

November 2, 2007

Mr. David A. Christian  
President and Chief Nuclear Officer  
Innsbrook Technical Center  
5000 Dominion Boulevard  
Glen Allen, VA 23060-6711

SUBJECT: KEWAUNEE POWER STATION - NRC INTEGRATED  
INSPECTION REPORT 05000305/2007004

Dear Mr. Christian:

On September 30, 2007, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Kewaunee Power Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on October 3, 2007, with Ms. L. Hartz and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, there were two NRC-identified findings of very low safety significance which involved violations of NRC requirements. In addition, one issue was reviewed under the NRC traditional enforcement process and determined to be a Severity Level IV violation of NRC requirements. However, because these violations were of very low safety significance and because the issues were entered into your corrective action program, the NRC is treating these findings and issue as non-cited violations (NCVs), in accordance with Section VI.A.1 of the NRC Enforcement Policy. Additionally, three licensee-identified violations are listed in Section 4OA7 of this report. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Kewaunee Power Station.

D. Christian

-2-

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Jamnes L. Cameron, Chief  
Branch 5  
Division of Reactor Projects

Docket No. 50-305  
License No. DPR-43

Enclosure: Inspection Report 05000305/2007004  
w/Attachment: Supplemental Information

cc w/encl: L. Hartz, Site Vice President  
C. Funderburk, Director, Nuclear Licensing  
and Operations Support  
T. Breene, Manager, Nuclear Licensing  
L. Cuoco, Esq., Senior Counsel  
D. Zellner, Chairman, Town of Carlton  
J. Kitsembel, Public Service Commission of Wisconsin  
State Liaison Officer, State of Wisconsin

D. Christian

-2-

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

Jamnes L. Cameron, Chief  
Branch 5  
Division of Reactor Projects

Docket No. 50-305  
License No. DPR-43

Enclosure: Inspection Report 05000305/2007004  
w/Attachment: Supplemental Information

cc w/encl: L. Hartz, Site Vice President  
C. Funderburk, Director, Nuclear Licensing  
and Operations Support  
T. Breene, Manager, Nuclear Licensing  
L. Cuoco, Esq., Senior Counsel  
D. Zellner, Chairman, Town of Carlton  
J. Kitsembel, Public Service Commission of Wisconsin  
State Liaison Officer, State of Wisconsin

DOCUMENT NAME: C:\FileNet\ML073090271.wpd

Publicly Available     Non-Publicly Available     Sensitive     Non-Sensitive

To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy

OFFICE	RIII					
NAME	JCameron:ntp					
DATE	11/02/07					

**OFFICIAL RECORD COPY**

Letter to D. Christian from J. Cameron dated November 2, 2007

DISTRIBUTION:

DXC1

TEB

MHC

RidsNrrDirslrib

MAS

KGO

JKH3

SXB3

CAA1

LSL (electronic IR's only)

C. Pederson, DRP (hard copy - IR's only)

DRPIII

DRSIII

PLB1

TXN

[ROPreports@nrc.gov](mailto:ROPreports@nrc.gov) (inspection reports, final SDP letters, any letter with an IR number)

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-305

License No: DPR-43

Report No: 05000305/2007004

Licensee: Dominion Energy Kewaunee, Inc.

Facility: Kewaunee Power Station

Location: Kewaunee, WI 54216

Dates: July 1 through September 30, 2007

Inspectors: S. Burton, Senior Resident Inspector  
P. Higgins, Resident Inspector  
R. Winter, Reactor Engineer  
J. Cassidy, Health Physicist  
K. Barclay, Reactor Engineer  
J. Tapp, Reactor Engineer  
J. Bartleman, Reactor Engineer  
R. Langstaff, Senior Reactor Inspector

Approved by: J. Cameron, Chief  
Branch 5  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000305/2007004; 7/1/2007 - 9/30/2007; Kewaunee Power Station. Maintenance Risk Assessments and Emergent Work Control, Surveillance Testing, Followup of Events and Notices of Enforcement Discretion.

This report covers a three-month period of inspection by resident inspectors and announced inspections by regional specialists. Two Green findings and one Severity Level IV violation, all associated with non-cited violations (NCVs), were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### A. NRC-Identified and Self-Revealed Findings

#### **Cornerstone: Initiating Events**

- Green. The inspectors identified a finding of very low safety significance and an associated non-cited violation of 10 CFR 50.65(a)(1), "Requirements for monitoring the effectiveness of maintenance at nuclear power plants." Specifically, as of August 25, 2007, the licensee failed to implement the Maintenance Rule (a)(1) action plan which had been incorporated into plant procedure N-AS-01 to preclude a loss of the "G" air compressor. The licensee entered the issue into their corrective action program. Corrective actions have included implementation of the procedural requirements of N-AS-01 for both the "G" and "F" air compressors.

The finding is greater than minor because it relates to a licensee failure to implement prescribed significant compensatory measures to manage risk and implement the 10 CFR 50.65(a)(1) action plan. Additionally, the finding is associated with the equipment performance attribute of the Initiating Events Cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors evaluated the finding using Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process," and determined that this finding is of very low safety significance by answering "No" to all questions in the Initiating Events Cornerstone column. (Section 1R13)

#### **Cornerstone: Barrier Integrity**

- Green. The inspectors identified a finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," during plant preparations to perform Surveillance Procedure SP-23-100B, "Train B Containment Spray Pump and Valve Test - IST." Specifically, the inspectors noted on August 8, 2007, that

shortly prior to performing the surveillance procedure, the plant had hung safety tags on the containment spray system in order to perform repair activities on IDS-102, a check valve in that system. These tags required that normally open motor-operated valves IDS-202 and IDS-2B be cycled closed and tagged in order to isolate the check valve. Because these motor-operated valves were required to be stroke and time-tested during the performance of the surveillance procedure, and the effects of preconditioning on these valves was not considered prior to implementation of the maintenance activity, the inspectors determined that plant procedures were inadequate to assess preconditioning implications associated with station activities. The licensee entered the issue into their corrective action program. Corrective actions included completion of the surveillance procedure with acceptable results and an evaluation of the test results, which determined that the surveillance test was acceptable.

The finding is greater than minor because it was associated with the configuration control attribute of the Barrier Integrity Cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. The inspectors evaluated the finding using IMC 0609, Appendix A, "Significance Determination Process," and determined that this finding is of very low safety significance by answering "No" to all questions in the containment barriers cornerstone column. The inspectors also determined that the primary cause for this finding is related to the cross-cutting area of human performance. Specifically, under the component of resources, procedures to assess and prevent preconditioning of safety-related components were not complete, accurate, and up-to-date (H.2(c)). (Section 1R22)

### **Cornerstone: Mitigating Systems**

- Green. The inspectors identified a finding of very low safety significance for the licensee's failure to adequately update the Updated Safety Analysis Report (USAR) in accordance to 10 CFR 50.71, "Maintenance of records, making of reports." The licensee failed to update the USAR to fully reflect changes and analyses made in response to license amendment 184. Once identified, the licensee entered this issue into its corrective action program.

Because this issue potentially impacted the NRC's ability to perform its regulatory function, this finding was evaluated using the traditional enforcement process. The finding is greater than minor because of the failure to provide complete licensing and design basis information in the USAR could result in either the licensee making an inappropriate licensing interpretation or the NRC making an inappropriate regulatory decision based on incomplete information in the USAR. The issue is of very low safety significance based upon a Phase 2 significance determination analysis of the associated technical issue. The issue was a NCV of 10 CFR 50.71(e), which required that the USAR be updated to include the effects of all safety evaluations performed by the licensee in support of requested license amendments. The primary cause of this violation is related

to the cross-cutting area of problem identification and resolution because the extent of condition review performed for a recent and similar violation failed to identify the issue even though it was within the scope of the extent of condition review which had been performed (P.1(c)). (Section 4OA3.1)

**B. Licensee-Identified Violations**

Violations of very low safety significance, which were identified by the licensee, have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.



## REPORT DETAILS

### Summary of Plant Status

Kewaunee operated at full power for the entire inspection period except for brief downpowers to conduct planned surveillance testing activities with the following exception:

- on July 14, 2007, reactor power was reduced to 87 percent to facilitate repairs on transmission line R-304 and on heater drain pump "B." Full power operation was resumed on July 15.

### **1. REACTOR SAFETY**

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdown

a. Inspection Scope

The inspectors performed partial walkdowns of accessible portions of trains of risk-significant mitigating systems equipment. The inspectors reviewed equipment alignment to identify any discrepancies that could impact the function of the system and potentially increase risk. Identified equipment alignment problems were verified by the inspectors to be properly resolved. The inspectors selected redundant or backup systems for inspection during times when equipment was of increased importance due to unavailability of the redundant train or other related equipment. Inspection activities included, but were not limited to, a review of the licensee's procedures, verification of equipment alignment, and an observation of material condition, including operating parameters of equipment in-service. As part of this inspection, the documents listed in the Attachment were reviewed.

The inspectors selected the following equipment trains to assess operability and proper equipment line-up for a total of eight inspection samples:

- service water train "A" with service water train "B" out-of-service for maintenance;
- residual heat removal (RHR) system "B" following system testing;
- turbine-driven auxiliary feedwater after service water header flushing;
- instrument busses 2 and 3 and associated power supply following maintenance;
- emergency diesel generator "B" upon restoration from semiannual operability test;
- auxiliary feedwater pump "B" upon restoration from instrument testing;
- auxiliary feedwater pumps after "B" service water header flushing; and
- safety injection system "B" upon restoration from maintenance.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors performed a complete walkdown of equipment for one risk significant mitigating system. The inspectors walked down the system to review mechanical and electrical equipment line-ups, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of past and outstanding work orders was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the corrective action program database to ensure that any system equipment alignment problems were being identified and appropriately resolved. As part of this inspection, the documents listed in the Attachment were reviewed.

The inspectors selected the chemical volume and control system to assess operability and proper equipment line-up for a total of one inspection sample.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Quarterly Fire Zone Walkdowns (71111.05Q)

a. Inspection Scope

The inspectors walked down risk significant fire areas to assess fire protection requirements. The inspectors reviewed areas to assess whether the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and had implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events, or the potential to impact equipment which could initiate or mitigate a plant transient. The inspection activities included, but were not limited to, the control of transient combustibles and ignition sources, fire detection equipment, manual suppression capabilities, passive suppression capabilities, automatic suppression capabilities, compensatory measures, and barriers to fire propagation. As part of this inspection, the documents listed in the Attachment were reviewed.

The inspectors selected the following areas for review, for a total of 18 inspection samples:

- PFP-4, Screen House and Tunnel;
- PFP-5, 1A Diesel Generator and Diesel Generator Day Tank Rooms;
- PFP-6, 1B Diesel Generator and Diesel Generator Day Tank Rooms;
- PFP-7, CO<sub>2</sub> Storage Tank Room;
- PFP-8, 480-Volt Switchgear Bus 1-51 and 1-52 Room;
- PFP-9, 480-Volt Switchgear Bus 1-61 and 1-62 Room and Auxiliary Feedwater Pump Area;
- PFP-11, Turbine Building Basement;
- PFP-12, Turbine Building Mezzanine;
- PFP-14, Turbine Building Operating Floor;
- PFP-16, Refueling Water Storage Tank and Containment Spray Pump Area;
- PFP-17, Charging Pump, Boric Acid Concentrate Pump and RHR Pump Pit Areas;
- PFP-19, Condensate Storage and Reactor Make Up Water Storage Room and Adjacent Areas;
- PFP-20, Materials Storage and Radiation Protection Office Areas;
- PFP-22, RHR Heat Exchanger, Component Cooling Water Pump, Letdown and Sealwater Filter Areas, and Refueling Water Storage Tank and Valve Gallery;
- PFP-24, Main Steam Line B Relief Header and Cable spreading Area;
- PFP-26, Control Room;
- PFP-28, Control Room Heating, Ventilation, Heating and Air Conditioning Equipment and Records Storage Room; and
- PFP-29, Auxiliary Building and Turbine Building Fan Rooms.

b. Findings

No findings of significance were identified.

.2 Annual Fire Drill Review (71111.05A)

a. Inspection Scope

The inspectors reviewed fire drill activities to evaluate the licensee's ability to control combustibles and ignition sources, the use of fire fighting equipment, and their ability to mitigate the event. The inspection activities included, but were not limited to, the fire brigade's use of fire fighting equipment, effectiveness in extinguishing the simulated fire, effectiveness of communications amongst fire brigade members and the control room, command and control by the fire commander, and observation of the post-drill critique. As part of this inspection, the documents listed in the Attachment were reviewed.

The inspectors observed the licensee's fire brigade response to an announced fire drill in the main transformer area, for a total of one inspection sample.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

The inspectors performed an annual review of the licensee's testing of heat exchangers. The inspection focused on potential deficiencies that could mask the licensee's ability to detect degraded performance, identification of any common cause issues that had the potential to increase risk, and ensuring that the licensee was adequately addressing problems that could result in initiating events that would cause an increase in risk. The inspection activities included, but were not limited to, a review of the licensee's observations as compared against acceptance criteria, the correlation of scheduled testing and the frequency of testing, and the impact of instrument inaccuracies on test results. Inspectors also verified that test acceptance criteria considered differences between test conditions, design conditions, and testing criteria. As part of this inspection, the documents listed in the Attachment were reviewed.

The inspectors selected the auxiliary building basement fan coil units, for a total of one inspection sample.

b. Findings

Auxiliary Building Heating and Ventilation Calculations Potentially Unconservative

Introduction: The inspectors identified an unresolved item (URI) associated with potentially inoperable Technical Specification (TS) related equipment due to support system unavailability and related calculational issues.

Discussion: On August 17, 2007, the daily work schedule indicated that an administrative limiting condition for operation was planned for work associated with the auxiliary building fan coil units. The inspectors inquired about the basis for the administrative limiting condition for operation and found that the related calculations indicated that under certain post-accident combinations of pump and room cooler operation that the coolers may not be fully capable of removing the heat from the system. As a result, the inspectors selected the associated fan coil unit to review as a sample for heat sink performance.

