification of any emergency perform the following:

a. Complete a Nuclear Plant Accident Notification form, EMD-32a, (from Emergency Kit or DAP printout).

NOTE:	The MSP operator may request that a different phone number be used after initial contact is made.

b. Contact:

- Michigan State Police (MSP) at 8-1-517-336-6250 using the MSP bridge phone (extension 1088) in the back of the Control Room.
- Berrien County Sheriff's Department at 8-1-269-983-3911. IF the automated system answers, THEN dial 7200.

c. Document phone calls on Data Sheet 1, Shift Manager Initial Notification List.

d. Provide the information from the Nuclear Plant Accident Notification form, verbally to the MSP and the Berrien County Sheriff's Department.

e. Request a call back from the MSP and Berrien County Sheriff's Department.

f. Inform the MSP that the Nuclear Plant Accident Notification form will be faxed.

3.2.6 Fax Nuclear Plant Accident Notification form, to the MSP: Fax number 8-1-517-336-6257.

NOTE: If BROADCAST is pushed on the fax machine all of the locations listed in step 3.2.7 will receive the fax. If BROADCAST is NOT used then each of the locations will have to be individually faxed at the numbers listed in step 3.2.7.

3.2.7 IF an Alert, Site Area Emergency or General Emergency exists, THEN make follow-up notifications to the below listed facilities by faxing:

- EMD-32a, Nuclear Plant Accident Notification, within 15 minutes of a change of classification or Protective Action Recommendation.
- EMD-32b, Nuclear Plant Event Technical Data, every 30 minutes there after until relieved by the EOF or as directed by the MSP.

Michigan State Police	8-1-517-336-6257
State Emergency Operations Center	8-1-517-333-4987
Emergency Operations Facility	8-284-2942
Emergency News Center/JPIC	8-284-5892
Visitors' Center	2906 or 2907

3.2.8 IF a General Emergency exists and a PAR is made based on dose assessment, THEN within 15 minutes of the General Emergency classification or PAR change:

- Complete an EMD-32a and EMD-32b form and make notifications as directed in step 3.2.5 and fax the forms to the parties listed in step 3.2.7.

3.2.9 For all classifications, including classification upgrades, the Shift Manager or designee shall:

a. Provide the information on Data Sheet 2, Plant Status, to the NRC as soon as possible after the State and County have been notified, and within one hour of classification.

- Make the notification in accordance with the instructions in PMP-7030-001-001, Prompt NRC Notification.

3.2.10 **IF** an emergency classification is upgraded or the PAR changes, **THEN** verbally inform the MSP, Berrien County Sheriff's Department and the NRC.

- Document phone calls to MSP and Berrien County Sheriff's Department, on Data Sheet 1, Shift Manager Initial Notification List.

3.2.11 Inform the Security Shift Supervisor of the time of the Emergency Classification.

a. Direct the Security Shift Supervisor to assume the responsibility of the Security Director.

b. Direct the Security Shift Supervisor to notify the personnel listed in Section 5 of the ERO Phone Directory of the Emergency Classification.

3.3 Drills, Exercises and Communication System Tests

3.3.1 **IF** a Drill or Exercise is being conducted, **THEN** perform the applicable portions of Attachment 1.

3.3.2 **IF** a Communication System Test is being conducted, **THEN** perform the applicable portions of Attachment 2.

4 FINAL CONDITIONS

4.1 Emergency is closed-out.

4.2 Drill is completed.

4.3 Communication System Test is completed.

5 REFERENCES

5.1 Use References:

5.1.1 Emergency Response Organization ERO Phone Directory.

5.1.2 PMP-7030-001-001, Prompt NRC Notification

5.2 Writing References:

5.2.1 Source References:

a. NUREG 0654 FEMA REP-1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants (Rev. 1).

b. Cook Nuclear Plant Emergency Plan.

5.2.2 General References

a. None.

1 DRILLS AND EXERCISES

1.1 IF an Alert, Site Area Emergency, or a General Emergency has been declared, THEN the Simulator Shift Manager calls the SAS at extension 41-1118 and directs Security to implement the Dialogic Emergency Response Organization pager system for an announced or unannounced drill as directed by the controller. The drill or exercise controller may provide alternate instructions for contacting Security as dictated by the drill scenario.

1.2 The Simulator Shift Manager requests that the Shift Manager have a control room staff member page the plant using the Plant PA system, and make an announcement in accordance with the drill controller's instructions.

1.3 The Simulator Shift Manager directs the Simulator control room staff to sound the Nuclear Emergency Alarm and the Containment Evacuation Alarm in the SIMULATOR for a Site Area Emergency or General Emergency.

1.4 The Simulator Shift Manager directs the Simulator unaffected control room staff to page the Training Building and Buchanan Office Building by dialing 41-1646 on the plant phone system, and make an announcement in accordance with the drill controller's instructions.

