



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
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May 8, 2009

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

**SUBJECT: KEWAUNEE POWER STATION INTEGRATED INSPECTION REPORT  
05000305/2009002**

Dear Mr. Christian:

On March 31, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Kewaunee Power Station. The enclosed report documents four of the five inspection findings, which were discussed on April 8, 2009, with Mr. S. Scace and other members of your staff. The remaining inspection finding is related to physical security and is documented in Inspection Report 05000305/2009008.

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.

The report documents three NRC-identified findings and one self-revealed finding of very low safety significance (Green). The findings were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as Non-Cited Violations (NCVs) consistent with Section VI.A.1 of the NRC Enforcement Policy.

If you contest any NCV, 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 a copy to the Regional Administrator, Region III; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Kewaunee. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at Kewaunee. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

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). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Michael A. Kunowski, Chief  
Branch 5  
Division of Reactor Projects

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

Enclosure: Inspection Report 05000305/2009002  
w/Attachment: Supplemental Information

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

D. Christian

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*/RA/*

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M. Wilson, Director, Nuclear Safety and Licensing  
C. Funderburk, Director, Nuclear Licensing and Operations Support  
T. Breene, Manager, Nuclear Licensing  
L. Cuoco, Senior Counsel  
D. Zellner, Chairman, Town of Carlton  
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SUBJECT: KEWAUNEE POWER STATION NRC INTEGRATED INSPECTION REPORT  
05000305/2009002

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000305/2009002

Licensee: Dominion Energy Kewaunee, Inc.

Facility: Kewaunee Power Station

Location: Kewaunee, WI

Dates: January 1, 2009, through March 31, 2009

Inspectors: S. Burton, Senior Resident Inspector  
K. Barclay, Resident Inspector  
D. Lawver, Physical Security Inspector  
J. Cassidy, Senior Health Physicist

Approved by: Michael A. Kunowski, Chief  
Branch 5  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

IR 05000305/2009002; 01/01/2009 – 03/31/2009; Kewaunee Power Station; Flooding; Maintenance Risk Assessments and Emergent Work Control; and Follow-Up of Events and Notices of Enforcement Discretion.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Four Green findings were identified by the inspectors. The findings were considered Non-Cited Violations (NCVs) of NRC regulations. 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 4, dated December 2006.

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

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

- Green. A finding of very low safety significance (Green) and associated Non-Cited Violation of 10 CFR 50.65(a)(4) was identified by the inspectors for the failure to properly assess risk that resulted from risk significant maintenance being performed on the component cooling water (CCW) system, when the licensee inappropriately applied criteria for the use of a dedicated operator to meet availability requirements. As part of its corrective actions, the licensee stopped work that required the use of a dedicated operator pending further evaluation.

The issue was more than minor because the licensee's risk assessment for March 11, 2009, failed to consider the CCW unavailable during maintenance. Specifically, the failure to account for the unavailability of CCW resulted in an inadequate daily risk assessment and could affect the unavailability time of this system in related performance and maintenance rule indicators. The inspectors evaluated the finding using the Significance Determination Process in accordance with Inspection Manual Chapter 0609, "Significance Determination Process," Attachment K, Maintenance Risk Assessment and Risk Management Significance Determination Process, dated May 19, 2005, and determined the issue screened as having very low safety significance (Green), because the incremental conditional core damage probability was less than 1E-6 due to the test condition lasting only four hours. The inspectors determined that the finding had a cross-cutting aspect in the corrective action program component of problem identification and resolution, because the licensee failed to thoroughly evaluate a prior problem such that the resolution addressed the causes and extent of conditions necessary to preclude this event. (P.1(c)) (Section 1R13)

#### **Cornerstone: Mitigating Systems**

- Green. A finding of very low safety significance and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to translate the flooding design basis into specifications, procedures, and instructions. Specifically, the licensee failed to control the storage of

material in the steam generator blowdown tank room that could potentially clog a floor drain, in an adjoining room, that was credited in a flood analysis. As part of its corrective actions, the licensee removed or secured the material of concern.

The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Protection Against External Events and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee did not put adequate controls in place to ensure that the drain would performed its credited function to be open and free flowing during an internal flood scenario involving a break in a 4-inch condensate line. The inspectors evaluated the finding using the Significance Determination Process in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a, for the Mitigating Systems Cornerstone, dated January 10, 2008. The significance of the finding was determined to be of very low safety significance (Green) because the inspectors answered "no" to the questions in the Mitigation Systems Cornerstone column. The inspectors did not identify a cross-cutting aspect associated with this finding because the controls over material that could plug the drain should have been implemented when calculation 2005-05708 was completed and incorporated in the flooding design basis in 2005; therefore, this issue was not reflective of current performance. (Section 1R06)

- Green. A finding of very low safety significance (Green) and associated Severity Level IV, Non-Cited Violation of 10 CFR 50.59 was identified by the inspectors while reviewing Unresolved Item 05000305/2008003-03, "Siphon Line Which Interconnected Two Diesel Generator Emergency Fuel Oil Storage Tanks Was Not Functioning as Designed." Specifically, while performing Updated Safety Analysis Report change request, UCR 93-031, the licensee inappropriately screened the removal of the Updated Safety Analysis Report reference to the siphon line when plant staff incorrectly answered "no" to all of the 10 CFR 50.59 evaluation questions. The licensee entered this issue into its corrective action program for evaluation and development of corrective actions, as appropriate.

Because violations of 10 CFR 50.59 are considered to be violations that potentially impede or impact the regulatory process, they are dispositioned using the traditional enforcement process. As described in Supplement I of the Enforcement Policy, to determine the severity of a 10 CFR 50.59 violation, the underlying technical issue was evaluated under the Significance Determination Process. The inspectors evaluated the finding using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a, for the Mitigating Systems Cornerstone, dated January 10, 2008. The inspectors answered "yes" to Question 2 in the Mitigation System Cornerstone column which required the issue to be evaluated in accordance with Appendix A, of Inspection Manual Chapter 0609. Using Appendix A, the inspectors screened the issue as very low safety significance (Green) because the quantity of fuel to the diesel generators that was historically available always exceeded that needed for 24 hours of operation, thereby, resulting in the probabilistic risk assessment function for the diesels being met. The inspectors determined that the issue had a cross-cutting aspect in problem identification and resolution, corrective action program, because the licensee

had identified similar deficiencies with accurately applying or interpreting the current licensing basis, and failed to take timely action to complete corrective actions, or establish barriers to prevent recurrence of this deficiency (P.1(d)). Section 4OA3.2)

**Cornerstone: Barrier Integrity**

- Green. A finding of very low safety significance (Green) and associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed for the licensee's failure to follow the corrective action program procedure to implement corrective actions that could have prevented a December 30, 2008, door seal failure, which rendered both trains of control room ventilation inoperable. The licensee entered this issue into its corrective action program and, as partially corrective action, has increased its monitoring of doors for potential failure mechanisms.

The finding was determined to be more than minor because it was associated with the Barrier Integrity Cornerstone attribute of Configuration Control and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The inspectors evaluated the finding using the Significance Determination Process (SDP) in accordance with Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," dated January 10, 2008, and determined the finding represented a degradation of the barrier function to protect against radiological hazards, toxic gas, and smoke that required a Phase 3 analysis. A Region III Senior Reactor Analyst completed a qualitative Phase 3 analysis and determined that because the duration of the event was small, 44 minutes, the issue screened as having very low safety significance (Green). The inspectors determined that the finding had a cross-cutting aspect in the corrective action program component element of problem identification and resolution because the licensee failed to take appropriate corrective actions to address safety issues and adverse trends in a timely manner. (P.1(d)) (Section 4OA3.)

**B. Licensee-Identified Violations**

No violations of significance were identified.

## REPORT DETAILS

### Summary of Plant Status

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

- On March 26, 2009, Kewaunee experienced an unplanned power change when they reduced power below 1673 megawatts thermal as required by Technical Specifications (TS) 3.4.b.3. Specifically, at 12:26 p.m. a high energy line break (HELB) door was declared non-functional, and as a result all three auxiliary feedwater (AFW) pumps were declared inoperable. Technical Specification 3.4.b.3 states that if two of the three AFW trains are inoperable, then within two hours, reduce reactor power to less than or equal to 1673 megawatts thermal. The HELB door was returned to a functional status at 5:40 p.m. and the licensee exited the action statements and returned to full power.