During the inspectors' reviews, it appeared that certain combinations of room coolers and equipment did not support operability of equipment as defined by TSs. Additionally, when the licensee was questioned about requirements for entry into related limiting conditions for operation, they referenced a letter to another licensee which Kewaunee had not made Kewaunee-specific through the 10 CFR 50.59 process or an amendment request. The inspectors concluded that the application of non-license specific information to the operation of Kewaunee was a performance deficiency. Additionally, the licensee's related Calculation, C11157, "Auxiliary Building Basement Post Accident Heat Gain," dated May 26, 2007, predated the specified letter, as such, the failure of the licensee to recognize the TS implications at the time of the development of the calculations was also a performance deficiency.

As a result of procedural changes that came about after the inspectors' inquires and of other auxiliary building issues that existed with the mezzanine room coolers, the on-site safety review committee requested that engineering review all calculations for auxiliary building ventilation. Because the continuing reviews identified other room cooling issues that could impact the operability of safety-related equipment, the inspectors considered this issue unresolved pending the licensee's finalization of related calculations and possible submittal of any related licensee event reports (LERs).  
(URI 05000305/2007004-01)

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

The inspectors performed a quarterly review of licensed operator requalification training. The inspectors assessed the licensee's effectiveness in evaluating the requalification program, ensuring that licensed individuals operate the facility safely and within the conditions of their license, and evaluated licensed operator mastery of high-risk operator actions. The inspection activities included, but were not limited to, a review of high risk activities, emergency plan performance, incorporation of lessons-learned, clarity and formality of communications, task prioritization, timeliness of actions, alarm response actions, control board operations, procedural adequacy and implementation, supervisory oversight, group dynamics, interpretations of TSs, simulator fidelity, and licensee critique of performance. As part of this inspection, the documents listed in the Attachment were reviewed.

The inspectors observed a licensed operator requalification training crew during an evaluated simulator scenario that included a steam generator level control failure, a loss of nonsafety-related busses accompanied with a failure to trip the reactor, and a loss of feedwater to the steam generators, for a total of one inspection sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

.1 Quarterly Reviews of Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed systems to assess maintenance effectiveness, including maintenance rule activities, work practices, and common cause issues. Inspection activities included, but were not limited to, the licensee's categorization of specific issues, including evaluation of performance criteria, appropriate work practices, identification of common cause errors, extent of condition, and trending of key parameters. Additionally, the inspectors reviewed implementation of the Maintenance Rule (10 CFR 50.65) requirements, including a review of scoping, goal-setting, performance monitoring, short-term and long-term corrective actions, functional failure determinations associated with reviewed corrective action program documents, and

current equipment performance status. As part of this inspection, the documents listed in the Attachment were reviewed.

The inspectors performed the following maintenance effectiveness reviews, for a total of four inspection samples:

- a function-oriented review of the chemical volume and control system because the licensee designated it as risk significant under the Maintenance Rule;
- an issue/problem-oriented review of the main turbine generator system because the licensee designated it as risk significant under the Maintenance Rule and the system experienced hydrogen cooler leakage;
- an issue/problem-oriented review of structures - auxiliary building roof because the licensee designated it as risk significant under the Maintenance Rule and the system experienced water leakage impacting the auxiliary building special ventilation zone; and
- a function-oriented review of the heater drain pumps because the licensee designated it as risk significant under the Maintenance Rule.

b. Findings

No findings of significance were identified.

.2 Maintenance Effectiveness Periodic Evaluation Periodic Evaluation (71111.12B)

a. Inspection Scope

The inspectors examined the last two maintenance rule periodic evaluation reports completed for June 2004 through December 2004 and January 2005 through June 2006. The inspectors reviewed a sample of (a)(1) Action Plans, Performance Criteria, Functional Failures, and Condition Reports to evaluate the effectiveness of (a)(1) and (a)(2) activities. These same documents were reviewed to verify that the threshold for identification of problems was at an appropriate level and the associated corrective actions were appropriate. Also, the inspectors reviewed the maintenance rule procedures and processes. The inspectors focused the inspection on the following systems (samples):

- 4160-Volt Distribution;
- Safety Injection;
- Direct Current Supply and Distribution;
- Chemical and Volume Control; and
- Station and Instrument Air

The inspectors verified that the periodic evaluations were completed within the time restraints defined in 10 CFR 50.65 (once per refueling cycle, not to exceed 24 months). The inspectors also ensured that the licensee reviewed its goals, monitored Structures, Systems, and Components (SSCs) performance, reviewed industry operating experience, and made appropriate adjustments to the maintenance rule program as a result of the above activities.

The inspectors verified that:

- the licensee balanced reliability and unavailability during the previous cycle, including a review of high safety significant SSCs;
- (a)(1) goals were met, that corrective action was appropriate to correct the defective condition, including the use of industry operating experience, and that (a)(1) activities and related goals were adjusted as needed; and
- the licensee has established (a)(2) performance criteria, examined any SSCs that failed to meet their performance criteria, and reviewed any SSCs that have suffered repeated maintenance preventable functional failures including a verification that failed SSCs were considered for (a)(1).

In addition, the inspectors reviewed maintenance rule self-assessments and audit reports that addressed the maintenance rule program implementation.

This review represented five triennial inspection samples.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments (RAs) and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed maintenance activities to review RAs and emergent work control. The inspectors verified the performance and adequacy of RAs, management of resultant risk, entry into the appropriate licensee-established risk bands, and the effective planning and control of emergent work activities. The inspection activities included, but were not limited to, a verification that licensee RA procedures were followed and performed appropriately for routine and emergent maintenance, that RAs for the scope of work performed were accurate and complete, that necessary actions were taken to minimize the probability of initiating events, and that activities to ensure that the functionality of mitigating systems and barriers were performed. Reviews also assessed the licensee's evaluation of plant risk, risk management, scheduling, configuration control, and coordination with other scheduled risk significant work for these activities. Additionally, the assessment included an evaluation of external factors, the licensee's control of work activities, and appropriate consideration of baseline and cumulative risk. As part of this inspection, the documents listed in the Attachment were reviewed.

The inspectors observed maintenance or planning for the following activities or risk significant systems undergoing scheduled or emergent maintenance, for a total of seven inspection samples:

- work schedule change associated with the service water pretreatment filters;
- work schedule change and increased tagging activities for instrument air receivers "A" and "C" relief valves;
- risk management during charging pump trip;

- work schedule changes to replace service water pressure switch and traveling screen "B2" work scope change;
- air compressor "G" inadvertent trip;
- risk profile change due to thunderstorm watch; and
- risk profile change due to vehicle in switch yard.

b. Findings

Failure to Implement Maintenance Rule (a)(1) Corrective Actions on the "G" Instrument Air Compressor

Introduction: A finding of very low safety significance (Green) and an associated non-cited violation (NCV) of 10 CFR 50.65(a)(1), "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," was identified by the inspectors during discussions with plant personnel regarding a trip of the "G" air compressor, a component designated as risk significant in the plant probabilistic risk assessment (PRA) model.

Description: The "G" air compressor is designated as risk significant in the plant PRA model. Additionally, the "G" air compressor is in Maintenance Rule (a)(1) status, in part, due to this air compressor tripping on high temperature. As a result, a maintenance rule (a)(1) action plan had been developed that included interim corrective actions to open the doors on the air compressor and to provide additional ventilation to support operation of the compressor. These interim corrective actions were incorporated into plant procedure N-AS-01, "Station and Instrument Air System."

On the morning of August 22, 2007, plant engineering personnel advised operations personnel that the "G" instrument air compressor high pressure outlet air temperature was increasing and approaching the trip setpoint. Implementation of the interim corrective actions in procedure N-AS-01 to support operation of the air compressor was discussed at that time. In the afternoon of August 22, engineering personnel again contacted plant operations and advised them that the air temperature was nearing its trip setpoint. At that time, engineering personnel recommended that the interim corrective actions of N-AS-01 be implemented, or that the "G" air compressor be shutdown and the "F" air compressor be started, however these actions were not taken. On August 25, at approximately 11:30 a.m., the "G" air compressor tripped on high temperature and the standby "F" air compressor started and assumed load before the declining air system pressure affected reactor operations. The inspectors concluded that the failure to implement the interim corrective actions of N-AS-01 resulted in a high temperature trip of the "G" air compressor, increased plant operating risk, and was a failure to implement the 10 CFR 50.65(a)(1) action plan requirements established in procedure N-AS-01.

Analysis: The inspectors determined that the licensee's failure to implement the requirements of N-AS-01 for the "G" air compressor, which resulted in a high temperature trip of that air compressor, was a performance deficiency and a finding. The inspectors concluded that the finding is greater than minor in accordance with Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 20, 2007, in that the finding relates



to a licensee failure to implement prescribed significant compensatory measures to manage risk and implement the 10 CFR 50.65(a)(1) action plan. Additionally, the finding is associated with the equipment performance attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the licensee failed to implement proceduralized interim corrective actions to prevent a high temperature trip of the "G" air compressor.

The inspectors evaluated the finding using Appendix A of IMC 0609, "Significance Determination Process," and determined that this finding is of very low safety significance (Green) by answering "No" to all questions in the initiating events cornerstone column.

Enforcement: 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance and nuclear power plants," paragraph (a)(1) states in part that "When the performance or condition of a structure, system, or component does not meet established goals, appropriate corrective action shall be taken." Contrary to this, the licensee failed to implement appropriate corrective actions established in N-AS-01 to prevent a high temperature trip of the "G" air compressor, a component which was in maintenance rule (a)(1) status. The licensee entered this issue into the plant corrective action program as CR018623, "Station and Instrument Air Compressor Fault; Air Compressor G HP Air Out Temp Hi Trip," and, as corrective action, subsequently implemented the procedural requirements of N-AS-01 on both the "G" and "F" air compressors. Because this violation was of very low safety significance and was entered into the licensee's corrective action program, this violation is being treated as an NCV consistent with Section VI.A of the NRC enforcement policy (NCV 05000305/2007004-02).

#### 1R15 Operability Evaluations (71111.15)

##### a. Inspection Scope

The inspectors reviewed operability evaluations that affected mitigating systems or barrier integrity to ensure that operability was properly justified and that the component or system remained available. The inspection activities included, but were not limited to, a review of the technical adequacy of the operability evaluations to determine the impact on TSs, the significance of the evaluations to ensure that adequate justifications were documented, and that risk was appropriately assessed. As part of this inspection, the documents listed in the Attachment were reviewed.

The inspectors reviewed the following operability evaluations for a total of three inspection samples:

- calculation assumptions exceeded for motor-operated valves;
- condensate storage tank interface with auxiliary feedwater pumps; and
- reasonable assurance for safety for the auxiliary building special ventilation zone.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

a. Inspection Scope

The inspectors' review of permanent plant modifications focused on verification that the design bases, licensing basis, and performance capability of related SSCs were not degraded by the installation of the modification. The inspectors also verified that the modifications did not place the plant in an unsafe configuration. The inspection activities included, but were not limited to, a review of the design adequacy of the modification by performing a review, or partial review, of the modification's impact on plant electrical requirements, material requirements and replacement components, response time, control signals, equipment protection, operation, failure modes, and other related process requirements. As part of this inspection, the documents listed in the Attachment were reviewed.

The inspectors selected a modification to provide cooling water to the safety-related service water pumps from the plant equipment water system for review for a total of one inspection sample.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors verified that the post-maintenance test procedures and activities were adequate to ensure system operability and functional capability. Activities were selected based upon the SSC's ability to impact risk. The inspection activities included, but were not limited to, witnessing or reviewing the integration of testing activities, applicability of acceptance criteria, test equipment calibration and control, procedural use and compliance, control of temporary modifications or jumpers required for test performance, documentation of test data, system restoration, and evaluation of test data. Also, the inspectors verified that maintenance and post-maintenance testing activities adequately ensured that the equipment met the licensing basis, TSs, and USAR design requirements. As part of this inspection, the documents listed in the Attachment were reviewed.

The inspectors reviewed post-maintenance activities associated with the following components for a total of eight inspection samples:

- post-maintenance testing of charging pumps "A" and "C" following maintenance;
- post-maintenance testing of traveling water screens following replacement of the drive hub

- post-maintenance testing of service water pump “1B” following replacement of the cooling water pressure regulator;
- post-maintenance testing of spent fuel cooling water pump following maintenance;
- post-maintenance testing of the spent fuel pool cooling water heat exchanger following maintenance;
- post-maintenance testing of the reactor makeup water pump motor starter following restoration after preventative maintenance;
- post-maintenance testing of the battery room fan coil unit “B” following restoration after planned maintenance; and
- post-maintenance testing of control room air conditioning train “A” temperature controller following restoration after calibration.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed surveillance testing activities to assess operational readiness and to ensure that risk-significant SSCs were capable of performing their intended safety function. Activities were selected based upon risk significance and the potential risk impact from an unidentified deficiency or performance degradation that an SSC could impose on the Unit if the condition was left unresolved. The inspection activities included, but were not limited to, a review for preconditioning, integration of testing activities, applicability of acceptance criteria, test equipment calibration and control, procedural use, control of temporary modifications or jumpers required for test performance, documentation of test data, applicability to TSs, impact of testing relative to performance indicator (PI) reporting, and evaluation of test data. As part of this inspection, the documents listed in the Attachment were reviewed.

The inspectors selected the following surveillance testing activities for review for a total of six inspection samples:

- technical support center diesel generator monthly test;
- safety injection train “A” pump and valve test (inservice testing (IST));
- service water train “A” pump and valve test;
- 4160-Volt bus No. 6 undervoltage test;
- containment radiation monitors R-11 and R-12 testing (reactor coolant system (RCS) leakage); and
- containment spray train “B” pump and valve test (containment isolation valve).

b. Findings

Preconditioning of Safety-Related Motor-Operated Valves

Introduction: A finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors during plant preparations to perform Surveillance Procedure SP-23-100B, "Train B Containment Spray Pump and Valve Test - IST."