1 COMMUNICATION SYSTEM TESTS

1.1 Nuclear Emergency Alarm Test and ERO Turnover/Notification Process Test

1.1.1 Operating shift shall perform the following tests every Tuesday at approximately 1000 or at a time approved by the Shift Manager:

- Call the SAS at extension 1118 to direct Security to activate the Dialogic Emergency Response Organization pagers for a Turnover.

1.1.2 Test Nuclear Emergency Alarm

Announce:

"This is a test. The following is a test of the Nuclear Emergency Alarm and ERO turnover notification."

- Sound the Nuclear Emergency Alarm (NEA) for 8 to 10 seconds and then reset by pushing "OVERIDE" button.

Announce:

"The test of the Nuclear Emergency Alarm is complete. Oncoming duty ERO personnel should call Dialogic when the ERO pager activates."

- Acceptance Criteria:

NEA alarm is heard in the Control Room.

_____ _____

Print Name/Signature Date

1.1.3 Perform test of the Training Building and Buchanan Office Building Public Address System.

- Dial 1646 and announce the following:

  "This is a test of the Training Building and Buchanan Office Building Public Address System and ERO turnover notification. Oncoming duty ERO personnel should call Dialogic when the ERO pager activates. Test is complete."

  Acceptance Criteria: (only required to be verified during normal work days).

  Emergency Planning personnel report that PA system test is heard in the Training Building and Buchanan Office Building.

  _____ _____
  Print Name/Signature Date

1.1.4 Perform the test of the Beach PA system monthly, between May 1st and October 31st.

- Station an AEO within range of the Beach PA system speakers.
- Make the following announcement using the Beach PA system microphone.
- **"This is a test of the Beach Public Address System. Test complete."**
- Acceptance Criteria:

  Announcement is heard by the AEO stationed for the test.

  _____ _____
  Print Name/Signature Date

ON-SITE NOTIFICATION	PHONE NUMBER	CONTACT ESTABLISHED INITIALS / TIME
Security (SAS) for Dialogic Activation	1118 or 1119	_____/_____
Training and Buchanan Office PA Announcement	1646	_____/_____

OFF-SITE NOTIFICATION	PHONE NUMBER	CONTACT ESTABLISHED INITIALS / TIME	EVENT CLOSEOUT INITIALS / DATE
Berrien County Sheriff's Department	8-1-269-983-3911	_____/_____	_____/_____
REQUEST CALL BACK VERIFICATION	BCSD Person Contacted:_____ Time Call Back Received:_____		
Michigan State Police	8-1-517-336-6250	_____/_____	_____/_____
REQUEST CALL BACK VERIFICATION	MSP Person Contacted:_____ Time Call Back Received:_____		
NRC Operations Center -	8-1-301-816-5100 8-1-301-951-0550 8-1-301-415-0553	**Red Phone or Commercial** _____/_____	_____/_____
	NRC Person Contacted:_____ Continuous contact will be required for an Alert, Site Area Emergency, or General Emergency		

NOTE: This Data Sheet is not required to be sent to the NRC unless asked for by the NRC. It is to be used as a guide for the communicator talking to the NRC.

Time of NRC Notification: _____

Reactivity Control

- All Control rods inserted? Yes No _____ # of rods out
- Reactor Subcritical? Yes No
- Emergency Boration initiated? Yes No
- Adequate Shutdown Margin? Yes No

RCS Inventory Control - Check all that apply for the current plant conditions

- Inventory makeup controlled by: (Identify all pumps injecting into RCS)

  CVCS – Normal Charging _____
  Charging Pumps via BIT (High Head SI) _____
  Safety injection pumps (Intermediate Head SI) _____
  RHR Pumps (Low Head SI) _____
  Other: _____ _____

RCS Pressure Control

- Pressurizer PORVs Closed? Yes No
- Pressurizer Safeties Closed? Yes No

RCS Heat Transport Control – Check all that apply for the current plant conditions

Forced Circulation by RCP _____
Natural Circulation _____
Feed and Bleed _____
Decay Heat Removal System (RHR) _____

RCS Heat Sink (available or in operation) - Check all that apply for the current plant conditions

S/G – Condenser Dump Valves _____
S/G – Atmospheric Dump Valves _____
S/G – Safety Valves _____
RCS – Feed/Bleed _____
Decay Heat Removal System (RHR) _____

S/G Inventory Control - Check all that apply for the current plant conditions

Main Feedwater _____
Aux. Feedwater _____
Other: _____ _____

Containment Control

- Ice Condenser Doors OPEN? Yes No
- Containment Sprays ON? Yes No
- Hydrogen Recombiners/Igniters ON? Yes No
- Containment Isolation Valves fail to CLOSE? Yes No
- Phase A Actuation? Yes No