### **1. REACTOR SAFETY**

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

#### 1R01 Adverse Weather Protection (71111.01)

##### .1 External Flooding

##### a. Inspection Scope

The inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the Updated Safety Analysis Report (USAR) for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, and determined that barriers required to mitigate the flood were in place and operable. Additionally, the inspectors performed a walkdown of the protected area to identify any modification to the site which would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors also reviewed the abnormal operating procedure for mitigating the design basis flood to ensure it could be implemented as written. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one external flooding sample as defined in Inspection Procedure (IP) 71111.01-05.

##### b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- component cooling water system – train “B”; and
- technical support center diesel generator, when out-of-service for maintenance.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, USAR, TS requirements, condition reports (CRs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program (‘) with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities constituted two partial system walkdown samples as defined in IP 71111.04-05.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns that were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- fire zone TU-95B, 480-volt switchgear, bus 1-61 and 1-62 room;
- fire zone TU-70A, screen house;
- fire zone TU-70B, screen house; and
- fire zone TU-90, 1A diesel generator room.

The inspectors reviewed areas to assess if 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 in accordance with the licensee's fire plan. 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 with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

These activities constituted four quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings of significance were identified.

1R06 Flooding (71111.06)

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the USAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. The specific documents reviewed are listed in the Attachment to this report. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant area to assess the adequacy of watertight doors and verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- steam generator blow down tank room.

This inspection constituted one internal flooding sample as defined in IP 71111.06-05.

b. Findings

Potential Debris Sources Could Clog a Drain Credited During Internal Floods

Introduction: A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to translate the flooding design basis into specifications, procedures, and instructions. Specifically, the licensee failed to control the storage of material that could potentially clog a floor drain credited in the flood analysis and located in the Bus 1 and 2 switchgear room.

Description: The inspectors reviewed the licensee's flooding analysis and its design features to prevent and mitigate the consequences of internal flooding during the first quarter of 2009. After the review, the inspectors walked down the steam generator blowdown tank (SGBT) room on March 7, 2009, to look for any possible deficiencies. The inspectors identified multiple sources of debris including an unsecured storage drum of new filters and a clear poly bag containing rope, multiple pieces of anti-contamination clothing, and rubber gloves. The inspectors had noted, during their flooding basis review, that the floor drain in the adjacent Bus 1 and 2 switchgear room was credited for removing water during a flood scenario that originated in the SGBT room, and concluded that the debris could clog the drain during a flooding event. The inspector informed the control room of their concern, and the licensee removed or secured the items of concern.

The inspectors reviewed calculation 2005-05708, "Internal Flood Levels Due to Postulated Ruptures in General Lines in the Auxiliary Building." The calculation credited the Bus 1 and 2 switchgear room floor drain and contained a discussion that emphasized the need for the floor drain to be open and free flowing. The calculation further stated that if the drain becomes blocked the results for that case were no longer valid. The inspectors also found that this calculation was referenced in the USAR to evaluate flooding sources that originated in the auxiliary building, from which, worst case scenarios were used to develop flood protection strategies and indicated the maximum flood height for the auxiliary building basement was 6 inches. The inspectors asked the licensee what the new auxiliary building flood heights would be without crediting the Bus 1 and 2 floor drain. The licensee performed an analysis where the floor drain was not credited and determined that the new flood height was 7.3 inches instead of the original 6 inches. The licensee verified that no additional components in the auxiliary building were affected that were not already analyzed in the original calculation.

The inspectors reviewed the new analysis and identified that the licensee had failed to assess the impact on equipment in safeguards alley where the barrier protecting safeguards alley from the floor was only 7 inches high. The safeguards alley flood zone (5B) contains all three of the licensee's AFW pumps and both trains of the safety-related 480-volt switchgears. The licensee subsequently performed an additional analysis and found that the water added from removing the credited floor drain from the flooding scenario filled the trench in safeguards alley and covered the floor to a depth of approximately a tenth of an inch, however, no equipment was affected.

Analysis: The inspectors determined that the failure to properly control the storage of material that could potentially clog the credited floor drain in the Bus 1 and 2 switchgear

room was a performance deficiency. The inspectors determined that the performance deficiency was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," dated December 4, 2008, because it was associated with the Mitigating Systems Cornerstone attribute of Protection Against External Events and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee did not put adequate controls in place to ensure that the drain would perform its credited function to be open and free flowing during a flooding scenario involving a break of a 4-inch condensate line.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a for the Mitigating Systems Cornerstone, dated January 10, 2008. The significance of the finding was determined to be of very low safety significance (Green) because the inspectors answered "no" to all of the questions in the Mitigation Systems Cornerstone column.

The inspectors did not identify a cross-cutting aspect associated with this finding because the controls should have been implemented when calculation 2005-05708 was completed and incorporated in the flooding design basis in 2005, therefore this issue was not reflective of current performance.

Enforcement: 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions.

Contrary to the above, when the licensee incorporated calculation 2005-05708 into its flooding design basis and implemented flooding mitigation strategies, the licensee failed to translate the flooding design basis into specifications, procedures, and instructions to control the storage of material that could potentially clog the credited floor drain in the Bus 1 and 2 switchgear room. The licensee immediately removed or secured the items of concern and has planned long-term corrective actions to update the controls in their station housekeeping procedure. Because this violation was of very low safety significance, and it was entered into the licensee's CAP as CR 325836 and CR 327802, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000305/20090002-01).

1R07 Annual Heat Sink Performance (71111.07)

.1 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the licensee's testing of turbine building fan coil unit heat exchangers to verify that potential deficiencies did not mask the licensee's ability to detect degraded performance, to identify any common cause issues that had the potential to increase risk, and to ensure that the licensee was adequately addressing problems that could result in initiating events that would cause an increase in risk. The inspectors reviewed the licensee's observations 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 conditions. Documents reviewed are listed in the Attachment to this report.

This annual heat sink performance inspection constituted one sample as defined in IP 71111.07-05.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On February 3 and February 10, 2009, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator requalification program sample as defined in IP 71111.11.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk significant system:

- service water, as a result of service water pump breaker failure.

The inspectors reviewed events such as where ineffective equipment maintenance had resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structure, system, and component (SSC)/functions classified as (a)(2) or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly maintenance effectiveness sample as defined in IP 71111.12-05.

b. Findings

No findings of significance were identified.

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- emergent equipment deficiencies during the week of January 4-8, 2009;
- feedwater pump seal water controller maintenance;
- notice of enforcement discussion for emergency diesel fuel volume;
- emergency diesel generator “B” out-of-service for maintenance; and
- component cooling water pump and valve test – train “A”.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Documents reviewed are listed in the Attachment to this report.

These maintenance risk assessments and emergent work control activities constituted five samples as defined in IP 71111.13-05.

b. Findings

Inappropriate Application of a Dedicated Operator During a CCW Surveillance

Introduction: A finding of very low safety significance (Green) and associated NCV of 10 CFR 50.65(a)(4) was identified by the inspectors for the failure to properly assess risk that resulted from risk significant maintenance being performed on the CCW system, when the licensee inappropriately applied criteria for the use of a dedicated operator to meet availability requirements.

Description: While assessing daily risk and maintenance activities for March 11, 2009, the inspectors noted that procedure SP-31-168A, “Train ‘A’ Component Cooling Pump and Valve Test - IST,” Revision 15, was performed, yet did not contribute to the daily risk. The inspectors inquired about the basis for not including the test in the daily risk and were informed that the procedure contained steps for a dedicated operator to be stationed locally to accomplish tasks necessary to assure availability of the system.

The inspectors reviewed procedure SP-31-168A to assess the controls that allowed the system to be considered available for risk management purposes. Procedure SP-31-168A required the operator to be stationed locally, for the control room operator and the dedicated local operator to establish communications, for the local operator to be in possession of directions necessary to accomplish system restoration in the event of a need, and for the unit supervisor to provide the restoration order.

The inspectors reviewed the guidance contained in NRC-endorsed industry guidance NUMARC 93-01, “Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” for the definition of “Unavailability, SSC.” This definition states that “SSCs out-of-service for testing are considered unavailable, unless the test configuration is automatically overridden by a valid starting signal, or the function can be

promptly restored either by an operator in the control room or by a dedicated operator stationed locally for that purpose. Restoration actions must be contained in a written procedure, must be uncomplicated (a single action or a few simple actions), and must not require diagnosis or repair. Credit for a dedicated local operator can be taken only if (s)he is positioned at the proper location throughout the duration of the test for the purpose of restoration for the train should a valid demand occur. The intent of this paragraph is to allow licensees to take credit for restoration actions that are virtually certain to be successful (i.e., probability nearly equal to 1) during accident conditions.”