Description: On August 8, 2007, Surveillance Procedure SP-23-100B, "Train B Containment Spray Pump and Valve Test - IST," was scheduled to be performed. Shortly before the surveillance procedure was scheduled to be performed, the planning and scheduling group had scheduled safety tags to be hung on the containment spray system in order to repair IDS-102, a containment spray system check valve. These tags required that normally open motor-operated valves IDS-202 and IDS-2B be cycled closed and tagged in order to isolate the check valve. These motor-operated valves were also required to be stroke and time-tested during performance of the surveillance procedure. The inspectors were concerned that operation of these valves as part of the maintenance on the check valve could result in preconditioning of the valves prior to performance of the surveillance test on the valves and could invalidate the test results. Plant General Nuclear Procedures, GNP-08-02-08, "Work Order Planning," and GNP-08-02-11, "Online Maintenance Planning and Scheduling," required that "When work orders are combined with a surveillance or ASME Code required testing, preconditioning should be considered when developing the work plan to prevent unacceptable preconditioning."

The inspectors determined, following review of plant procedures, interviews with plant management, and a review of NRC guidance on preconditioning, that plant procedures were not adequate to support proper consideration of preconditioning. These procedures did not discuss or provide a definition for acceptable versus unacceptable preconditioning, did not provide guidance on the scope of components which should be included in such consideration, and did not identify which personnel were responsible for the consideration of potential preconditioning. Therefore, the inspectors determined that, due to inadequate procedures, adequate consideration of preconditioning of IDS-202 and IDS-2B during maintenance activities was not given before the surveillance procedure that tested these valves was conducted.

Analysis: The inspectors determined that the licensee's failure to provide adequate guidance for preconditioning in General Nuclear Procedures GNP-08-02-08 and GNP-08-02-11 was a performance deficiency and a finding. Specifically, the licensee's Quality Assurance Program Description (QAPD) describes the plants implementation of 10 CFR Part 50, Appendix B, and commits the plant to the provisions of Regulatory Guide 1.33, Revision 2, February 1978, "Quality Assurance Program Requirements (Operation)." Appendix A, Section 9a, of Regulatory Guide 1.33, states in part that "Maintenance that can affect the performance of safety-related equipment, should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances." Therefore, the licensee's failure to provide adequate procedures which could affect the performance of

safety-related equipment was contrary to the requirements of the QAPD and subject to the requirements of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings, which states, in part that, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings."

The inspectors concluded that the finding is greater than minor in accordance with Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 20, 2007, in that the finding was associated with the configuration control attribute of the Barrier Integrity Cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the licensee failed to provide adequate procedures to support the consideration of preconditioning of motor-operated valves in the containment spray system prior to conducting a TS required surveillance test on that system. Additionally, the failure to provide adequate procedures, if left uncorrected, would become a more significant safety concern.

The inspectors evaluated the finding using Appendix A of IMC 0609, "Significance Determination Process," and determined that this finding is of very low safety significance (Green) by answering "No" to all questions in the containment barriers cornerstone column.

The inspectors also determined that the primary cause for this finding is related to the cross-cutting area of human performance. Specifically, under the component of resources, procedures to assess and prevent preconditioning of safety-related components were not complete, accurate, and up-to-date (H.2(c)).

Enforcement: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, in part, that "Activities affecting quality, shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings." Contrary to this, the inspectors identified that licensee's procedures GNP-08-02-08, "Work Order Planning," and GNP-08-02-11, "Online Maintenance Planning and Scheduling," were inadequate to support proper consideration of preconditioning of motor-operated valves in the containment spray system. The inspectors identified this when they found that motor-operated valves IDS-202 and IDS-2B had been closed (operated) as part of safety tags for repair of a check valve on the containment spray system shortly before a surveillance test was performed on the motor-operated valves. The licensee entered this issue into its corrective action program as condition reports CR017488, "NRC Question Regarding Preconditioning of IDS-2B Prior to SP-23-100B," and CR018082, "NRC Inspector Questions Adequacy of Preconditioning Prevention." Corrective actions included completion of the surveillance procedure with acceptable results and an evaluation of the test results that determined that the surveillance test was acceptable. Because this violation was of very low safety significance and was entered into the licensee's

corrective action program, this violation is being treated as an NCV consistent with Section VI.A of the NRC enforcement policy (NCV 05000305/2007004-03).

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed one temporary modification to assess the impact of the modification on the safety function of the associated system. The inspection activities included, but were not limited to, a review of design documents, safety screening documents, USAR, and applicable TSs to determine that the temporary modification was consistent with modification documents, drawings, and procedures. The inspectors also reviewed the post-installation test results to confirm that tests were satisfactory and the actual impact of the temporary modification on the permanent system and interfacing systems were adequately verified. As part of this inspection, the documents listed in the Attachment were reviewed.

The inspectors selected for review a temporary modification that disconnected cabling from a nonsafety-related cable tray that terminated in a safety-related power supply RR-104, for a total of one inspection sample.

b. Findings

No findings of significance were identified.

**Cornerstone: Emergency Preparedness**

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors selected emergency preparedness exercises that the licensee had scheduled as providing input to the Drill/Exercise PI. The inspection activities included, but were not limited to, the classification of events, notifications to offsite agencies, protective action recommendation development, and drill critiques. Observations were compared with the licensee's observations and corrective action program entries. The inspectors verified that there were no discrepancies between observed performance and PI reported statistics. As part of this inspection, the documents listed in the Attachment were reviewed.

The inspectors selected an emergency preparedness exercise scheduled on July 10, 2007, Technical Support Center Evaluation 1b, for a total of one inspection sample.

b. Findings

No findings of significance were identified.

## 2. RADIATION SAFETY

### Cornerstone: Occupational Radiation Safety

#### 2OS1 Access Control to Radiologically Significant Areas (71121.01)

##### .1 Review of Licensee Performance Indicators for the Occupational Exposure Cornerstone

###### a. Inspection Scope

The inspectors reviewed the licensee's occupational exposure control cornerstone PIs to determine whether or not the conditions surrounding the PIs had been evaluated and identified problems had been entered into the corrective action program for resolution. These reviews represented one inspection sample.

###### b. Findings

No findings of significance were identified.

##### .2 Plant Walkdowns and Radiation Work Permit Reviews

###### a. Inspection Scope

The inspectors reviewed licensee controls and surveys in the following two radiologically significant work areas within radiation areas, high radiation areas, and airborne radioactivity areas in the plant and reviewed work packages that included associated licensee controls and surveys of these areas to determine whether radiological controls including surveys, postings, and barricades were acceptable:

- Investigate inoperable level indication on the Spent Resin Storage Tank; and
- Containment At-Power Entry.

These reviews represented one inspection sample.

The inspectors walked down and surveyed (using an NRC survey meter) these areas to verify that the prescribed radiation work permit (RWP), procedure, and engineering controls were in place; that licensee surveys and that postings were complete and accurate; and that air samplers were properly located. These reviews represented one inspection sample.

The inspectors reviewed RWPs for airborne radioactivity areas with the potential for individual worker internal exposures of >50 mrem committed effective dose equivalent (CEDE). The inspectors verified barrier integrity and engineering controls performance (e.g., HEPA (high efficiency particulate air) ventilation system operation) for these selected airborne radioactive material areas, with a focus on any work areas with a history of, or the potential for, airborne transuranics. This review represented one inspection sample.

The adequacy of the licensee's internal dose assessment process for internal exposures >50 millirem CEDE was assessed. There were no internal exposures >50 millirem CEDE. These reviews represented one inspection sample.

The inspectors also reviewed the licensee's physical and programmatic controls for highly activated and/or contaminated materials (non-fuel) stored within spent fuel or other storage pools. These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.3 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, LERs, and special reports related to the access control program to verify that identified problems were entered into the corrective action program for resolution. These reviews represented one inspection sample.

The inspectors reviewed corrective action reports related to access controls and high radiation area radiological incidents (non-PIs identified by the licensee in high radiation areas <1R/hr). Staff members were interviewed and corrective action documents were reviewed to verify that follow-up activities were being conducted in an effective and timely manner, commensurate with their importance to safety and risk-based on the following:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes;
- Identification and implementation of effective corrective actions;
- Resolution of NCVs tracked in the corrective action system; and
- Implementation/consideration of risk significant operational experience feedback.

These reviews represented one inspection sample.

The inspectors evaluated the licensee's process for problem identification, characterization, prioritization, and verified that problems were entered into the corrective action program and resolved. For repetitive deficiencies and/or significant individual deficiencies in problem identification and resolution, the inspectors verified that the licensee's self-assessment activities were capable of identifying and addressing these deficiencies. These reviews represented one inspection sample.

The inspectors reviewed licensee documentation packages for all PI events occurring since the last inspection to determine whether of these PI events involved dose rates greater than 25 R/hr at 30 centimeters or greater than 500 R/hr at 1 meter. Barriers



were evaluated for failure and to determine if there were any barriers left to prevent personnel access. Unintended exposures greater than 100 millirem total effective dose equivalent (or greater than 5 rem shallow dose equivalent or greater than 1.5 rem lens dose equivalent) were evaluated to determine whether there were any regulatory overexposures or if there was a substantial potential for an overexposure. There were no PI events since the last inspection. These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.4 Job-In-Progress Reviews

a. Inspection Scope

The inspectors observed the following two jobs that were being performed in radiation areas and high radiation areas for observation of work activities that presented the greatest radiological risk to workers:

- Investigate inoperable level indication on the Spent Resin Storage Tank; and
- Containment At-Power Entry.

The inspectors reviewed radiological job requirements for these activities including RWP requirements and work procedure requirements and attended As-Low-As-Is-Reasonably-Achievable (ALARA) job briefings. These reviews represented one inspection sample.

Job performance was observed with respect to RWP and procedural requirements to verify that radiological conditions in the work area were adequately communicated to workers through pre-job briefings and postings. The inspectors also verified the adequacy of radiological controls, including required radiation, contamination, and airborne surveys for system breaches; radiation protection job coverage that included audio and visual surveillance for remote job coverage; and contamination controls. These reviews represented one inspection sample.

The inspectors reviewed the adequacy of radiological controls, radiation protection job coverage (including audio and visual surveillance for remote job coverage), and contamination controls during these job performance observations. This review represented one inspection sample.

The inspectors reviewed the application of dosimetry to effectively monitor exposure to personnel for high radiation work areas with significant dose rate gradients (factor of five or more). This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.5 High Risk Significant, High Dose Rate High Radiation Area, and Very High Radiation Area Controls

a. Inspection Scope

The inspectors held discussions with the Radiation Protection Manager concerning high dose rate/high radiation area and very high radiation area controls and procedures, including procedural changes that had occurred since the last inspection, to verify that any procedure modifications did not substantially reduce the effectiveness and level of worker protection. These reviews represented one inspection sample.

The inspectors discussed with Radiation Protection supervisors the controls that were in place for special areas that had the potential to become very high radiation areas during certain plant operations, to determine whether these plant operations required communication beforehand with the Radiation Protection group, so as to allow corresponding timely actions to properly post and control the radiation hazards. These reviews represented one inspection sample.

The inspectors conducted plant walkdowns to verify the posting and locking of entrances to high dose rate high radiation areas, and very high radiation areas. These reviews represented one inspection sample.

b. Findings

No findings of significance were identified

.6 Radiation Worker Performance

a. Inspection Scope

During job performance observations, the inspectors evaluated radiation worker performance with respect to stated radiation protection work requirements and evaluated whether workers were aware of the significant radiological conditions in their workplace, the RWP controls and limits in place, and that their performance had accounted for the level of radiological hazards present. These reviews represented one inspection sample.

The inspectors reviewed radiological problem reports that found that the cause of the event was due to radiation worker errors to determine if there was an observable pattern traceable to a similar cause and to determine whether this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. These problems, along with planned and taken corrective actions, were discussed with the Radiation Protection Manager. These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.7 Radiation Protection Technician Proficiency

a. Inspection Scope

During job performance observations, the inspectors evaluated Radiation Protection Technician performance with respect to radiation protection work requirements and evaluated whether they were aware of the radiological conditions in their workplace, the RWP controls and limits in place, and whether their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities. These reviews represented one inspection sample.

The inspectors reviewed radiological problem reports that found the cause of the event was radiation protection technician error to determine whether there was an observable pattern traceable to a similar cause and to determine whether this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

4. **OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors sampled the licensee's submittals for the PIs listed below for the period indicated. The inspectors used PI definitions and guidance contained in Revision 5 of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," to verify the accuracy of the PI data.

**Cornerstone: Public Radiation Safety**

- Radiological Effluent Technical Specification/Offsite Dose Calculation Manual  
Radiological Effluent Occurrence

The inspectors reviewed the licensee's corrective action database and selected individual reports generated since this indicator was last reviewed in April 2006, to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous effluent summary data and the results of associated offsite dose calculations for selected dates between June 2006 and July 2007 to determine whether indicator results were accurately reported. The inspectors also reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose.

This review represented one inspection sample.

### **Cornerstone: Occupational Radiation Safety**

- Occupational Exposure Control Effectiveness

The inspectors reviewed the licensee's assessment of the PI for occupational radiation safety to determine whether indicator related data were adequately assessed and reported during the previous four quarters. The inspectors compared the licensee's PI data with the corrective action report database, reviewed radiological restricted area exit electronic dosimetry transaction records, and discussed data collection and analysis methods for PIs with licensee representatives.

This review represented one inspection sample.

### **Cornerstone: Barrier Integrity**

- Reactor Coolant System Specific Activity

The inspectors reviewed Chemistry Department records, including isotopic analyses for selected dates between June 2006 through July 2007 to determine whether the greatest dose equivalent iodine values determined during steady state operations corresponded to the values reported to the NRC. The inspectors also reviewed selected dose equivalent iodine calculations, including the application of dose conversion factors as specified in plant TSs. Additionally, the inspectors accompanied a chemistry technician and observed the collection and preparation of reactor coolant system samples to evaluate compliance with the licensee's sampling procedures. Further, sample analyses and calculation methods were discussed with chemistry staff to determine their adequacy relative to TSs, licensee procedures, and industry guidelines.

This review represented one inspection sample.

#### b. Findings

No findings of significance were identified.

#### 4OA2 Identification and Resolution of Problems (71152)

##### .1 Routine Review of Identification and Resolution of Problems

###### a. Inspection Scope

As part of the routine inspections documented in this inspection report, the inspectors verified that the licensee entered the problems identified during the inspection into their corrective action program. Additionally, the inspectors verified that the licensee was identifying issues at an appropriate threshold and entering them in the program, and verified that problems included in the program were properly addressed for resolution. Attributes reviewed included: problems were completely and accurately identified; timeliness was commensurate with the safety significance; evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root

causes, extent of condition reviews, and previous occurrences reviews were proper and adequate; and classification, prioritization, and focus were commensurate with safety and sufficient to prevent recurrence of the issue.

b. Findings

No findings of significance were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

To assist with the identification of repetitive equipment failures and specific human performance issues for follow-up by the inspectors, the inspectors performed a daily screening of items entered into the licensee's corrective action program. This review was accomplished by reviewing daily CAP summary reports and attending corrective action review board meetings.

b. Findings

No findings of significance were identified.

.3 Selected Issue Follow up (Annual Sample): Annual Sample of Operator Workarounds

a. Inspection Scope

The inspectors selected the licensee's operator workaround list, and sampled procedures and corrective actions to assess the impact of operator workarounds to determine whether system functions were affected or the operators ability to implement abnormal or emergency procedures were affected. Included in this review was operator workarounds that may not be tracked as an operator workaround or may have been formalized as part of station procedures.

b. Findings

No findings of significance were identified.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) LER 05000305/2005-012-00, Residual Heat Removal Pump Run-Out Upon Loss of Instrument Air While Aligned for Sump Recirculation

On June 10, 2005, based on review of emergency core cooling system (ECCS) pump analyses, the licensee identified that there was a potential for a RHR pump to be operated in a run-out condition when containment spray was aligned to take a suction from the RHR pump and the RHR system flow control valve failed open (such as upon a loss of instrument air). The licensee submitted a license amendment request to revise TSs to not require that containment spray have a flow path capable of taking suction from the containment sump, and revised emergency operating procedures to reduce the

vulnerability associated with the identified potential run-out condition. The licensee documented the problem in corrective action program document CAP027287, "RHR Pump Runout / Loss of IA to RHR-8A/B." This licensee-identified finding involved a violation of 10 CFR Part 50, Appendix B, Criteria III, "Design Control." The enforcement aspects of the violation are discussed in Section 4OA7 of this report. During review of this issue, the inspectors identified a finding involving a violation of 10 CFR 50.71, "Maintenance of Records, Making of Reports," which is discussed below. This LER is closed.

Introduction: The inspectors identified a finding of very low safety significance (Green) and associated Severity Level IV of 10 CFR 50.71 when the licensee failed to update the USAR to reflect analyses performed in support of License Amendment 184.

Description: Technical Specifications required that containment spray have an operable flow path capable of taking suction from the refueling water storage tank (RWST) and from the containment sump. As such, containment spray could not be considered operable with the potential to cause a run-out condition on a RHR pump while in the recirculation mode. On June 16, 2005, the licensee submitted a license amendment request to delete the reference to taking a suction from the containment sump from the containment spray operability section. As part of the request, the licensee identified that there was a potential to put a RHR pump in a run-out condition upon a loss of instrument air when containment spray was operated in the recirculation mode. The licensee noted that operation of containment spray in the recirculation mode was potentially detrimental to a loss of coolant accident (LOCA) response. The licensee noted that recent design basis accident analyses did not take credit for containment spray being used in the recirculation mode and that procedure changes would remove the potential detrimental scenario regarding the containment spray pumps. However, the licensee stated that the containment spray system recirculation mode would still be available for use as long as the RHR flow control valves were available to throttle RHR pump injection flow prior to supply suction to the containment spray pumps. The licensee further stated that run-out protection could be accomplished within the RWST changeover procedures by prohibiting the use of the containment spray system in the recirculation mode if the ability to throttle the flow being injected into the RCS loops was lost. The June 21, 2005, NRC safety evaluation report supporting TS Amendment 184, which addressed the licensee's request, based acceptance, in part, on the licensee's commitment to accomplish run-out protection within the RWST changeover procedures.

Section 6.4 of the USAR made multiple references to containment spray being operated in the recirculation mode. However, the April 2007 update of the USAR neither described the potential for RHR to run-out when containment spray was operated in the recirculation mode nor described the run-out protection provisions that the licensee had committed to for the RWST changeover procedures. The inspectors determined that a USAR change had not been processed to address the potential for run-out or address the commitments associated with the amendment.

On June 21, 2005, the licensee revised procedure ES-1.3, "Transfer to Containment Sump Recirculation," to modify the steps involving the recirculation mode of containment spray. The revisions to the procedure steps included 1) limiting the use of containment spray to beyond design basis conditions where at least three containment fan coil units

were not available, 2) ensuring that the RHR flow control valve was closed prior to using containment spray in the recirculation mode, and 3) monitoring RHR pump motor current for a potential run-out.

The inspectors noted that the procedure revision did not fully provide run-out protection. Specifically, the procedure did not adequately address the potential case where loss of the ability to throttle the RHR system flow control valve occurred after the containment spray recirculation mode was established (such as upon the loss of instrument air). There were no steps which identified a potential run-out condition upon loss of instrument air. In addition, the steps added to monitor RHR pump motor current for potential run-out conditions may not have been effective in that a pump motor trip or damage could occur due to run-out conditions before operators could recognize the condition and take appropriate corrective actions. The licensee did not have an analysis which showed operators could take appropriate actions in time. The licensee initiated condition reports CR015826, "Caution Needed for ES-1.3 Step 28," and CR016145, "Procedural Control of IDS in Recirculation Mode May be Inadequate," in response to procedural issues raised by the NRC. The inspectors concluded that had USAR changes with associated 10 CFR 50.59 screenings and/or evaluations been appropriately processed upon the discovery of the potential run-out condition and commitments associated with the TS amendment, the procedure issues identified by the inspectors would likely have been appropriately addressed.

In Inspection Report 05000305/2006016, dated January 26, 2007, the NRC previously identified a violation associated with another failure to update the USAR in accordance with 10 CFR 50.71(e). The licensee had placed this issue in their corrective action system under CAP039449, "USAR Not Updated to Reflect Method of Evaluation in GL 96-06 Response." As part of the corrective actions (as documented by CA028714, "USAR Not Updated to Reflect Method of Evaluation in GL 96-06 Response), the licensee conducted a review of the activities that may not have been appropriately reflected in USAR updates since June 1, 2003, including approved license amendment requests. The licensee closed the action on April 16, 2007. However, although TS amendment 184 was within the scope of the review, the licensee failed to identify the failure to update the USAR to reflect the run-out provisions which the licensee had committed to within the RWST changeover procedures.

Analysis: Because violations of 10 CFR 50.71(e) potentially impede or impact the regulatory process, they are dispositioned using the traditional enforcement process instead of the SDP. Typically, the Severity Level would be assigned after consideration of appropriate factors for the particular regulatory process violation in accordance with the NRC Enforcement Policy. However, the SDP is used, if applicable, in order to consider the associated risk significance of the finding prior to assigning a severity level. Using IMC 0612, Appendix B, "Issue Dispositioning Screening," dated September 20, 2007, the inspectors determined that the finding is more than minor because of the potential to impact the regulatory process. Specifically, the failure to provide complete licensing and design basis information in the USAR could result in either the licensee making an inappropriate licensing interpretation or the NRC making an inappropriate regulatory decision based on incomplete information in the USAR. The inspectors determined that the finding was most closely associated with the Mitigating Systems Cornerstone because the issue involved potential malfunctions of the RHR pumps under

certain conditions rather than the Barrier Integrity Cornerstone due to the involvement of the containment spray system. For the purpose of evaluating the risk significance associated with this finding, the inspectors assumed that one of two trains of the recirculation function of RHR would be affected due to the licensee's procedures not fully providing run-out protection as specified by commitments made for TS amendment 184. This assumption was conservative because the potential for run-out of a RHR pump would only exist for beyond design basis events in which three or more containment air coolers had failed and the ability to throttle the RHR system flow valve would have been lost while containment spray was operated in the recirculation mode. The inspectors performed a Phase 2 significance determination analysis of the associated technical issue and determined that the finding was of very low safety significance (Green) based on review of the NRC Risk-Informed Inspection Notebook for Kewaunee, Revision 2, worksheet for large break LOCAs. In accordance with the Enforcement Policy, the violation was classified as a Severity Level IV violation.

The inspectors determined that this issue was related to the cross-cutting area of problem identification and resolution because the licensee failed to thoroughly evaluate a previously identified problem such that the resolution fully addressed causes and extent of condition, as necessary, including conducting effectiveness reviews of corrective actions to ensure that the problem was resolved. Specifically, the extent of condition review performed for a recent and similar violation failed to identify that the USAR had not been appropriately updated to reflect commitments made for TS amendment 184 (P.1(c)).

Enforcement: 10 CFR 50.71(e) required, in part, that licensees periodically update the Final Safety Analysis Report (FSAR) to assure that it included the latest information developed. 10 CFR 50.71(e) further required that the submittal contain all changes made in the facility and all the changes necessary to reflect information and analyses submitted to the Commission by the licensee or prepared by the licensee pursuant to Commission requirement since the submission of the original FSAR or, as appropriate, the last updated FSAR. 10 CFR 50.71(e) required, in part, that the updated FSAR be revised to include the effects of all safety evaluations performed by the licensee in support of requested license amendments. By letter dated June 16, 2005, the licensee stated as part of the analyses in support of a license amendment request that RHR pump run-out protection could be accomplished within the RWST changeover procedures by prohibiting the use of the containment spray system in the recirculation mode if the ability to throttle the flow being injected into the RCS loops is lost.

Contrary to the above, as of July 13, 2007, the licensee had not updated the FSAR (at Kewaunee, the USAR) to reflect analyses performed in support of license amendment 184. Specifically, the USAR had not been updated to reflect that there was a potential to put a RHR pump in a run-out condition upon a loss of instrument air when containment spray was operated in the recirculation mode. Additionally, the USAR had not been updated to reflect that run-out protection was accomplished within the RWST changeover procedures by prohibiting the use of the containment spray system in the recirculation mode if the ability to throttle the flow being injected into the RCS loops was lost. Once identified, the licensee entered the issue in its corrective action program as CR015880, "USAR May Not Have Been Updated as Required for License Amendment 184." The result of the violation was determined to be of very



low safety significance; therefore, this violation of 10 CFR 50.71(e) was classified as a Severity Level IV violation. Because the finding was of very low safety significance and it was entered into the licensee's corrective action program (CR 015880), this violation is being treated as an NCV consistent with VI.A.1 of the NRC Enforcement Policy (NCV 05000305/2007004-04).

- .2 (Closed) LER 05000305/2005-012-01, Residual Heat Removal Pump Run-Out Upon Loss of Instrument Air While Aligned for Sump Recirculation. This LER was reviewed as part of the review for LER 05000305/2005-012-00 discussed in Section 4OA3.1 above. This LER is closed.
- .3 (Closed) LER 05000305/2005-012-02, Residual Heat Removal Pump Run-Out Upon Loss of Instrument Air While Aligned for Sump Recirculation. This LER was reviewed as part of the review for LER 05000305/2005-012-00 discussed in Section 4OA3.1 above. This LER is closed.
- .4 (Closed) LER 05000305/2006-002-00, Safety-Related Relay Racks with Improper Quality Classification of Foxboro Signal Conditioning Modules.

On April 18, 2006, the licensee identified that nonsafety-related Foxboro signal conditioning modules were installed in relay room racks for which safety-related modules were required. The licensee subsequently replaced the nonsafety-related units with units qualified as safety-related where required. In addition, the licensee evaluated the extent of condition. The inspectors verified the adequacy of the licensee's extent of condition evaluation by reviewing the safety classification of components installed in a sample of relay racks. The inspectors concluded that the scope of the review performed by the licensee was adequate. This licensee-identified finding involved a violation of 10 CFR Part 50, Appendix B, Criterion III. The enforcement aspects of the violation are discussed in Section 4OA7 of this report. The inspectors identified a minor deficiency in that the LER had stated that an extent of condition was initiated to review all relay racks versus the relay racks containing Foxboro signal conditions units. However, based on review of corrective actions documents and discussions with site engineering personnel involved with the review, the inspectors determined that the extent of condition review performed was more limited than that discussed in the LER. Since the inspectors considered the scope of the extent of condition review to be adequate, the inspectors determined that the discrepancy was minor. The licensee initiated CR016242, "Extent of Condition for Foxboro Relay Racks Quality Classification," to address the discrepancy. This LER is closed.