The inspectors concluded that the criteria requiring that the system be promptly restored either by an operator in the control room or by a dedicated operation stationed locally for that purpose was not met because the procedure used the unit supervisor to recognize the condition and provide the order for restoration, a control room operator to communicate the order to the local dedicated operator, and the local dedicated operator to restore the condition. The inspectors noted that the licensee considered the fact that the procedure established communications between the control room operator and the dedicated operator would be sufficient to afford a high degree of certainty that system restoration would be completed if necessary. The inspectors disagreed because the control room operator was not dedicated and could be called to other tasks during an emergency, the procedure did not establish a requirement that the unit supervisor remain at the controls during the performance of the test, and the procedure did not establish requirements to ensure the reliability of the communications equipment. Additionally, the procedure was deficient because in the event on an emergency where the control room operator or unit supervisor may be needed to perform other tasks, it did not institute a requirement to restore the system alignment prior to performing those tasks.

The inspectors also concluded that the criterion requiring that “restoration actions . . . must not require diagnosis or repair” was also not met because the procedure did not provide guidance specifying which indication or alarm would require the initiation of restoration actions. The inspectors interviewed operations department management to ascertain their understanding of expectations and the indications that the unit supervisor would use to make a decision for restoration. Operations management indicated that there could be multiple conditions that may require a restoration decision and that the unit supervisor “would know” when to make a restoration order. The inspectors concluded that without a singular alarm or indication that keyed the restoration decision, diagnosis of the systems actual performance would be required.

Regarding the single operator requirement, the inspectors concluded that, if a remote operator were utilized to recognize and communicate restoration criteria for an operator stationed at the restoration site locally in the field, the remote operator must be equally as dedicated. That is to say, the remote operator should be dedicated and have procedural guidance defining restoration criteria; that the procedurally defined criteria do not require diagnosis or repair, that guidance existed (training, procedural, pre-job brief, etc.) which defined the elements necessary for communications activities; and that reliable and redundant communications methods had been verified to be functional (either by routine surveillance or through a pre-job test), all prior to the performance of the task. Additionally, if the remote or performing operators were the control room operator and was not dedicated, then the control room operator must have restoration criteria that need to be performed prior to the performing/assuming alternate duties. The

inspector found that the licensee did not identify any restoration criteria for the control room operator as part of the procedure, training, or as part of the pre-job briefing for the activity.

The inspectors asked the licensee to provide the risk information necessary to understand the significance of the activity if a dedicated operator were not credited for immediate restoration. Using the approved risk model in effect during the performance of the surveillance the licensee indicated that the risk, which was modeled as green at  $4.30E-5$ , would have been at  $1.15E-4$ , yellow.

The inspectors noted that this issue will require a historic review by the licensee and may impact out-of-service times for systems that input into both the maintenance rule and performance indicators. Additionally, the licensee's misunderstanding of the requirements necessary to credit availability for a dedicated operator may extend into other procedures. Therefore, the inspectors concluded that the impact of the misapplication of maintenance rule guidance relative to out-of-service times for systems on both performance indicators and maintenance rule availability will be considered an unresolved item (URI) pending a review of the licensee corrective actions and extent-of-condition reviews for this issue (URI 05000305/2009002-02).

Analysis: The inspectors concluded that the incorrect designation of an operator as dedicated to credit availability was a performance deficiency warranting further review. The issue was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," dated December 4, 2008, because the licensee's risk assessment for March 11, 2009, failed to consider the CCW unavailable during maintenance. Specifically, the failure to account for the unavailability of CCW resulted in an inadequate daily risk assessment and could affect unavailability time of this system in related performance and maintenance rule indicators.

Although CCW affected both Mitigating Systems and Initiating Events Cornerstones the inspectors evaluated this system against the initiating events indicator because a loss of the redundant train of this system at 100 percent power, the plant condition when the performance deficiency was identified, could cause a plant transient and potentially lead to a reactor coolant pump seal failure. The inspectors evaluated the finding using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment K, Maintenance Risk Assessment and Risk Management Significance Determination Process, dated May 19, 2005, and determined the issue screened as having very low safety significance (Green), because the incremental conditional core damage probability was less than  $1E-6$  due to the test condition lasting only four hours.

The inspectors determined that the finding had a cross-cutting aspect in the CAP component of problem identification and resolution, because the licensee failed to thoroughly evaluate a prior problem such that the resolution addressed the causes and extent of conditions necessary to preclude this event. Specifically, in September 2008, CR108628 identified that emergency core cooling system unavailability may not be properly counted during surveillance testing because of the licensee's misinterpretation of the requirements for crediting availability through the use of dedicated operators. As a result of this issue, the licensee submitted a frequently asked question (FAQ) related to crediting availability through the use of dedicated operators for the mitigating systems performance indicator. The licensee subsequently recognized in a corrective action

related to this condition report, CA 129337, issued February 20, 2009, that prior use of the dedicated operator and not counting the unavailability in the performance indicator data submittal was inappropriate and acknowledged that the prior occurrences where the use of a dedicated operator was credited was unacceptable. Therefore, the licensee withdrew the FAQ from review and indicated that the performance indicator data would be corrected to accurately reflect the unavailability. However, the licensee limited their immediate corrective actions to the issue associated with the performance indicator reporting requirements and failed to institute corrective actions to assess the extent of condition of the problem or institute barriers to prevent similar occurrences (P.1(c)).

Enforcement: 10 CFR 50.65(a)(4) states, in part, that before performing maintenance activities the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activity. Contrary to this requirement, on March 11, 2009, the licensee failed to properly assess and manage risk when availability credit was taken for a dedicated operator who did not meet the allowance criteria for being considered dedicated; this resulted in the licensee not accounting for risk significant maintenance being performed on the CCW system in the daily risk management profile.

The licensee entered this issue into its corrective action program as CR 326625. The licensee immediately issued a shift order to curtail the use of dedicated operators until an evaluation of their use was completed. Corrective actions planned include a review of all procedures crediting the use of a dedicated operator against the endorsed NUMARC guidance. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000305/2009002-03).

## 1R15 Operability Evaluations (71111.15)

### .1 Operability Evaluations

#### a. Inspection Scope

The inspectors reviewed the following issues:

- crack identified in reactor coolant pump shaft;
- safeguards light causes short;
- emergency diesel generator "B" - door 3 HELB issue;
- safety injection pump control room pressure indicator malfunction; and
- component cooling water – HELB.

The inspectors selected these potential operability issues based on the risk-significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and USAR to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors

determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

This operability inspection constituted five samples as defined in IP 71111.15-05

b. Findings

Multiple CCW Pipes in Close Proximity to High Energy Feedwater Lines

Introduction: The inspectors identified a unresolved item relating to the identification of multiple CCW pipes in close proximity to a high energy feedwater line.

Description: During a CCW system alignment walkdown, the inspectors identified a location where the steam supply pipe to the turbine-driven AFW pump and multiple CCW pipes, including the CCW line to the surge tank, were routed in close proximity to a 16 inch feedwater line. The inspectors noted that the USAR, under Chapter 10A, "Postulated Pipe Failure Analysis," stated where high-energy pipes were routed in the vicinity of structures and systems necessary for safe shutdown of the nuclear plant, a small break in the piping system would be postulated.

However, the licensee informed the inspectors that the HELB basis was being updated and that there would no longer be a need to postulate cracks in that area of feedwater piping, based on vendor calculations that had been performed. The licensee provided the inspectors a 2005 extent-of-condition documentation sheet that described the concern of the CCW lines being in close proximity to the feedwater line. The document also restated, that under vendor calculation KNPP-205614-P01, Kewaunee would no longer be required to postulate a break or a crack in that area of piping.

The inspectors reviewed the licensing basis for HELB and found that Kewaunee did not fall under the requirements of the NRC's Standard Review Plan, which allowed for analyzing potential stresses in high energy pipes that if found low enough would preclude the licensee from postulating cracks near safe shutdown equipment. The licensee did fall under the requirements of a letter sent to the licensee in 1972 by the Atomic Energy Commission, (the "Giambusso letter" – signed by NRC staff member, Mr. A. Giambusso). The letter stated that where high-energy pipes were routed in the vicinity of structures and systems necessary for safe shutdown of the nuclear plant, a crack in the piping system would be postulated.

The licensee performed an evaluation for the steam supply to the turbine-driven AFW pump and the CCW lines and found that they would not be affected by a feedwater pipe crack. The licensee, after further reviewing its HELB basis, stated that the CCW system may not be required for safe shutdown during a HELB. The inspectors reviewed the licensee's list of systems required after a feedwater break and found that CCW was not listed as a required system. The inspector subsequently reviewed the licensee's Appendix R Design Description for Safe Shutdown and found that CCW was listed as a required system for safe shutdown to hot shutdown. Specifically, CCW was required to perform reactivity and inventory control functions to support hot shutdown

operations. The inspectors concluded that these functions were necessary for hot shutdown regardless of the initiating event. Therefore the inspectors could not validate the licensee's assertion that CCW may not be required to support HELB.

The licensee is currently updating its HELB basis and this item will remain unresolved until the licensee completes this effort and can determine whether CCW should have been included in the systems required for safe shutdown after a HELB (URI 05000305/2009002-04).

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following post-maintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- test of service water pump breaker;
- test of containment sump supply valve to residual heat removal pump "B";
- test of RHR pump "B" supply valve (RHR-400B); and
- test of a reactor protection system relay.

These activities were selected based upon the SSCs ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TSs, the USAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to verify that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted four post-maintenance testing samples as defined in IP 71111.19-05.

b. Findings

No findings of significance were identified.

## 1R22 Surveillance Testing (71111.22)

### .1 Surveillance Testing

#### a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- reactor protection logic train “B” test;
- motor-driven AFW pump “A” full flow test- Inservice Testing (IST);
- seismic monitor surveillance test;
- emergency diesel air system pressure prop test;
- train “A” Residual Heat Removal (RHR) pump and valve test – Containment Isolation Valve (CIV); and
- containment pressure instrument channel test.

The inspectors observed in-plant activities, reviewed procedures, and associated records to determine the following:

- did preconditioning occur;
- were the effects of the testing adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- were acceptance criteria clearly stated, did they demonstrate operational readiness, and were they consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency were in accordance with TSs, the USAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers (ASME) code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;

- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted three routine surveillance testing samples, one inservice testing sample, one reactor coolant system leak detection inspection sample, and one containment isolation valve sample as defined in IP 71111.22, Sections -02 and -05.

b. Findings

(i) Emergency Diesel Generator (EDG) Air System May Not Be Appropriately Qualified

Introduction: The inspectors identified an unresolved item associated with the qualification of the EDG air start system. Specifically, the EDG starting air compressors were previously qualified Quality Assurance (QA) level 1 (QA-1) and may have been inappropriately downgraded to QA-2.

Description: While reviewing of procedure OP-KW-OSP-DGE-006B, "Diesel Generator B Start-up Air Leakage Test," the inspectors noted that the air receivers also supply controlling air to the ventilation dampers in the diesel rooms. Because the dampers and starting air were supplied from the system, the inspectors reviewed the calculations for the capacity of the air receivers and assessed the design basis of the associated air compressors.

The design of the system consisted of a normal and a spare bank of air receivers and an associated air compressor for each diesel generator. The air receivers for each diesel had the capability of be interconnected both to the designated diesel and to the alternate diesel. Additionally, procedures and equipment existed to interface the diesel air system with the station instrument air system through the use of hoses stationed locally for this purpose.

The inspectors reviewed the calculation for the diesel air receivers and found that the capacity of the receivers supported five start sequences of the diesel and had enough additional capacity to run the ventilation dampers for approximately 24 hours. The inspectors noted that with this capacity the safety-related air receivers, even if interconnected, could not support the diesel generator for the seven days needed to meet the TS fuel oil mission time. The inspectors also reviewed station documentation to ascertain the diesel generator mission time, but were unable to find any information to support a specific interval. Because the air receivers were only designed to support 24 hours of operation without replenishment, the inspectors reviewed the qualifications of the supporting air compressors. The inspectors found that the air compressors, piping, and related power was, at one time, all classified as both seismic and QA-1;

however, the compressors had been downgraded to QA-2 due to replacement part issues.

The inspectors asked the licensee to provide the design basis supporting the lower qualification of the air compressors and the acceptability of the design. The licensee entered this issue into its corrective action program as CR 326432, "Missing Design and Licensing Basis for EDG Start Up Air System." This CR and associated operability determination supported the immediate operability assessment of the diesel generator; however, related prompt operability assessments were in-progress at the close of the inspection period. The inspectors considered this issue unresolved pending review of the licensee's assessment and/or reconstitution of the related licensing basis and operability evaluation (URI 05000305/2009002-05).

(ii) Seismic Monitoring System Repeatedly Fails Surveillance

Introduction: An unresolved item was identified by the inspectors for the inability of the seismic monitoring system to be maintained operable and support entry into the emergency plan.

Description: While performing a plant status review of the relay room, the inspectors noticed that the seismic monitoring system was tagged as needing repair on multiple components, including the recording chart. Because this instrument was a TS-required instrument, it was used to determine reporting requirements for declaration of an unusual event, and its chart may be a necessary backup to assess reporting elements, the inspectors elected to review the next surveillance performed on the system.

The licensee performed SP-87-133, "Seismic Monitoring System Calibration and Functional Test," Revision I, for seismic monitoring on January 8, through February 3, 2009. During the performance of the related surveillance, the two channels for horizontal motion had alarm triggers which were found to be non-conservatively out-of-specification. The inspectors reviewed the related data and determined that the instrument started performing erratically in 2005; with all of the trigger cards were found out-of-specification during the 2005 and 2007 surveillance tests.

The inspectors assessed the licensee's instrumentation calibration practices and found that the licensee did write a CR when instrumentation was found out of specification; did not re-zero instruments to a reference value unless the instrument was found out of specification; did not consider replacing an instrument until the instrument experienced three consecutive failures; and did not trend instrument set-point data to assess the predictability of instrument failures.

The inspectors concluded that the seismic monitor failure was predictable and that the lack of a program to monitor instrument performance contributed to the failure. Because the instrument failure was predictable, the inspectors concluded that the ability of the licensee to use the seismic monitor as a reliable method to assess and enter the emergency plan was impaired, and that for some period of time during the calibration interval, the related instruments were inoperable.

Additionally, the surveillance procedure indicates reliance on the Point Beach Generating Station seismic monitors when the Kewaunee instruments were

out-of-service. The inspectors did not review the Point Beach instrument outages to assess if there may have been periods when the Kewaunee seismic monitor were inoperable coincident with the Point Beach instrument.

The fact that the alarm cards for both operating and design basis earthquakes of the instrument were found out-of-specification in the non-conservative direction, during the last three surveillance tests, called into question the station's ability to ensure that the reporting requirements would be able to be met nor the applicable response plant equipment procedures would be entered in the event of an earthquake.

Because this issue is similar to the issue identified in September 2008 (AV 2008503-01) where radiation instrumentation was found to be incapable of supporting entry into the emergency plan, the inspectors are considering this as an unresolved item pending review during the inspection of the radiation instruments in June 2009 (URI 05000305/2009002-06).

### **Cornerstone: Emergency Preparedness**

#### 1EP6 Drill Evaluation (71114.06)

##### .1 Training Observation

###### a. Inspection Scope

The inspector observed a simulator training evolution for licensed operators on March 10, 2009, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the Attachment to this report.

This training inspection constituted one sample as defined in IP 71114.06-05.

###### 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 (PIs) for the Occupational Exposure Cornerstone

###### a. Inspection Scope

The inspectors reviewed the licensee's Occupational Exposure Control Cornerstone performance indicator to determine whether the conditions resulting in any PI occurrences had been evaluated and whether identified problems had been entered into the licensee's CAP for resolution.

This inspection constitutes one sample as defined in IP 71121.01-5.

###### b. Findings

No findings of significance were identified.

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

###### a. Inspection Scope

The inspectors assessed the adequacy of the licensee's internal dose assessment process for internal exposures in excess of 50 millirem committed effective dose equivalent. There were no internal exposures greater than 50 millirem committed effective dose equivalent.

This inspection constitutes one sample as defined in IP 71121.01-5.

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

This inspection constitutes one sample as defined in IP 71121.01-5.

###### b. Findings

No findings of significance were identified.

##### .3 Problem Identification and Resolution

###### a. Inspection Scope

The inspectors reviewed a sample of the licensee's self-assessments, audits, Licensee Event Reports (LERs), and Special Reports related to the access control program to verify that identified problems were entered into the CAP for resolution.

This inspection constitutes one sample as defined in IP 71121.01-5.

The inspectors reviewed corrective action reports related to access controls and any high radiation area radiological incidents (issues that did not count as PI occurrences identified by the licensee in high radiation areas less than 1 Roentgen/hour. 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.

This inspection constitutes one sample as defined in IP 71121.01-5.

The inspectors evaluated the licensee's process for problem identification, characterization, and prioritization and verified that problems were entered into the CAP 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.

This inspection constitutes one sample as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

.4 Job-In-Progress Reviews

a. Inspection Scope

The inspectors reviewed radiological work in high radiation work areas having significant dose rate gradients to evaluate whether the licensee adequately monitored exposure to personnel and to assess the adequacy of licensee controls. These work areas involved areas where the dose rate gradients were severe; thereby, increasing the necessity of providing multiple dosimeters or enhanced job controls.