- .5 (Closed) LER 05000305/2006-007-00, Reactor Coolant System Resistance Temperature Detector (RTD) Cross Calibration Procedure Has the Potential to Exceed the TS Limiting Condition for Operation (LCO) Allowed Time Limit

On June 13, 2006, licensee engineering personnel identified that performance of procedure SP-47-310, "Reactor Coolant System RTD Cross Calibration," could result in exceeding the time allowed by TSs. Procedure SP-47-310 removed from service all four narrow range channels of reactor coolant system temperature instrumentation. The procedure was normally performed while the plant was in an intermediate shutdown condition. The steam line isolation signal for high steam flow and two of four

low-low average temperature with safety injection were affected by removal of the instrumentation for performance of procedure SP-47-310. Technical Specification Table 3.5-4 item 2.b specified that if a minimum of one channel was not available, that the plant be in hot shutdown and, if minimum conditions were not met within 24 hours, that steps shall be taken to place the plant in a cold shutdown condition. Based on review of operator logs for when the surveillance procedure had last been performed (November 2004), the licensee was not able to determine whether the 24-hour LCO specified by TSs had been exceeded because times for specific steps of the procedure had not been recorded. The logs identified the procedure as having been in progress for 68.6 hours. As such, the licensee assumed that TS 3.5 had not been met. In the LER, the licensee noted that, historically, performance times for specific steps of procedure SP-47-310 were not recorded and that precise durations of inoperability could not be determined. This licensee-identified finding involved a violation of TS 3.5 and TS Table 3.5-4. The enforcement aspects of the violation are discussed in Section 4OA7 of this report. The licensee revised procedure SP-47-310 to notify control room operators when the surveillance would place the plant in a 24-hour LCO. The procedure already had a step in place to notify control room operators when the LCO was no longer in effect. However, the inspectors determined that the licensee's corrective actions were not wholly effective. The inspectors reviewed the control room logs for October 21-22, 2006, when the surveillance procedure had most recently been performed and determined a minor deficiency existed in that the duration of when the plant was in the LCO could not be determined. Log entries made once per shift indicated which LCOs were entered at the time of review, including the initiation of the 24-hour LCO at 2:36 p.m. on October 21. However, the time that the LCO was exited was not recorded. Based on review of shift logs, the inspectors were able to determine that the LCO was not in effect at 7:00 p.m. on October 22. As such, the inspectors were able to determine that the LCO had been in effect for less than 28.4 hours, but were unable to confirm that the LCO had been in effect less than 24 hours. Because the shift logs provided evidence that control room operators were aware that the LCO was in place and were tracking LCOs in general, the inspectors concluded that the operators failed to log the LCO exit time, which is a minor deficiency, rather than exceeded the LCO time. The licensee initiated CR016069, "TS LCO Tracking May Be Inadequate," to address the log keeping issue identified by the inspectors. This LER is closed.

.6 (Closed) LER 05000305/2006012-00, Automatic Reactor trip Due to Loss of Instrument Bus

On October 30, 2006, the reactor tripped from approximately 92 percent power, due to "B" steam generator steam flow/feed flow mismatch coincident with low water level in the "B" steam generator. Loss of the red instrument bus caused the plant transient that led to the reactor trip. All systems responded as designed with the following exceptions: the steam supply inlet valve for the "1B" reheater did not fully close resulting in the associated relief valve to lift, and the reserve auxiliary transformer breaker failed to close resulting in a loss of circulating water flow and condenser vacuum. Subsequent inspection of the red instrument bus inverter found that some of the static switch silicon controlled rectifiers had failed, ultimately causing the inverter to fail. The two sets of silicon controlled rectifiers and two circuit cards were replaced. The LER was reviewed by the inspectors and no findings of significance were identified and no violation of NRC

requirements occurred. The licensee wrote CAP038921, CAP038970, and CAP038965, placing these issues into the corrective action program. This LER is closed.

.7 Personnel Performance During Non-Routine Plant Evolutions and Events

a. Inspection Scope

The inspectors reviewed personnel performance to planned and unplanned non-routine evolutions to review operator performance and the potential for operator contribution to the evolution, transient, or event. The inspectors observed or reviewed records of operator performance during the evolution. Reviews included, but were not limited to, operator logs, pre-job briefings, instrument recorder data, and procedures. As part of this inspection, the documents listed in the Attachment were reviewed.

The inspectors evaluated the following events and evolutions, for a total of six inspection samples:

- turbine generator hydrogen cooler leak;
- unexpected extremity dose;
- manual actions in fuel pool are not achievable;
- unplanned entry into technical specifications for the special ventilation zone and an associated 10 CFR 50.72 report;
- unplanned entry into TSs for the special ventilation zone and an associated 10 CFR 50.72 report; and
- roof preparations for lift of new auxiliary building crane trolley.

b. Findings

No findings of significance were identified.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Ms. L. Hartz and other members of licensee management on October 8, 2007. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meetings

Interim exits were conducted for:

- Maintenance Effectiveness Periodic Evaluation with Mr. B. Hoffner, Assistant Plant Manager on August 3, 2007
- An interim exit meeting was conducted for Access Control to Radiologically Significant Areas with Mr. T. Webb, on August 10, 2007

#### 4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG - 1600, for being dispositioned as NCVs.

- 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures be established to assure applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. Criterion III also requires, in part, that such design control measures provide for verifying or checking the adequacy of design. On May 10, 2005, the licensee identified that such measures were inadequate in that a RHR pump could run-out when containment spray was operated in recirculation mode taking suction from the RHR system. The licensee subsequently modified operating procedures to minimize this potential. The licensee documented this problem in CAP027287. The inspectors identified a separate violation of 10 CFR 50.71(e) which is discussed in Section 4OA3.1. This finding is of very low safety significance based on a Phase 2 significance determination evaluation. (Section 4OA3.1)
- 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures be established to assure applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. Criterion III also requires, in part, that such measures include provisions to assure that appropriate quality standards are specified and included in design documents. On April 18, 2006, the licensee identified that such measures were inadequate in that nonsafety-related Foxboro signal conditioning units had been installed where safety-related units were required. The licensee subsequently replaced the nonsafety-related units with safety-related units where required. In addition, the licensee performed an extent of condition review. The licensee documented this problem in CAP033058 and CAP033059. This finding is of very low safety significance because the deficiency was related to the qualification of the components and there was no evidence that functionality was adversely affected. (Section 4OA3.2)
- Technical Specification 3.5 and TS Table 3.5-4 required that instrumentation for the main steam isolation function upon high steam flow coincident with low-low average temperature ( $T_{ave}$ ) and safety injection have a minimum of one operable channel. If the minimum conditions were not met within 24 hours, the TSs required that steps be taken to place the plant in a cold shutdown condition. On June 13, 2006, the licensee determined that the requirements of Table 3.5-4 had not been met in November 2004 in that a surveillance activity had disabled all of the  $T_{ave}$  channels for a period in excess of 24 hours. The licensee revised the surveillance procedure to ensure control room operators were aware of conditions that placed the plant in an LCO. The licensee documented this problem in CAP034520. This finding is of very low safety significance because the main steam lines were isolated at the time. (Section 4OA3.3)

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

R. Adams, Health Physicist  
L. Armstrong, Site Engineering Director  
M. Bernsdorf, Chemistry  
T. Breene, Nuclear Licensing Manager  
M. Crist, Plant Manager  
L. Hartz, Site Vice-President  
W. Henry, Maintenance Manager  
B. Lembeck, Radiation Protection Supervisor  
J. Ruttar, Operations Manager  
D. Shannon, Health Physics Operations Supervisor  
R. Steinhardt, Site Maintenance Rule Coordinator  
C. Tiernan, Corporate Maintenance Rule Coordinator  
S. Wood, Emergency Preparedness Manager

#### Nuclear Regulatory Commission

J. Cameron, Chief, Division of Reactor Projects, Branch-5

### LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened

05000305/2007004-01	URI	Auxiliary Building Heating and Ventilation Calculations Potentially Unconservative (Section 1R07)
05000305/2007004-02	NCV	Failure to Implement Maintenance Rule (a)(1) in Corrective Actions on the "G" Instrument Air Compressor (Section 1R13)
05000305/2007004-03	NCV	Preconditioning of Safety-Related Motor-Operated Valves Prior to Performance of Technical Specification Required Surveillance Testing (Section 1R22)
05000305/2007004-04	NCV	Failure to Update the Updated Safety Evaluation Report (Section 4OA3.1)

Closed

05000305/2007004-02	NCV	Failure to Implement Maintenance Rule (a)(1) in Corrective Actions on the "G" Instrument Air Compressor (Section 1R13)
05000305/2007004-03	NCV	Preconditioning of Safety-Related Motor-Operated Valves Prior to Performance of Technical Specification Required Surveillance Testing (Section 1R22)
05000305/2007004-04	NCV	Failure to Update the Updated Safety Evaluation Report (Section 4OA3.1)
05000305/2005012-00	LER	Residual Heat Removal Pump Run-Out Upon Loss of Instrument Air While Aligned for Sump Recirculation (Section 4OA3.1)
05000305/2005012-01	LER	Residual Heat Removal Pump Run-Out Upon Loss of Instrument Air While Aligned for Sump Recirculation (Section 4OA3.2)
05000305/2005012-02	LER	Residual Heat Removal Pump Run-Out Upon Loss of Instrument Air While Aligned for Sump Recirculation (Section 4OA3.3)
05000305/2006002-00	LER	Safety-Related Relay Racks with Improper Quality Classification of Foxboro Signal Conditioning Modules (Section 4OA3.4)
05000305/2006007-00	LER	Reactor Coolant System Resistance Temperature Detector Cross Calibration Procedure has the Potential to Exceed the TS Limiting Condition for Operation Allowed Time Limit (Section 4OA3.5)
05000305/2006012-00	LER	Automatic Reactor Trip Due to Loss of Instrument Bus (Section 4OA3.6)

## LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety but rather that selected sections of portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

### **Section 1R04: Equipment Alignment**

GNP-03.30.01; Operations Management and Leadership  
N-CVC-35B-CL; Charging and Volume Control Prestartup Checklist; dated December 5, 2006  
N-FW-05B-CL; Auxiliary Feedwater System Prestartup Checklist; Revision AM  
N-SI-33-CL; Safety Injection System Prestartup Checklist; dated September 27, 2006  
OPER EX100-28; Flow Diagram, Safety Injection System; Revision AK  
OPER EX100-29; Flow Diagram, Safety Injection System; Revision Y  
OPERXK-100-35; Flow Diagram, Chemical and Volume Control System; Revision AA  
OPERXK-100-36; Flow Diagram, Chemical and Volume Control System; Revision AT  
OPERXK-100-37; Flow Diagram, Chemical and Volume Control System; Revision AA  
OPERXK-100-38; Flow Diagram, Chemical and Volume Control System; Revision U  
PMP-38.08; EDC - 7.5 KVA Single Phase Inverter Electrical Maintenance; Revision 14  
RT-FW-05B-3; Auxiliary Feedwater Service Water Header B Flush; Revision 5  
RT-FW-058-4A; Turbine-Driven Auxiliary Feedwater Service Water Header Flush; Revision 2  
SP-02-138A; Train A Service Water Pump and Valve Test - IST; Revision 17  
SP-02-138A; Train B Service Water Pump and Valve Test - IST; Revision 16  
SP-05B-345; Auxiliary Feedwater Pump B Low Suction and Low Discharge Pressure Trip Test  
SP-34-099B; Train B RHR Pump and Valve Test - IST; Revision L  
SP-42-047B; Diesel Generator B Operational Test; Revision AJ

### **Section 1R05: Fire Protection**

CAP032007; Placement of Temporary Flashlights During EBL Replacement  
CAP033687; Cable Spreading Room Fire Suppression System Adequacy is Questioned  
CAP040096; CSR Fire Suppression System Coverage - Potential NCV of Appendix R, III.G.3  
CR015011; Discrepancy between Appendix R Dedicated Shutdown Procedure E-O-06 and  
DSP Drawing E-3175  
CR015527; Editorial Error on Table 12-5 of Fire Protection Program Plan  
CR018611; Lack of Emergency Lighting for Appendix R Manual Operator Actions  
CR018909; Appendix R Manual Operator Actions in Fire Affected Area (Bus 1 and 2 Room)  
CR018928; Appendix R Manual Operator Actions in Fire Affected Area  
CR019053; Appendix R Manual Operator Actions in III.G.2 Area (Containment/Shield Building)  
CR019369; Appendix R Manual Operator Action - Dryout of Non-Credited Steam Generator  
CR019371; Appendix R Manual Operator Action - Dryout of Non-Credited Steam Generator  
Part 2  
CR020213; Appendix R - FP Improvement Plan - Tracking of Draft Deliverables for Kewaunee  
Power Station Review  
CR021029; Fire Marshal to Evaluate Area South of Transformers for Combustible Storage  
E-FP-08; Emergency Operating Procedure - Fire; Revision AU  
PFP-4; Screen House and Tunnel; Revision B  
PFP-5; 1A Diesel Generator and Diesel Generator Day Tank Rooms; Revision B