This inspection constitutes one sample as defined in IP 71121.01-5.

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, in order to assess whether any procedure modifications substantially reduced the effectiveness and level of worker protection.

This inspection constitutes one sample as defined in IP 71121.01-5.

The inspectors discussed with radiation protection supervisors the controls that were in place for special areas of the plant that had the potential to become very high radiation areas during certain plant operations. The inspectors assessed if 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.

This inspection constitutes one sample as defined in IP 71121.01-5.

The inspectors conducted plant walkdowns to assess the posting and locking of entrances to high dose rate, high radiation areas, and very high radiation areas.

This inspection constitutes one sample as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified

.6 Radiation Worker Performance

a. Inspection Scope

The inspectors reviewed radiological problem reports for which 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 if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. Problems or issues with planned or completed corrective actions were discussed with the Radiation Protection Manager.

This inspection constitutes one sample as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

.7 Radiation Protection Technician Proficiency

a. Inspection Scope

The inspectors reviewed radiological problem reports for which the cause of the event was radiation protection technician error to determine if there was an observable pattern traceable to a similar cause and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

This inspection constitutes one sample as defined in IP 71121.01-5.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

40A1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index (MSPI) - Emergency Alternating Current (AC) Power System

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - Emergency AC Power System PI for the first quarter through the fourth quarter 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, MSPI derivation reports, issue reports, event reports, and NRC Integrated Inspection Reports to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one MSPI emergency AC power system sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.2 MSPI - High Pressure Injection Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - High Pressure Injection Systems PI for the first quarter through the fourth quarter 2008. To determine the

accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports, and NRC Integrated Inspection Reports to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one MSPI high pressure injection system sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.3 MSPI - Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - Heat Removal System PI for the first quarter through the fourth quarter 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, MSPI derivation reports, and NRC Integrated Inspection Reports to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one MSPI heat removal system sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.4 MSPI - RHR System

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - Residual Heat Removal System performance indicator for the first quarter through the fourth quarter 2008. To

determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports, and NRC Integrated Inspection Reports to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one MSPI residual heat removal system sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.5 MSPI - Cooling Water Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - Cooling Water Systems performance indicator for the first quarter through the fourth quarter 2008. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports, and NRC Integrated Inspection Reports to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one MSPI cooling water system sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

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

### **Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection**

#### .1 Routine Review of Items Entered Into the CAP

##### a. Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's CAP at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Attributes reviewed included: the complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that 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 that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the Attachment to this report.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

##### b. Findings

No findings of significance were identified.

#### .2 Daily CAP Reviews

##### a. Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished through inspection of the station's daily CR packages.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

##### b. Findings

No findings of significance were identified.

.3 Selected Issue Follow-Up Inspection: Service Water Pump Circuit Breaker Failure Leads to an Assessment of Breaker Problems

a. Scope

During a review of items entered in the licensee's CAP, the inspectors found two recent corrective action items documenting service water pump breaker failures. The inspectors selected CR318324, "SW [service water] Pump A1 Red Run Indication Not Lit in Control Room," dated December 29, 2008, for review. The inspectors found that the licensee had, as a result of this issue and other recent issues, identified a negative trend in breaker-performance. As a result of this issue the licensee performed an operational decision making (ODM) evaluation on breaker issues, ODM000079. This ODM identified several follow-on assignments to improve breaker performance. Activities proposed included procedural enhancements, strategies for rotating breakers, developing a breaker maintenance history tracking system, performing a circuit breaker self-assessment, and consulting with a breaker maintenance expert to improve overall breaker maintenance practices and performance. The inspectors concluded that the magnitude and types of historical failures observed on both 4160 and 480 volt safety-related circuit breakers warranted a future review to assess the effectiveness of the implemented corrective actions. The inspectors reviewed the related documentation and found that the licensee had scheduled an effectiveness review, CA126142, for this issue.

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Findings

No findings of significance were identified.

.4 Selected Issue Follow-Up Inspection: CCW Surge Tank Level Transmitter Calibration Failures

a. Scope

During a review of items entered in the licensee's CAP, the inspectors found recent corrective action items documenting repetitive occurrences where LT-618, the CCW surge tank level transmitter, was found out of calibration during the performance of ICP-31-01, "CC – Surge Tank Level Loop 618 Calibration." The inspectors reviewed the adequacy of the corrective actions and assessed the licensee's instrumentation calibration practices.

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152-05.

b. Observations

The inspectors concluded that level transmitter failures were predictable based on the recurring frequency. The inspector also found that transmitter output is a QA-2 function

and that alternate methods for identifying changes to the CCW system water level were available. The licensee replaced the transmitter during the week of March 30, 2009.

No findings of significance were identified.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 Notice of Enforcement Discretion (NOED)

a. Inspection Scope

The licensee submitted an oral request for enforcement discretion for TS 3.7.a.7, "Auxiliary Electrical Systems," on January 23, 2009. The licensee requested enforcement discretion for a 14-day period until a license amendment request to change TS 3.7.a.7 could be submitted and approved. This request was for not meeting the required 35,000 gallons of fuel oil available to either diesel generator. The NRC staff granted approval during a teleconference with the licensee, on January 23, at approximately 3:42 p.m. The licensee sent a follow-up letter on January 27, 2009.

On January 23, 2009, during a teleconference with the NRC, the licensee declared the siphon line that connects the two underground fuel oil storage tanks for the diesel generators inoperable. With the siphon line inoperable and neither storage tank capable of providing at least 35,000 gallons of fuel, Kewaunee could not meet the requirement to supply at least 35,000 gallons of fuel to an EDG. With the condition of Kewaunee not being able to provide 35,000 gallons of fuel to either EDG, both EDGs would be inoperable. Technical Specification 3.7.b.7 requires that if two EDGs are inoperable for more than two hours, then Kewaunee must initiate action within one hour to achieve Hot Standby within the next six hours. As the result of additional specifications that applied, the licensee entered TS 3.0.c, which directs that actions be initiated within one hour to place the unit in a mode in which the specification does not apply by placing it, as applicable, in at least hot standby within the next six hours, hot shutdown within the following six hours, and cold shutdown within the subsequent 36 hours. The one hour action time expired at 2:58 p.m.; the licensee entered its shutdown procedure at 2:45 p.m. and the NOED was granted at 3:42 p.m. Although preparations were made to shutdown, no reactivity manipulations were performed. The NOED was used until 3:15 p.m. on February 6, 2009, at which time License Amendment No. 203 was approved by the NRC. The amendment provided fuel oil storage requirements that would provide for a 7-day supply of fuel to either EDG without credit for the siphon line connection between the two underground tanks.

Prior to approval for granting the NOED, the inspectors (from the site, headquarters and the region) reviewed the licensee's basis for the NOED in accordance with Regulatory Information Summary RIS 2005-01, "Changes to NOED Process and Staff Guidance." The inspectors also reviewed the scheduled work activities, environmental conditions, compensatory actions planned, and the site's readiness to implement the NOED. Prior to and during the period when the NOED was in effect, the inspectors verified that the licensee appropriately managed plant risk and that the licensee implemented the compensatory measures identified during the telephone call that verbally granted the NOED. The review of these items is also documented in the NRC approval letter for NOED 09-3-01, dated January 29, 2009.

b. Findings

There were no findings related to the NOED implementation. There was one finding related to the cause of the siphon line inoperability which is discussed below in section 4OA3.2, "Siphon Line Which Interconnected Two Diesel Generator Emergency Fuel Oil Storage Tanks Was Not Functioning as Designed."

.2 (Closed) URI 05000305/2008003-03, Siphon Line Which Interconnected Two Diesel Generator Emergency Fuel Oil Storage Tanks Was Not Functioning as Designed

a. Inspection Scope

Inspection Report (IR) 05000305/2008003 identified a URI associated with the EDG fuel oil storage tank design and licensing basis following the licensee issuing event notification (EN) EN#44182. This EN stated that a siphon line interconnecting the two EDG emergency fuel oil storage tanks was not functioning as designed. The purpose of the siphon line, as part of EDG fuel oil system, was to feed fuel oil from either storage tank to the adjacent tank; thereby, interconnecting the tanks such that both EDGs had access to fuel from both tanks.

The inspectors reviewed the licensing basis of the EDG fuel oil system as described in the TSs, USAR and other licensing basis documents. This review included consideration of seismic, single failure, and fuel oil storage volume requirements. The inspectors concluded that the siphon line was part of the current licensing basis (CLB). However, the licensee's position was that the siphon line was not part of the CLB.

b. Findings

Introduction: A finding of very low safety significance (Green) and associated Severity Level IV, NCV of 10 CFR 50.59 was identified by the inspectors.