PFP-6; 1B Diesel Generator and Diesel Generator Day Tank Rooms; Revision C  
 PFP-7; CO<sub>2</sub> Storage Tank Room; Revision D  
 PFP-8; 480 V Switchgear Bus 1-51 and 1-52 Room; Revision C  
 PFP-9; 480 V Switchgear Bus 1-61 and 1-62 Room and Auxiliary Feedwater Pump Area;  
 Revision D  
 PFP-11; Turbine Building Basement; Revision E  
 PFP-12; Turbine Building Mezzanine; Revision D  
 PFP-14; Turbine Building Operating Floor; Revision 14  
 PFP-16; Refueling Water Storage Tank and Containment Spray Pump Area; Revision C  
 PFP-17; Charging Pump, Boric Acid Concentrate Pump and Residual Heat Removal Pump Pit  
 Areas; Revision E  
 PFP-19; Condensate Storage and reactor Make Up Water Storage Room and Adjacent Areas;  
 Revision D  
 PFP-20; Materials Storage and Radiation Protection Office Areas; Revision E  
 PFP-22; Residual Heat Removal Heat Exchanger, Component Cooling Water Pump, Letdown  
 and Sealwater Filter Areas and Refueling Water Storage Tank and Valve Gallery; Revision D  
 PFP-24; Main Steam Line B Relief Header and Cable Spreading Area; Revision C  
 PFP-26; Control Room; Revision F  
 PFP-28; Control Room Heating, Ventilation and Air Conditioning Equipment and Records  
 Storage Room; Revision D  
 PFP-29; Auxiliary Building and Turbine Building Fan Rooms; Revision C  
 FPP-08-02; Fire Watch Patrol; Revision 9  
 FPP-08-17; Impairments to Active Fire Protection Systems; Revision 6  
 PMP-41-06; LT-Big Beam Emergency Light Common Train Electrical Maintenance -  
 Appendix "R" and Non Appendix "R"; Revision 16  
 Emergency Operating Procedure; Reactor Trip or Safety Injection; Procedure E-O; Revision 34  
 Fire Brigade Drill Scenario 008; Yard Area - Main Transformer Phase C  
 Fire Protection System Impairment Form 04-141; Records Storage Room CO<sub>2</sub> System  
 Out-of-Service for PMP-08-05, CO<sub>2</sub> System (Cardox) Dry Test; dated November 29, 2004  
 Fire Protection System Impairment Form 05-81; Damage to Initiating Device on TSC Computer  
 Room Halon System; dated May 13, 2005  
 Fire Protection System Impairment Form 06-102; Turbine Building Mezzanine North and South  
 Sprinkler System will not Provide Full Coverage Due to Scaffolding and Asbestos Abatement  
 Activities; dated September 21, 2006  
 Fire Protection System Impairment Form 06-141; Cable Spreading Room Sprinkler System;  
 dated December 15, 2006  
 Fire Protection System Impairment Form 07-60; 6-Volt Emergency Light, Group 5; dated  
 June 28, 2007  
 Kewaunee Power Station Emergency Exercise Objectives; dated September 25, 2007  
 Kewaunee Power Station Emergency Exercise Scenario; dated September 25, 2007  
 Kewaunee Power Station Fire Protection Program Plan; Revision 7; dated August 2006  
 Kewaunee Power Station Fire Protection/Appendix R Improvement Project; dated April 2007  
 Kewaunee Power Station Fire Protection Program Plan; Table 12-5; Emergency Lighting  
 Battery Unit Operability Requirements; Revision 7; dated August 2006  
 Preventive Work Order 07-001856-000; Replace 6-Volt Emergency Light Batteries



### **Section 1R07: Heat Sink Performance**

CR018911; NRC Concern - Procedural Actions Related to Service Water Pump  
CA015942; Engineering Primary Systems to Review for Past operability and Determine Reportability  
CA016849; Auxiliary Building Basement Heat Load Calculations Are Non-Conservative  
CA016879; Auxiliary Building Basement Heat Load Calculations Are Non-Conservative  
CR019147; Auxiliary Building Basement Heat Load Calculations Are Non-Conservative  
CR019674; Auxiliary Building Fan Floor Heat Gain Calculation Is Non-Conservative  
CR019676 Auxiliary Building Fan Floor Heat Gain Calculation Has Inadequate Technical Basis  
CR020597; Incorrect Assumption Made in Fan floor Heat Up Evaluation  
GNP-08.02.08; Work Order Planning; Revision 14  
GNP-08.02.11; On-Line Maintenance Planning and Scheduling; Revision M  
N-ACA-17; Auxiliary Building Ventilation System; Revision AA  
N-ACA-17-CL; Auxiliary Building Vent System Prestartup CL; Revision Y  
RAS000037; Auxiliary Building Basement Heat Load Calculations Are Non-Conservative  
RAS000038; Provide Additional Documentation for AB Fan Floor FCU Functionality  
RAS000039; Provide Basis for Supporting the Reasonable Assurance of Safety  
RT-ESF-55A; Exercising Normally Energized Solenoid Valves Train A  
Drawing M-704; Zone SV Exhaust System  
Kewaunee Nuclear Power Plant Data Report 155-302; Auxiliary Building Fan Floor Fan Coil Unit B  
Kewaunee Power Station System Descriptions; Auxiliary Building Ventilation System (ACA); System 17; Revision 2  
Technical Evaluation; Effects of Post-LOCA Temperature Increases on Auxiliary Building Fan Level Equipment at Kewaunee Power Station; Revision 0

### **Section 1R11: Licensed Operator Requalification Program**

LRC-07-DY503; Licensed Operator Requalification Dynamic Simulator Exercise Evaluation; Revision B

### **Section 1R12: Maintenance Effectiveness**

A1E000012; A1E to Eng BOP System Track the Heater Drain System Maintenance Rule (a)(1) Action Plans in CRS  
A1E000013; A1E to Eng BOP System Track the TB System Maintenance Rule a(1) Action Plans  
A1E000022; A1E to Mech Des Eng to Track the Auxiliary Building Roof Maintenance Rule a(1) Plans  
A1G000033; Track (a)(1) Goals for Auxiliary Building Roof Replacement  
CA014217; Obtain Project Approval for Auxiliary Building Roof Replacement  
CA014218; Track the roofing replacement Activities  
CA014219; Request Re-Screening of Work Orders Associated to AB Roof Degradation  
CA014221; Track Completion of Work Orders 05-000418 and 06-004342 During the KR-29 Outage  
CA014222; Interim Action - Perform Quarterly Walkdowns of AB Roof  
CA022013; Pull Hydrogen Tube, Analyze, and Complete Equipment Root Cause  
CA022433; Pursue funding for Design Change Request 3368, Installation of VFDs on Charging Pumps

CA022435; Pursue Replacement of the B Charging Pump Suction/Discharge Valves Sooner Than Scheduled  
CA022718; Areas For Improvement from Maintenance Rule Self-Assessment  
CA028852; Update Maintenance Rule (a)(1) Action Plans  
CAP030676; Crosshead/Poppet Valve Damage on Charging Pump C  
CAP030796; SI Annunciator B Low Pressure Alarm; dated January 6, 2006  
CAP031148; Maintenance Rule (a)(1) Evaluation - Charging Pump 1C  
CAP031947; Out of Spec for Turbine Power  
CAP036223; Charging Pump "C" Fault Received  
CAP040211; Update Maintenance Rule (a)(1) Action Plans  
CAP040363; Battery Charger Trouble Alarm Received During Diesel Generator A Test  
CAP041831; Delaminated/Spalled Shield Building Concrete at El. 664' of Auxiliary Building Room 403  
CAP044908; Leaky Auxiliary Building Roof Issue  
CE018509; Charging Pump "C" Fault Received  
CE020246; Zone SV Updated Safety Analysis Report Allowed Leakage Area May Be Non-Conservative  
DCR 3368; CVCS Charging Pump Drive Replacement; Draft A  
EFR025105; Rx Makeup Water Flow Deviation Alarms; dated August 3, 2006  
ER-AA-MRL-10; Maintenance Rule Program; Revision 1  
ER-AA-MRL-100; Implementing Maintenance Rule; Revision 0  
MRE003010; Heater Drain Pump A Speed Failure  
MRE003012; Control Room Deficiency, Heater Drain Pump B Failed to Respond in Manual Control  
MRE003025; Perform an MRE on Work Request 05-3119 - Unexpected Stopped Heater Drain Pump B  
MRE003027; Overspeed/Loss of Heater Drain Pump A  
MRE003049; Overcurrent Trip of Heater Drain Pump B  
MRE000641; Screenhouse Roof Leaking  
MRE002808; Problem with SV-1 During SP-54-086  
MRE002816; Out of Spec for Turbine Power  
MRE002852; Deteriorated Expansion Joint Between the Floor and Containment - 657' Elevation  
MRE002853; Turbine Failed to Go Off Turning Gear  
MRE002861; Perform an MRE on Work Requests 06-1771 and 06-1772 - Turbine Building Roof Leaks  
MRE002862; Wall Concrete Fell to Operating Deck of Turbine Building  
MRE002993; Exciter Bearing Metal Temperature Increase  
MRE003034; Automatic Reactor Trip  
MRE003051; Delaminated/Spalled Shield Building Concrete at Elevation 664' of Auxiliary Building Room 403  
NEP-08.04; Maintenance Rule Inspection Guideline for Buildings and Structures; Revision B Probabilistic Risk Assessment A0424 Performance Criteria Sensitivity for Maintenance Rule; dated December 7, 2004  
Root Cause Evaluation RCE 000638; SI Pumps A and B Maintenance Rule (a)(1) Evaluation; January 21, 2004  
Kewaunee Power Station Central Reporting by System Number; May 22, 2007 to Date  
Kewaunee Power Station Chemical and Volume Control System Maintenance Rule Performance Summary; 2007 Quarter 1  
Kewaunee Power Station Condition Report List by Systems; May 22, 2007 - August 24, 2007

Kewaunee Power Station Corrective Action Systems 20, 43, 54 and 84; February 11, 2006 to May 22, 2007  
Kewaunee Power Station; Maintenance Rule Category (a)(1); Turbine - Category A; 2007 Quarter 2  
Kewaunee Power Station; Maintenance Rule Category (a)(2); Turbine Analog Electro-Hydraulic Controller - Category A; 2007 Quarter 2  
Kewaunee Power Station; Project 11862-038; Heater Drain Pump System Study; Revision 0  
Kewaunee Power Station; Root Cause Evaluation K-2007-0753; Heater Drain Pump Reliability Issues  
List of Functional Failures, Maintenance Rule Functional Failures, Maintenance Rule Preventable Failure, and Repetitive Maintenance Preventable Functional Failures; dated July 2007  
Main Maintenance Rule (a)(1) Evaluation for DC Supplies Function 38-02; dated February 16, 2004  
Maintenance Rule (a)(1) Evaluation for FWP B Breaker; dated June 26, 2006  
Maintenance Rule Expert Panel Meeting Minutes; dated May 21, 2004  
Maintenance Rule Expert Panel Meeting Minutes; dated January 25, 2006  
Maintenance Rule Performance Criteria for MR SSCs; dated July 2007  
Maintenance Rule Periodic Assessment Kewaunee; January 1, 2004 - December 31, 2004; dated March 9, 2005  
Maintenance Rule Periodic Assessment Kewaunee; January 1, 2005 - June 30, 2006; dated November 29, 2006  
Maintenance Rule Program Periodic Self Assessment; dated July 25, 2007  
Maintenance Rule Quarterly Report - January 1, 2006 - March 31, 2006; dated May 11, 2006  
Maintenance Rule System Basis; Heater Drains; Revision 6  
Maintenance Rule System Basis; Turbine Generator and Support Auxiliaries; Revision 6  
Maintenance Rule System Basis; 89A Plant Structures; Revision 3  
Root Cause Evaluation RCE-2007-0704; Main Generator Hydrogen Cooler Tube Leak; Revision 0  
Root Cause Evaluation RCE-2007-0704; Main Generator Hydrogen Cooler Tube Leak; Revision 1  
Root Cause Evaluation RCE-2007-0704; Main Generator Hydrogen Cooler Tube Leak; Revision 2  
Root Cause Evaluation RCE 2007-0711; Maintenance Rule (a)(1) Evaluation - Charging Pump 1C  
Root Cause Evaluation RCE-2007-0754; Reactor Trip During Turbine Testing  
SSC Performance Criteria Sheet; System 89A Structures; Revision 0  
System Health Reports for 4160V Distribution, Safety Injection; DC Supply and Distribution; Chemical and Volume Control; and Station and Instrument Air; dated April 2007  
Turbine Generator System; System TGS Function 01 Record; February 2006 - July 2007  
Turbine Generator System; System TGS Function 02 Record; February 2006 - July 2007

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**

CR017596; Minimize Run Time on SA Compressor 1G During Hot Summer Months  
CR018623; Station and Instrument Air Compressor Fault; Air Compressor G HP Air Out Temp Hi Trip  
CR018703; Interim Maintenance Rule (a)(1) Actions Not Implemented for G Air compressor Problem

N-AS-01; Station and Instrument Air System; Revision 30  
Emergent Work Risk Evaluation; Added FIN Activity to Change SWPT Filters B and C to Schedule on August 13 and 14, 2007; dated August 14, 2007  
Emergent Work Risk Evaluation; Expanded Activity for Air Compressors A and C to Include Air Receivers A and C, SA2C, SA2A, AND SA101B Due to Expanding the Tagout for Work Scheduled on August 13 and 15, 2007; dated August 14, 2007  
Emergent Work Risk Evaluation; Added Charging Pump C as Equipment Out-of-Service Due to Pump Trip on August 16, 2007; dated August 17, 2007  
Emergent Work Risk Evaluation; Removed OP-KW-ISP-SW-001B and Added TWS B2 Maintenance; dated August 24, 2007  
Emergent Work Risk Evaluation; Thunderstorm Watch Issued for Kewaunee County; dated August 28, 2007  
Emergent Work Risk Evaluation; Notified by Electricians That a Truck Will Be Required in Substation; dated September 4, 2007  
Kewaunee Power Station Engineering Log; dated August 22, 2007  
Kewaunee Plant Configuration Changes and Relative Core Damage Frequency; dated August 13 through August 20, 2007  
Kewaunee Plant Configuration Changes and Relative Core Damage Frequency; dated August 20 through August 27, 2007  
Maintenance Rule (a)(1) Evaluation - G air Compressor; Revision 3  
Tagout 01-AS; Cont-00002-(001); Replace Pew Piping to Instrument Air Compressor A & C