Description: On April 30, 2008, with the reactor shutdown, the licensee identified that the siphon line was malfunctioning. Subsequently, the licensee established a procedure and a temporary modification to enable transfer of fuel oil from one storage tank to the other in the event that one of the safety-related installed pumps was not available. The inspectors noted that the temporary modification was not safety-related, was not seismically qualified, consisted of commercial grade components, and was not stored in a seismically controlled location.

The inspectors' review of the CLB identified that the licensee's safety analysis report from May 12, 1972, described the use of the siphon line to provide for a total of over 7 days of fuel for both EDGs. This was acknowledged by the NRC in its May 10, 1973, safety evaluation (Kewaunee's operating license was issued in December 1973). In an update to the USAR dated July 20, 1993, the licensee identified that the siphon line was "not working" and removed reference to it in the USAR, stating incorrectly that its inoperability did not adversely affect plant safety. The removal of this reference was accomplished by referencing elements of a ASME code relief request that had not been incorporated into the licensing basis for this purpose. The inspectors reviewed the related change request and concluded that USAR change request, UCR 93-031, inappropriately answered question Number 3, "Could the change increase the probability

of occurrence of a malfunction of equipment important to safety previously evaluated in the UASR?" as "No." Specifically, the licensee should have determined that the proposed activity degraded the SSC reliability because the activity reduced system/equipment redundancy or independence. As a result of the inappropriate assumption, the licensee did not submit a license amendment request as required by 10 CFR 50.59.

The inspectors also noted that with the siphon line inoperable and loss of one of the transfer pumps in either of the tanks, there would not be a 7-day supply of fuel oil to one of the EDGs during a postulated accident. Discussions with the licensee indicated that the problem with the siphon line that occurred on April 30, 2008, was related to the problem mentioned in the 1993 submittal to the NRC that the line was "not working" and reflected a problem with the siphon line that has existed since initial plant operations. The inspectors attributed the identification of the problem in April to the strong questioning attitude of new plant staff.

Analysis: The inspectors determined that the licensee's failure to perform a proper 10 CFR 50.59 was a performance deficiency warranting further review. Because violations of 10 CFR 50.59 are considered to be violations that potentially impede or impact the regulatory process, they are dispositioned using the traditional enforcement process. As described in Supplement I of the Enforcement Policy, to determine the severity of a 10 CFR 50.59 violation, the underlying technical issue was evaluated under the SDP.

The inspectors evaluated the finding using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a, for the Mitigating Systems Cornerstone, dated January 10, 2008. The inspectors answered "yes" to Question 2 in the Mitigation System Cornerstone column, which required the issue to be evaluated in accordance with Appendix A, of IMC 0609. Using Appendix A, the inspectors screened the issue as very low safety significance (Green) because the quantity of fuel to the diesel generators that was historically available always exceeded that needed for 24 hours of operation, thereby, resulting in the probabilistic risk assessment (PRA) function for the diesels being met.

The inspectors determined that the issue had a cross-cutting aspect in problem identification and resolution, Corrective Action Program, because the licensee had identified similar deficiencies with accurately applying or interpreting the CLB, since June 2005 (IRs 2005008, 2005011, 2006004, 2006016, and 2007002), and failed to take timely action to complete corrective actions, or establish barriers to prevent recurrence of this deficiency (P.1(d)),

Enforcement: 10 CFR 50.59(a)(1) states in part, that the licensee may make changes in the facility as described in the final safety analysis report without prior Commission approval unless the proposed change involves an unreviewed safety question. 10 CFR 50.59(a)(2) states, in part, that a proposed change shall be deemed to involve an unreviewed safety question if the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased. Contrary to this, the licensee failed to obtain Commission approval via a license amendment when it incorrectly determined that the

subject change did not constitute an unreviewed safety question and subsequently modified the safety analysis report.

The licensee entered this issue into its CAP as CR 321056 for evaluation and development of corrective actions, as appropriate. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program, this violation is being treated as a Non-Cited Severity Level IV Violation consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000305/2009002-07).

.3 Follow-up of 10 CFR 50.72 Notification: Steam Exclusion Door Failure Results In Multiple Safety Systems Being Declared Inoperable

a. Inspection Scope

The inspectors reviewed the licensee's event notifications and corrective actions for various losses of barrier integrity which impacted risk-significant and safety-related equipment. The inspectors reviewed the scope of the report, and corrective actions to determine if the station response was appropriate for each identified issue. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one sample as defined in IP 71153.

b. Findings

Introduction: A finding of very low safety significance (Green) and associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed for the licensee's failure to follow the CAP procedure to implement corrective actions that could have prevented a December 30, 2008, door seal failure.

Description: Between October 30, 2008, and January 28, 2009, the licensee experienced multiple problems with hazard barriers, specifically doors providing HELB, fire, and control room exclusion boundary protection. Multiple event notifications and LERs were made associated with the problems with the doors. The inspectors noted that corrective actions for the first occurrence, LER 05000305/2008-002-00, "Blocked Open Steam Exclusion Door Results in Postulated Inoperability of Safety Systems," included actions to revise surveillance procedures for critical doors and for require operations to perform a walk-down of doors identified as a single-point-vulnerability for equipment (CR 116752). Subsequent to the October 30, 2008, door failures, there have been more than five degraded door issues, including two which resulted in LERs.

In addition to the October 30, 2008, door failure, the inspectors noted that CR 117765, dated November 6, 2008, CR 117879, dated November 7, 2008, and CR 319052, dated January 7, 2009, were written for door issues and seal failures. While performing a plant walk-down, the inspectors also identified a door seal failure, which the licensee documented in CR 322644, dated January 12, 2009. The inspectors elected to assess the December 30, 2008, door failure and associated LER 05000305/2008-003-00, "Door Bottom Seal Failure Results in Inoperability of Control Room Ventilation System," because it represented a second nearly identical failure to the October 30, 2008, door failure.

For the corrective actions for the October 30, 2008, failure, the inspectors noted that a new procedure to inspect doors was not scheduled to be completed until March 2, 2009, with first performance of the modified procedure due in April 2009. Because door issues continued to manifest after the issuance of the first condition report, CR 116752, the inspectors were concerned that the corrective actions may not be timely. Additionally, a prior corrective action related to a HELB single point vulnerability study that occurred in advance of the October 30, 2008, door failure had increased the inspection frequency via the use of operator rounds, but was closed without action taken (CA 077972). Closure of CA 077972 occurred because a related corrective action, CA 072073, determined that it was inappropriate to use the 18-month surveillance as a 12-hour door inspection tool.

The inspectors reviewed licensee procedure, PI-KW-200, "Corrective Action," and noted for level 1 or 2 condition reports, step 3.7.2 stated that, "If the threat is continuous, implement corrective actions immediately, or implement compensatory actions to reduce the threat or mitigate the consequences." Because of the continuing door issues and because the failures impacted safety-related equipment operability, the inspectors concluded that the implementation of corrective actions was not timely nor in accordance the intent of implementing corrective or compensatory actions to remove the threat. Specifically, the December 30, 2008, self-revealing door seal failure that caused both trains of control room ventilation to be inoperable was preventable.

Analysis: The inspectors concluded that the failure to implement timely or effective interim corrective actions that could have prevented the December 30, 2008, self-revealing door seal failure was a performance deficiency warranting further review.

The inspectors determined that the performance deficiency was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," dated December 4, 2008, because it was associated with the Barrier Integrity Cornerstone attribute of Configuration Control and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The inspectors evaluated the finding using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," dated January 10, 2008, and determined the finding represented a degradation of the barrier function to protect against radiological hazards, toxic gas, and smoke that required a Phase 3 analysis. A Region III Senior Reactor Analyst completed a qualitative Phase 3 analysis and determined that because the duration of the event was small, forty-four minutes, the issue screened as having very low safety significance (Green).

The inspectors determined that the finding had a cross-cutting aspect in the corrective action program component element of problem identification and resolution because the licensee failed to take appropriate corrective actions to address safety issues and adverse trends in a timely manner ([P.1(d)).

Enforcement: 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, in part, that activities affecting quality shall be prescribed by documented procedures of a type appropriate to the circumstances. Kewaunee procedure PI-KW-200, "Corrective Action," step 3.7.2, requires that, "If the threat is

continuous, implement corrective actions immediately, or implement compensatory actions to reduce the threat or mitigate the consequences.” Contrary to this, the licensee failed to implement compensatory actions to preclude subsequent occurrences of similar events when corrective actions for an October 30, 2008, door seal failure were developed.