#### **Section 1R15: Operability Evaluations**

CR013788; NRC Resident Concern on Non-Safety Interface Condensate to Auxiliary Feed System  
LER 2000-014-01; All Three Auxiliary Feedwater Pumps Declared Inoperable Due to the Potential to Plug Their suction Strainers; dated August 21, 2000  
Design Change Request 917; Remove Strainers from Auxiliary Feedwater Pumps Suction Line; dated December 29, 1975  
Design Change Request 476; Remove Strainers from Auxiliary Feedwater Pumps Suction Line; dated January 16, 1976  
Design Change Request 3260; Design Description and Safety Evaluation; dated November 19, 2001  
Letter to Wisconsin Public Service Corporation; From Mr. Olshan, Project Manager Division of Operating Reactors Nuclear Regulatory Commission; Summary of Meeting on May 9, 1979 to Discuss the Auxiliary Feedwater System and Related Areas; dated May 14, 1979  
Letter To Mr. Mathews, Vice-President of Wisconsin Public Service; From Mr. Eisenhut, Director of Division of Operating Reactors Nuclear Regulatory Commission; NRC Requirements for Auxiliary Feedwater Systems at Kewaunee Plant; dated September 21, 1979  
Letter to Mr. Eisenhut, Director of Division of Operating Reactors Nuclear Regulatory Commission; From Mr. Mathews, Vice-President of Wisconsin Public Service; NRC Requirements for Auxiliary Feedwater System at kewaunee Plant; dated October 30, 1979  
Letter to Mr. Mathews, Vice-President of Wisconsin Public Service; From Mr. Varga, Chief of Operating Reactors Nuclear Regulatory Commission; Kewaunee Nuclear Power Plant Additional Information Requirements for Auxiliary Feedwater Systems; dated August 18, 1980

Letter to Mr. Varga, Chief of Operating Reactors Nuclear Regulatory Commission; From Mr. Mathews, Vice-President of Wisconsin Public Service; Additional Information for Auxiliary Feedwater System; dated October 17, 1980

Letter to All Operating Pressurized Water Reactor Licensees; From Mr. Eisenhut, Director of Division of Licensing Nuclear Regulatory Commission; SEISMIC Qualification of Auxiliary Feedwater Systems; dated February 10, 1981

Letter to Mr. Mathews, Vice-President of Wisconsin Public Service; From Mr. Varga, Chief of Operating Reactors Nuclear Regulatory Commission; NUREG-0737, Clarification of TMI Action Plan Requirements; Clarification Item No. 11.E.1.2 Auxiliary Feedwater System Automatic Initiation and Flow Indication; dated December 24, 1981

Letter to Mr. Giesler, Vice-President of Wisconsin Public Service; From Mr. Varga Division of Licensing Nuclear Regulatory Commission; Completed Review and Concluded that the Auxiliary Feedwater System has Sufficient SEISMIC Capability to Withstand a Safe Shutdown Earthquake and Accomplish Its Safety Function; dated August 30, 1982

Letter to Mr. Giesler, Vice-President of Wisconsin Public Service; From Mr. Varga Division of Licensing Nuclear Regulatory Commission; Kewaunee Nuclear Power Plant - Safety Evaluation Input on the Implementation of Recommendations for the Auxiliary Feedwater Systems; dated December 16, 1982

Letter To Mr. Varga, Division of Licensing Nuclear Regulatory Commission; From Mr. Giesler, Vice-President of Wisconsin Public Service; Auxiliary Feedwater System Operability; dated May 6, 1983

Letter to Mr. Giesler, Vice-President of Wisconsin Public Service; From Mr. Varga, Division of Licensing Nuclear Regulatory Commission; Review of Auxiliary Feedwater system is Complete and Acceptable; dated August 10, 1983

Memo to Mr. Novak, Assistant Director for Operating Reactors Nuclear Regulatory Commission; From Mr. Check, Assistant Director for Plant Systems Nuclear Regulatory Commission; Kewaunee Nuclear Power Plant - Safety Evaluation Report - Input on the Implementation of Recommendations for the Auxiliary Feedwater Systems; dated January 26, 1981

Preventive Work Order PM 27A017; Tank Condensate Storage Tank 1A - Replace Floating Roof Seal - Boiler Room Southeast Tank

Preventive Work Order PM 27A060; Tank Condensate Storage Tank 1B - Replace Floating Roof Seal - Boiler Room Southwest Tank

Temporary Change 00-19; Remove Auxiliary Feedwater Pump Suction Strainers; dated August 21, 2000

### **Section 1R17: Permanent Plant Modifications**

CA026047; Potentially Inappropriate Safety/NonSafety-Related Interface for Bearing Cooling CA030961; Additional NRC Concerns on Service Water CUNO Filters

CR016215; Perform Commercial Grade Dedication of Service Water CUNO Filters from QA Class 3 to Safety-Related

DCR 763; Service Water Pretreatment System 27B; dated October 6, 1978

DCR 3695; Install CUNO Filters for Plant Equipment Water Supply at Each Service Water Pump; Revision 0

50.59 Applicability Review of DCR 3695; Revision 0

N-SW-02; Service Water System; Revision 38

50.59 Applicability Review of N-SW-02; Revision 38

PCR031232; Missed Opportunity to Prevent the A2 and B1 Service Water Pump Loss of Essential Gland Water Flow  
SP-02-359A; Service Water Pump Train A Backup Bearing Lube Water Supply Check; Revision 0  
50.59 Applicability Review of SP-02-359A; Revision 0  
SP-02-359B; Service Water Pump Train B Backup Bearing Lube Water Supply Check; Revision 0  
50.59 Applicability Review of SP-02-359B; Revision 0  
WO 07-007852-000; Pump - Service Water Pump 1B1  
WO 07-008037-000; Pump - Service Water Pump 1B1  
Annunciator 47053-P; Service Water Pump BRG Seal with Flow Low; Revision 7  
50.59 Applicability Review of 47053-P; Revision 7  
Annunciator 47053-Q; Service Water Pump BRG Seal Water Pressure Low; Revision 1  
50.59 Applicability Review of 47053-Q; Revision 1  
Bowser-Morner, Inc.; Statement of Calibration; dated September 27, 2004  
Bowser-Morner, Inc.; Statement of Calibration; dated January 10, 2005  
Bowser-Morner, Inc.; Statement of Calibration; dated April 18, 2005  
Bowser-Morner, Inc.; Statement of Calibration; dated August 31, 2005  
Drawing 237127A-M202-DD; Flow Diagram; Service Water System  
Drawing 237127A-M394-H; Flow Diagram; Service Water Pre-Treatment System  
Drawing D-C-7013-B-01; Condensate Storage Tanks  
Drawing M-202-1; Flow Diagram; Service Water System; Revision CH  
Drawing M-247; Feedwater Piping; Revision CM  
Drawing M-256; Condensate Make-Up, Dump & Water Supply to Auxiliary Feedwater Pumps; Revision U  
Drawing M-257; Condensate Make-Up, Dump & Supply to Auxiliary Feedwater Pumps; Revision N  
Drawing M-394; Flow Diagram; Service Water Pre-Treatment System; Revision BR  
Drawing OPERM-202-1; Flow Diagram Service Water System; Revision CG  
Drawing OPERM-202-2; Flow Diagram Service Water System; Revision CS  
Filter Testing Setup Schematic Diagram  
Drawing OPERM-204; Flow Diagram Condensate & Gland Seal Systems; Revision HO  
Drawing OPERM-204; Flow Diagram Condensate & Gland Seal Systems; Revision HP  
Drawing OPERM-205; Flow Diagram Feedwater System; Revision BA  
Drawing OPERM-205; Flow Diagram Feedwater System; Revision BB  
Ingersoll-Dresser Pump Company Correspondence; Worthington 14QL18 Pump; dated April 18, 1994  
Interbasic Resources Inc. Test Report; JN 7931; dated September 8, 2005  
Interbasic Resources Inc. Test Report; JN 7931; dated September 9, 2005  
Interbasic Resources Inc. Test Report; JN 7931; dated September 10, 2005  
Interbasic Resources Inc. Test Report; JN 8011; dated October 4, 2005  
Kewaunee Power Station Shipping Document to IBR Testing Services; dated August 22, 2005  
Worthington Corporation; Detail of Packed Stuffing Box for Enclosed Shaft; Attachment C

### **Section 1R19: Post-Maintenance Testing**

CR014034; Oil Leaks on the SFP Pumps  
CR018900; Two Control Room A/C Valves Labeled with Wrong Labels  
GMP-131; Operational Use for SKF Microlog Analyzers; Revision G

GMP-242; 480V Starters and Breakers Removal/Installation Electrical Maintenance; Revision L  
GMP-251; Common Electrical Preventive Maintenance Tasks; Revision 16  
ICP-25-09; ACC - Control Room Air Conditioning Unit 1A Cooling Water Temperature  
Controller Calibration; Revision C  
MA-AA-102; Foreign Material Exclusion Evaluation; Revision 2  
PM-02-087; Attached Work Sheets  
PMP-02-02; Service Water - Traveling Screens Motor Coupling, Reducer, Chain and Sprocket  
Maintenance; Revision S  
PMP-16-02; TAV - Turbine Building Ventilation QA-1 Fan and Motor Maintenance; Revision J  
PMP-21-01; SFP - Motor and Pump Maintenance; Revision I  
PMP-27A-05; MUP - Demineralizer Electrical Maintenance; Revision E  
RT-CVC-35E; Charging Pump Operability Test; Revision A  
Work Order 07-002163-000; ASME Section XI Class 3 - System leakage Test; Spent Fuel Pool  
Heat Exchanger  
Work Order 04-007176-000; ASME Section XI Class 3 - System leakage Test; 8" Inlet to Spent  
Fuel Pool Heat Exchanger  
Work Order 07-005881-000; Fan Coil Unit - Battery Room 1B- Inspect and Lube Fan  
Work Order 07-006366-000; Screen-Traveling Water Screen 1B2

### **Section 1R22: Surveillance Testing**

CA015942; Engineering Primary Systems to Review for Past Operability and Determine  
Reportability  
CA016849; Auxiliary Building Basement Heat Load Calculations Are Non-Conservative  
CA016879; Auxiliary Building Basement Heat Load Calculations Are Non-Conservative  
CAP042956; All Four Service Water Pumps Are Currently Operating When Only Three Service  
Water Pumps Should be Required  
CR015400; SI Pump A Inboard Seal Leakage  
CR015700; Corrosion Product Buildup Observed on Service Water Pump and Motor Coupling  
Bolts and Nuts  
CR015403; SI Pump A Inboard Seal Has Light Dry Boric Acid Buildup  
CR017488; NRC Question Regarding Preconditioning of ICS-2B Prior to SP-23-100B  
CR018082; NRC Inspector Questions Adequacy of Preconditioning Prevention  
CR019147; Auxiliary Building Basement Heat Load Calculations Are Non-Conservative  
CR019674; Auxiliary Building Fan Floor Heat Gain Calculation Is Non-Conservative  
CR019676 Auxiliary Building Fan Floor Heat Gain Calculation Has Inadequate Technical Basis  
CR020597; Incorrect Assumption Made in Fan floor Heat Up Evaluation  
GNP-08.02.08; Work Order Planning; Revision 14  
GNP-08.02.11; On-Line Maintenance Planning and Scheduling; Revision M  
EN 43633; Kewaunee Power Station Reactor Plant Event Notification Worksheet; dated  
September 11, 2007  
MA-KW-ESP-EHV-002B; Bus 1-6 Loss of Voltage Relay Test and Calibration; Revision 1  
N-ACA-17; Auxiliary Building Ventilation System; Revision AA  
N-ACA-17-CL; Auxiliary Building Vent System Prestartup CL; Revision Y  
OP-KW-ORT-DGM-001C; TSC Diesel Generator Operation Log; Revision 0  
RAS000037; Auxiliary Building Basement Heat Load Calculations Are Non-Conservative  
RAS000038; Provide Additional Documentation for AB Fan Floor FCU Functionality  
RAS000039; Provide Basis for Supporting the Reasonable Assurance of Safety  
RT-ESF-55A; Exercising Normally Energized Solenoid Valves Train A

RT-DGM-10-TSC; Technical Support Center Diesel Generator; Revision AH  
 SP-02-138A; Train A Service Water Pump and Valve Test - IST; Revision N  
 50.59 Applicability Review of SP-02-138A; Revision N  
 SP-23-100B; Train B Containment Spray Pump and Valve Test - IST; Revision 14  
 SP-33-098A; Train A Safety Injection Pump and Valve Test - IST; Revision G  
 Drawing M-704; Zone SV Exhaust System  
 Kewaunee Nuclear Power Plant Data Report 155-302; Auxiliary Building Fan Floor Fan Coil  
 Unit B  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve C1-1001A; Caustic Additive to Containment Spray Control Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve C1-1001B; Caustic Additive to Containment Spray Control Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve C1-1003; Caustic Line Check Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-2A; Containment Spray Pump A Suction from RWST  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-2B; Containment Spray Pump B Suction from RWST  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-3A; Containment Spray Pump 1A Suction Check Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-3B; Containment Spray Pump 1B Suction Check Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-4A; Containment Spray Pump 1A Discharge Check Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-4B; Containment Spray Pump 1B Discharge Check Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-5A; Containment Spray Pump 1A Discharge Isolation Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-5B; Containment Spray Pump 1B Discharge Isolation Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-6A; Containment Spray Pump 1A Discharge Isolation Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-6B; Containment Spray Pump 1B Discharge Isolation Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-8A; Containment Spray Pump 1A to Containment Vessel Check Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-8B; Containment Spray Pump 1B to Containment Vessel Check Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-9A; Containment Spray Pump 1A to Containment Vessel Check Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-9B; Containment Spray Pump 1B to Containment Vessel Check Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-20A; Containment Spray Pump 1A Inlet Relief Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-20B; Containment Spray Pump 1B Inlet Relief Valve  
 Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS;  
 Valve ICS-100A; Containment Spray Pump 1A Recirculation Line Check Valve



Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS; Valve ICS-100B; Containment Spray Pump 1B Minimum Flow Check Valve

Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS; Valve ICS-102; Containment Spray Pumps Recirculation Line Check Valve

Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS; Valve ICS-201; ICS Recirculation to RWST

Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS; Valve ICS-202; ICS Recirculation to RWST

Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS; Valve ICS-203; Containment Spray Pumps Test Line Check Valve

Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS; Valve ICS-210A; Full Flow Test Line Isolation

Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS; Valve ICS-210B; Full Flow Test Line Isolation

Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS; Valve RHR-400A; RHR Pump A Supply to ICS Pump A Isolation Valve

Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS; Valve RHR-400B; RHR Pump B Supply to ICS Pump B Isolation Valve

Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS; Valve RHR-401A; Containment Spray Pump A Suction from RHR Pump A

Kewaunee Nuclear Power Plant Inservice Testing Basis Valve Data Sheet; System 23-ICS; Valve RHR-401B; Containment Spray Pump B Suction from RHR Pump B

Kewaunee Power Station Emergency Operating Procedure E-0; Reactor Trip or Safety Injection; Revision 34

50.59 Applicability Review of Emergency Operating Procedure E-0; Reactor Trip or Safety Injection; Revision 34

Kewaunee Power Station Engineering Log; dated September 13, 2007

Kewaunee Power Station System Descriptions; Auxiliary Building Ventilation System (ACA); System 17; Revision 2

Tagout 23-ICS; Replace ICS-102 Flange Gaskets; dated August 8, 2007

Technical Evaluation; Effects of Post-LOCA Temperature Increases on Auxiliary Building Fan Level Equipment at Kewaunee Power Station; Revision 0

### **Section 1R23: Temporary Plant Modifications**

TMOD 2006-03; Disconnect Cable INC0245 from Safeguards Power in RR-104

TMOD 2006-03; Disconnect Cable INC0245 from Safeguards Power in RR-104; Configuration Change Process Screening

50.59 Applicability Review of TMOD 2006-03; Disconnect Cable INC0245 from Safeguards Power in RR-104

### **Section 1EP6: Drill Evaluation**

CR021081; Emergency Plan Drill - Evacuation Plan not Part of Drill Scenario

CR021126; Evaluate Emergency Plan Evacuation Procedures and Transportation Arrangements

DNAP-2605; Drill/Exercise Performance Indicator - NEP; Revision 6

EPIPF-AD-07-01; Nuclear Accident Reporting System Forms; dated June 28, 2007

EPIPF-EOF-04-05; Administrative Logistics Director Checklist; Revision 3

EPIP-SEC-05; Personnel Evacuation; Revision I

HPF-115; Emergency Equipment Quarterly Inventory; Revision 0  
Emergency Planning drill/Exercise/Event Log Sheet; dated September 25, 2007  
Kewaunee Emergency Plan; Site Boundary Facility; Revision 31  
Letter of Agreement between Dominion Energy, Kewaunee and the State of Wisconsin; dated  
December 28, 2005

**Section 2OS1: Access Control to Radiologically Significant Areas**

CAP037844; Rad-worker Did Not Practice ALARA  
CAP034970; Locked High Radiation Area (LHRA) Posting Inconsistent with HP-01.019  
CR017632; Temporary Change to Procedure HP 9.004; NRC Identified  
CR017635; RWP Controls to Satisfy Technical Specification 6.13; NRC-Identified  
CR017637; Temporary Change to Procedure Did Not Specify SRO Review; NRC-Identified  
CR017644; HP form HPF-103 Missing from Personnel Dosimetry File; NRC-Identified  
CR019645; Control of Items in the Spent Fuel Pool; NRC-Identified  
CR017646; Posting of Radioactive Material(s) Areas; NRC-Identified  
HP-01.004; RCA Entry and Exit; Revision 26; dated July 31, 2007  
HP-01.018; Personnel General and Hot Particle Contamination Assessment and  
Documentation; Revision E; dated September 6, 2006  
HP-01.021; Issuance and Control of Locked High Radiation Area Keys; Revision F; dated  
August 8, 2006  
HP-03.006; In-Vitro Bioassay Measurement; Revision F; dated November 28, 2006  
HP-03.008; Evaluation of Inhalations or Ingestions; Revision D; dated January 17, 2006  
HP-03.009; Calculating Internal Dose from Whole Body Counter Results; Revision G; dated  
February 27, 2007  
HP-05.002; Equipment Tagging; Labeling, and Marking; Revision 7; dated July 5, 2007  
HP-09.004; Filling and Dewatering Radwaste Containers; Revision 7, dated August 7, 2007  
RWP Pre-Job Brief Checklist; RWPs 07-0017 and 07-0068; dated August 8, 2007  
Audit 07-06; Radiological Protection, Process Control Program, and Chemistry Programs; date  
not provided  
Audit 06-08; Radiological Protection, Process Control Program, and Chemistry Programs; dated  
September 21, 2006  
Form HPR-213; Locked High Radiation Area Greater Than Or Equal To 1000 mRem/Hr Key  
Log; dated May 29, 2006, through August 8, 2007  
Radiation Work Permit 07-0017; Containment/Annulus Entries For: Periodic Inspections,  
Accumulator Samples, and Other Work/PMs/SPs Not Requiring a Separate RWP; Revision 1  
Radiation Work Permit 07-0068; Check Calibration of PS-1a Signal Converter and Replace If  
Necessary; Revision 0

**Section 4OA1: Performance Indicator Verification**

CE016912; Dose Rate Alarm on DMC-200 During Instrument Calibrations; dated  
January 25, 2006  
CHEM 40.004; Primary Sampling System; Revision E; dated February 1, 2007  
CHEM-50.003; Iodine; Radioactive; Revision C; dated September 9, 2004  
CR017453; Potential Error Trap in Procedure Revision Process; dated August 7, 2007 (NRC-  
Identified)  
CR017592; Missing Information Related to Two ED Dose Rate Alarms; dated August 9, 2007  
(NRC-Identified)

CR017603; Primary Sampling Procedure Lacks Guidance for Rinsing Sample Container; dated August 9, 2007 (NRC-Identified)  
GNP-03.18.01; NRC Performance Indicators Reporting Instructions; Revision P; dated March 22, 2007  
PCE - Contamination Log 2006; February 9, 2006, through December 6, 2006  
Individual Employee Access Records; Criteria Selected, Starting Date June 1, 2006, DDE>100, Active Records Only = N; dated August 8, 2007  
Performance Indicator BI01; Reactor Coolant System Activity; dated August 6, 2007  
Performance Indicator OR01; Occupational Exposure Control Effectiveness; dated August 6, 2007  
Performance Indicator PR01; RETS/ODCM Radiological Effluent; dated August 6, 2007  
Radiation Protection Office Log; dated May 21, 2007

**Section 40A2: Identification and Resolution of Problems**

A-ACA-17; Abnormal Operation Auxiliary Building Ventilation System; Revision 15  
CA010667; Evaluate Issue and Take Appropriate Corrective Action for CR013525  
CA011143; Turbine Speed Erratic  
CA013851; Foxboro Box FW-7B Erratic  
CA015928; Main Steam 201-B1 Did Not Close on the Shutdown  
CA015930; Auxiliary Feedwater System Modification - Operator Workaround Outage Work  
CA015934; Turbine/Generator Came Off Variable Power Limit Twice During Backdown for Heat Drain Pump  
CA015936; Emergency Boric Acid Flow Totalizer Not Working  
CA015939; Turbine Building Roof Damper Operation Safety Concerns  
CA015943; Reactor Coolant System Loop B Bypass Flow Low - Discovered Flow Element Installed Backwards  
CA015953; SER 1569 Battery Room Exhaust Flow Low Disabled  
CA015955; SER 1074 and SER 1073 Reactor Coolant System Loop Bypass Flow Low Disabled  
CA015958; Work Order 06-7794; Found Replacement Parts Wired Wrong  
CA015960; Work Order 06-10121; Reactor Makeup Pump A Flow/Press Inadequate  
CA015964; Work Order 07-2589; Reactor Coolant System Leakrate Calculation - Deviations in Pressurizer Level Effects  
CA015969; Work Order 04-1382; Containment Vacuum Indication - Transmitter is Obsolete  
CA015970; Work Order 07-94; Indicates Meter N-36 Reads High  
CA015971; Recorder NR-45 Not Regulatory Guide 1.97 Qualified  
CA015973; Foxboro Hand Station Quality Assurance - Typing Upgrade Concerns  
CA016360; Water Identified in Main Generator Condensing Pot #1  
CA017362; New Operator Workaround Per OP-AA-1700, "Operations Aggregate Impact"  
CA018034; Improper Operation of Trap 31  
CR013525; Potential Operator Workaround - Miscellaneous Drain System (Turbine Building Sump)  
CR020027; New Operator Workaround Per OP-AA-1700, "Operations Aggregate Impact"  
CR020814; Improper Operation of Trap 31  
RAS 39; Fan Floor Fan Coil Unit Functionality and Zone SV Operability; Revision 1  
Kewaunee Power Station Control Room Log; dated September 25, 2007

### **Section 4OA3: Event Follow-up**

ACE 003333 Automatic Reactor Trip  
ACE000632; ACE to O&P to Determine Why All Coolers Not Available  
CA028714; USAR Not Updated to Reflect Method of Evaluation in GL 96-06 Response; dated December 18, 2006  
CAP027287; RHR Pump Runout / Loss of IA to RHR-8A/B; dated May 10, 2005  
CAP031891; LER 2005-012, RHR Pump Run-out Questions; dated March 9, 2006  
CAP032694; LER 2005-012, RHR Pump Run-Out; dated April 5, 2006  
CAP033058; In Relay Rack 119, Four Boxes Did Not Have Proper Electrical Boundary Assignment; dated April 18, 2006  
CAP033059; In Relay Rack 120 two boxes did not have proper Electrical boundary assignment; dated April 18, 2006  
CAP033443; RR101 QA Typing Discrepancies; dated May 1, 2006  
CAP034520; Surveillance SP-47-310 Removes RCS Delta T and Average T From Service; dated June 13, 2006  
CAP 038921 Automatic Reactor Trip  
CAP 038970 Breaker 1-407 Failed to Close During Reactor Trip  
CAP 038980 Inspect breakers 1-101, 1-201, 1-307 and 1-407 for Micro Switch Problems  
CAP039449; USAR Not Updated to Reflect Method of Evaluation in GL 96-06 Response; dated November 16, 2006  
CAP 039731 Completion Time for CAP 038980 Will Be Greater Than 30 days  
CAP 042240; Additional NRC Concerns on Service Water CUNO Filters  
CE017533; In Relay Rack 119, Four Boxes Did Not Have Proper Electrical Boundary Assignment; dated April 25, 2006  
CR015826; Caution Needed for ES-1.3 Step 28; dated July 12, 2007 (NRC-Identified)  
CR015880; USAR May Not Have Been Updated as Required for License Amendment 184; dated July 13, 2007 (NRC-Identified)  
CR016069; TS LCO Tracking May Be Inadequate; dated July 17, 2007 (NRC-Identified)  
CR016145; Procedural Control of ICS in Recirculation Mode May be Inadequate; dated July 18, 2007 (NRC-Identified)  
CR016242; Extent of Condition for Foxboro Relay Racks Quality Classification; dated July 19, 2007 (NRC-Identified)  
CR018029; Water Identified in Main Generator Condensing Pot #1  
CR018744; Dead Peregrine Falcon Found in Plant Heating Boiler During Annual Maintenance  
CR018921; Unexpected Extremity ED Dose Alarms Received During SFP Transfer Canal Work  
CR019066; Suspicious Aircraft Loitering in the Area of Kewaunee Power station  
CR019369; Appendix R Manual Operator Action - Dryout of Non-Credited Steam Generator  
CR020959; HRS-100A3, MSR Relief Lifted During Power Operations  
DNOS-0304; Narrative Logs; Revision 0  
ES-1.3; Transfer to Containment Sump Recirculation; Revision Y  
ES-1.3; Transfer to Containment Sump Recirculation; Revision Z  
ES-1.3; Transfer to Containment Sump Recirculation; Revision AA  
EN 43600; A Peregrine Falcon was Found Dead in the Plant Heating Boiler During Annual Maintenance on 8/27/07  
EN 43651; Shield Building Ventilation Train A Damper Controller Was Identified That Rendered the System Inoperable; dated September 18, 2007  
GNP-03.30.02; Conduct of Operations; Revision H  
N-TD-13; Turbine room Traps and Drains; Revision R

50.59 Applicability Review of N-TD-13; Turbine Room Traps and Drains; Revision R;  
dated September 30, 2007

LER 05000305/1984-014-00

LER 05000305/2006-012-00

ODM000030; Water Identified in Main Generator Condensing Pot #1

SP-47-310; Reactor Coolant System RTD Cross Calibration; Revision G

SP-47-310; Reactor Coolant System RTD Cross Calibration; Revision H

USAR Section 6.4; Containment Vessel Internal Spray System; Revision 20

WO 06-011867 Investigate and Repair Control Problem with CV-31017/MS-201B1

Ametek Solidstate Controls Failure Analysis Report for the Red Inverter Static Switch

Event Review Team Report, Instrument Bus Reactor Trip October 30, 2006

10 CRF 50.59 Screening 05-107-00; ES-1.3, Revision Z; dated July 21, 2005

## LIST OF ACRONYMS USED

ALARA	As-Low-As-Is-Reasonably-Achievable
CAP	Corrective Action Program Document
CEDE	Committed Effective Dose Equivalent
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
FSAR	Final Safety Analysis Report
GNP	General Nuclear Procedure
HEPA	High Efficiency Particulate Air
IMC	Inspection Manual Chapter
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
MR	Maintenance Rule
NCV	Non-Cited Violation
PI	Performance Indicator
PRA	Probabilistic Risk Assessment
QAPD	Quality Assurance Program Description
RA	Risk Assessment
RETS/ODCM	Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual
RHR	Residual Heat Removal
RTD	Resistance Temperature Detector
RWP	Radiation Work Permit
RWST	Refueling Water Storage Tank
SSC	Structure, System, and Component
TS	Technical Specification
URI	Unresolved Item
USAR	Updated Final Safety Analysis Report