The licensee entered this issue into its CAP as CR 318446. Corrective actions implemented and planned included an apparent cause evaluation, increased monitoring of doors for potential failure mechanisms, and a scoping study to assess permanent modifications for upgrading doors that act as hazard barriers for single point vulnerabilities. Because this violation was of very low safety significance and it was entered into the licensee’s CAP, this violation is being treated as a NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000305/2009002-08).

.4 (Closed) LER 05000305/2008-002-00: Blocked Open Steam Exclusion Door Results in Postulated Inoperability of Safety Systems

On October 30, 2008, when a technician was transiting through the door to the spent fuel pool cooling room the bottom door seal fell off and wedged the door open. This door provided a steam exclusion function and was stuck open for less than one minute. During the time when the steam exclusion function protecting safety-related equipment in both trains was inoperable, the plant was in both an unanalyzed condition and a condition that could have prevented the fulfillment of a safety function. With the door closed, the safety function was effective. The door remained closed until it was repaired. Section 1R15 above discusses the repetitive nature and related issues for the loss of hazard barriers. This LER is closed.

This event follow-up review constituted one sample as defined in IP 71153-05.

.5 (Closed) LER 05000305/2008-003-00: Door Bottom Seal Failure Results in Inoperability of Control Room Ventilation System

On December 30, 2008, when an operator was transiting through the door to the control room air conditioning room the bottom door seal fell off. This door provided a steam exclusion function and was a control room exclusion zone barrier; the door was inoperable for approximately 44 minutes until repairs were completed. During the time the door’s function was impaired, the door was incapable of protecting safety-related equipment in both trains of control room emergency ventilation and the plant was in both an unanalyzed condition and a condition that could have prevented the fulfillment of a safety function. Section 1R15 above discusses the repetitive nature and related issues for the loss of hazard barriers. This LER is closed.

This event follow-up review constituted 1 sample as defined in IP 71153-05.

.6 (Closed) LER 05000305/2009-002-00: Steam Exclusion Door Blocked Open During Maintenance Activities

On January 28, 2009, contrary to procedural requirements, a door chock was utilized to hold a door to the carbon dioxide room open, thus rendering the door incapable of automatic closure if released. The door being chocked open rendered it incapable of

performing its HELB function of protecting the safety-related 4160-volt switchgear. This condition lasted for approximately 15 minutes. During the time the door's function was impaired, the plant was in a condition that could have prevented the fulfillment of a safety function needed to control the release of radioactive material. Section 1R15 above discusses the repetitive nature and related issues for the loss of hazard barriers. Because the duration of the event was small this issue was considered minor. This LER is closed.

This event follow-up review constituted one sample as defined in IP 71153-05.

#### 4OA6 Management Meetings

##### .1 Exit Meeting Summary

On April 8, 2009, the inspectors presented the inspection results to S. Scace and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

##### .2 Interim Exit Meetings

An interim exit was conducted for:

- Access Control to Radiologically Significant Areas with Mr. S. Scace on January 16, 2009, and with Mr. J. Hale on February 25, 2009.

The inspectors confirmed that none of the potential report input discussed was considered proprietary.

#### 4OA7 Licensee-Identified Violations

None.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

S. Scace, Site Vice-President  
M. Crist, Plant Manager  
J. Hale, Radiation Protection Manager  
C. Olson, Radiation Protection General Supervisor  
M. Peroutka, Radiation Protection Supervisor  
D. Shannon, Radiation Protection General Supervisor  
J. Dillich, Site Engineering Director  
J. Gadzala, Licensing Engineer  
R. Repshas, Licensing Engineer  
W. Henry, Maintenance Manager  
T. Breene, Manager of Licensing  
J. Madden, System and Component Engineering  
K. Karr, Director Performance Improvement  
D. Bouche, Nuclear Specialist  
D. Lawrence, Operations Manager  
S. Yuen, Programs Engineering Manager  
J. Stafford, Organizational Effectiveness Manager  
C. Chovan, Outage and Planning Manager  
J. Palmer, Maintenance Training Supervisor  
J. McNamara, Design Engineering Supervisor

#### Nuclear Regulatory Commission

M. Kunowski, Chief, Division of Reactor Projects, Branch 5

### LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

#### Opened

05000305/2009002-01	NCV	Potential Debris Could Clog a Drain Credited During Internal Floods (Section 1R06)
05000305/2009002-02	URI	Inappropriate Application of a Dedicated Operator During a CCW Surveillance (Section 1R13)
05000305/2009002-03	NCV	Inappropriate Application of a Dedicated Operator During a CCW Surveillance (Section 1R13)
05000305/2009002-04	URI	Multiple Component Cooling Water Pipes in Close Proximity to High Energy Feedwater Lines (1R15)
05000305/2009002-05	URI	Emergency Diesel Generator Air System May Not Be Appropriately Qualified (Section 1R22)
05000305/2009002-06	URI	Seismic Monitoring System Repeatedly Fails Surveillance (Section 1R22)

05000305/2009002-07	NCV	Siphon Line Which Interconnected Two Diesel Generator Emergency Fuel Oil Storage Tanks Was Not Functioning as Designed (Section 4OA3.2)
05000305/2009002-08	NCV	Steam Exclusion Door Failure Results In Multiple Safety Systems Being Declared Inoperable (Section 4OA3.3)

Closed

05000305/2008-002-00	LER	Blocked Open Steam Exclusion Door Results in Postulated Inoperability of Safety Systems (Section 4OA3.4)
05000305/2008-003-00	LER	Door Bottom Seal Failure Results in Inoperability of Control Room Ventilation System (Section 4OA3.5)
05000305/2009-002-00	LER	Steam Exclusion Door Blocked Open During Maintenance Activities (Section 4OA3.6)
05000305/2008003-03	URI	Siphon Line Which Interconnected Two Diesel Generator Emergency Fuel Oil Storage Tanks Was Not Functioning as Designed (Section 4OA3.2)
05000305/2009002-01	NCV	Potential Debris Sources Could Clog a Drain Credited During Internal Floods (Section 1R06)
05000305/2009002-03	NCV	Inappropriate Application of a Dedicated Operator During a CCW Surveillance (Section 1R13)
05000305/2009002-07	NCV	Siphon Line Which Interconnected Two Diesel Generator Emergency Fuel Oil Storage Tanks Was Not Functioning as Designed (Section 4OA3.2)
05000305/2009002-08	NCV	Steam Exclusion Door Failure Results In Multiple Safety Systems Being Declared Inoperable (Section 4OA3.3)

## 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 or 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.

### 1R01 Adverse Weather Protection

- OP-KW-AOP-GEN-004; Response to Natural Events; Revision 5
- CR 325483; Degraded Conditions on Traveling Water Screen Covers Noted by NRC Inspector

### 1R04 Equipment Alignment

- CA 068349; Screenhouse Tunnel Drip Trays Are Not a Documented Plant Modification
- CR 090511; Screenhouse Tunnel Drip Trays Are Not a Documented Plant Modification
- CR 018330; Groundwater Leakage Observed at South End of Screenhouse Tunnel
- CR 026046; Screenhouse Tunnel Ceiling Leak
- CR 324378; Zone Inspection; Leak in Screenhouse Tunnel Ceiling Creates a Personnel Hazard
- MRE001058; Screenhouse Tunnel Ceiling Leak
- N-CC-31-CL; Component Cooling System Prestartup Checklist; Revision 29
- OP-KW-ORT-DGM-002; Operations Routine Test; Revision 4
- Drawing OPERM-202; Flow Diagram; Service Water System; Revision BV
- Drawing OPERM-202; Flow Diagram; Service Water System; Revision CE
- Drawing OPERM-202; Flow Diagram; Service Water System; Revision CP
- Drawing OPERXX-100-19; Flow Diagram; Component Cooling System; Revision AL
- Drawing OPERXX-100-20; Flow Diagram; Component Cooling System; Revision AC
- Implementation Procedure, Revision 2, as Corrected February 14, 1992
- Topical Design Basis Document; Kewaunee Power Station; High Energy Line Break; Revision 2

### 1R05 Fire Protection

- CA 073807; T-Track CA 020891 Tracking Action
- CAP 029203; Door 3 (Steam Exclusion) Opens in the Direction of Postulated Pressurization
- CR 097185; Place-keeper for the Remaining Assignments from CAP 029203
- CR 322689; NRC Question Related to Door 3 Steam Exclusion Function
- PMP-08-19; FP – Inspection of Plant and Fire Doors; Revision 17
- Drawing E-1606; Integrated Logic Diagram – Turbine Building and Screenhouse Vent System; Revision AE

- Drawing E-1620; Integrated Logic Diagram – Fire Protection System; Revision AF
- Drawing E-2009; Integrated Logic Diagram – Fire Protection System; Revision N
- Drawing M-601; Flow Diagram – Turbine and Auxiliary Building Ventilation; Revision CT
- Drawing M-636; Ventilation – Screenhouse and Diesel Generator Rooms; Revision N
- Drawing OPERM-213-9; Flow Diagram – Diesel Generator Startup Air Compressor A & B and Fish Screen Air

#### 1R06 Flood Protection Measures

- CA 021397; Drain Piping Impact on flooding Scenarios
- CAP 027580; Drain Piping Impact on Flooding Scenarios
- CR 021737; Flood Check Valves Can't be Worked On Line
- CR 028712; MD-300-3 Leaking Past Seat
- CR 105608; Vendor Dedication of Weldwire Used in Fabrication of Door 8 Found Unsatisfactory
- CR 317002; MD-300-3 Leaking Past Its Seat
- CR 325692; Auxiliary Building Flooding Does Not Include the Effects of Closing Valve MD(R)-200
- CR 325836; NRC Resident Questioned Capability of Bus 1 and 2 Drain Flowpath to Turbine Building
- OP-KW-ARP-47032-R; Residual Heat Removal Pump Pit Sump Level High; Revision 0
- OP-KW-ARP-47033-R; Auxiliary Building Flood Level High; Revision 0
- OP-KW-ARP-47053-N; Cond Trench Water Level High; Revision 0
- OP-KW-ARP-47054-N; Safeguard Alley Flood Level High; Revision 0
- PCR 021392; Drain Piping Impact on Flooding Scenarios
- PCR 021394; Drain Piping Impact on Flooding Scenarios
- Calculation 2005-04840; Internal Flood Levels Due to Postulated Piping Ruptures in the Main Feedwater Line in the Auxiliary Building; Revision 1
- Calculation 2005-05708; Internal Flood Levels Due to Postulated Piping Ruptures in General Pipe Lines in the Auxiliary Building; Revision 1 and 3
- Design Information Transmittal; Auxiliary Building Flooding Calculation; May 24, 2005
- Evaluation X10072; Attachment 2; Auxiliary Building (Controlled Area) Safe Shutdown Equipment Evaluation; Revision 1
- Internal Flooding – Auxiliary Building; Desktop Guidelines – Walkdown Checklist; Flood Zone 15B; Steam Generator Blowdown Equipment Room; April 28, 2005
- Kewaunee Nuclear Power Plant; Auxiliary Building Internal Flood Evaluation; Revision 0
- TDBD-KPS-FLD; Topical Design Basis Document for Kewaunee Power Station Internal Flooding; Revision 2

#### 1R07 Heat Sink Performance

- CR 014043I; Turbine Building Basement Drain by Service Water Pre-Treatment Cartridge Filters Is Plugged

- CR 014134; Unexpected Annunciator
- CR 014589; Received Annunciator 54-Q, Traveling Water Screen Differential Pressure High Due to Traveling Water Screen Train "A" Differential Pressure High
- CR 015530; R-20 18326 Pinwheel Is Stuck
- CR 019466; Control Room Alarm for Cooling Water Pump "A" Seal Flow Low
- CR 023636; Traveling Water Screen "B" Differential Pressure High
- CR 025439; Traveling Water Screen "A" Differential Pressure High
- CR 025697; Fouling of Secondary Sample Heat Exchangers
- CR 028265; Circulation Water Recirculation Pump Flow Low
- CR 028919; Corrosion Nodules and Silt Was Found in Valve SW-2002A and Up/Downstream Piping
- CR 031171; Received Annunciator 47054-Q for Traveling Water Screen "A" Differential Pressure High
- CR 094273; R-16 Sample Chamber Output Block with Sand
- CR 094398; R-16 Flow Indicator 23161 Is Reading Low Flow
- CR 094417; Circulation Water Chlorine Monitoring Flow Indicator Filled with Silt
- CR 094746; Unsatisfactory Cleanliness Inspection in 0.5 Inch Piping Associated with SW-914B
- CR 094865; Service Water Debris Found in Shell Side of Spent Fuel Pool Heat Exchanger
- CR 094977; Results of R-16 and R-20 Sample Chamber Inspections
- CR 095383; R-20 Sample Chamber Output Blocked with Sand
- CR 095402; R-20 Non-Functional Due to Low Sample Flows
- CR 096238; Completed Inspection GNP-01.09.01-2 of Service Water Piping
- CR 101863; Administration Building Heating Ventilation Air Condition System Service Water Strainers Plugging More Frequently
- CR 103968; Service Water Pump B1 Seal Water Flow Low with Dry Packing Gland
- CR 105221; Unexpected Control Room Alarm Traveling Water Screen "A" Differential Pressure High
- CR 110988; Condenser Fouling Has Increasing Trend
- CR 114985; Service Water Pre-Treatment Level Is High
- CR 120063; Containment Fan Coil Unit A/B Flow to R-16 Trending Down Over the Last Week
- CR 316389; R-20 Flow Meter Reading Low Out of Spec
- CR 317970; Excessive Amount of Sand Found in R-20 Chamber
- CR 317991; R-20 Extent of Condition Review from CR 317970
- CR 318285; Turbine Building Fan Coil Unit "C" Showing Signs of Being Clogged in Service Water Side
- CR 318551; New Condition Report to Document the Functionality of R-16 for the Condition in CR 317991
- CR 319429; Generate Work Order to Flush/Clean Electrical Maintenance Shop Cooling System Coils
- CR 319446; New Condition Report to Create a Reasonable Assurance of Safety for R-20 for the Condition in CR 317970
- CR 320879; Nuclear Oversight Department Recommendation; Determine Acceptability of One Service Water Pre-Treatment Settling Basin
- CR 321024; SW-2002B Piping Found Plugged with Silt and Sand
- NID-01.01; Generic Letter 89-13 Program Document

- PMP-16-02; TAV – Turbine Building Ventilation QA-1 Motor Maintenance
- PMP-16-08; TAV – Turbine Building Basement Fan Coil Unit Performance Monitoring
- Heat Exchanger Performance Data
- Preventive Maintenance Data Records
- System R-20 Description Data
- Work Order History Data Records

#### 1R11 Licensed Operator Regualification Program

- LRC-09 DY 101; Cycle 09-01 Dynamic Exam

#### 1R12 Maintenance Rule Implementation

- ACE 014079; 1-507 Breaker Failing to Close
- CA 125190; Electrical Maintenance to Continue Troubleshooting Under Work Order KW 100451938
- CA 125193; Breaker Component Engineer to Contact Westinghouse to Obtain Guidance
- CR 117904; 1-507 Breaker Found Foreign Material in MOC Switch Cover
- CR 119799; Service Water Pump A2 Breaker Did Not Close
- CR 318324; Service Water Pump A1 Red Run Indication Not Lit in Control Room
- CR 318475; Found Bent Front Lower Truck Cross Support Plate on Breaker 1-607
- CR 318504; Breaker 1-507 Truck Support Plate Found Bowed
- CR 318686; Service Water Pump A1 Green Light Did Not Illuminate
- CR 323555; Temperature Change to SP-02-138A Due to Equipment Issue
- CR 325172; Service Water Pump B2
- MRE 007341; 1-507 Breaker Failing to Close
- Maintenance Rule; Service Water Activity and Assessment Reports for September, 2007 through February, 2009

#### 1R13 Maintenance Risk Assessments and Emergent Work Control

- 01-Station Air and Instrument Air System, 26-Potable Water System, and 27B-Service Water Pretreatment System Data
- CA 083247; Evaluate the Concern Regarding Emergency Core Cooling System
- CA 129337; Emergency Core Cooling System Unavailability May Not Be Properly Counted During ORT-SI-001A
- CR 108628; Emergency Core Cooling System Unavailability May Not Be Properly Counted During ORT-SI-001A
- CR 119353; Breaker 14604 Reclosed Automatically When Opened
- CR 326625; NRC Senior Resident Questioned the Use of Dedicated Operator in SP-31-168A
- NF-AA-PRA-370; Attachment 1; General PRA Guidance That Applies to All Stations; Revision 1
- NF-AA-PRA-101-3071; Table 5B; Kewaunee Power Station Safety Monitor Component Table by System Number

- OP-KW-ARP-47063-C; Feedwater Pump "A" Abnormal; Revision 0
- OP-KW-ORT-DGM-002; Operations Routine Test; Revision 1
- SP-31-168A; Train A Component Cooling Pump and Valve Test – IST; Revision 15
- WM-AA-100; Work Management; Revision 4
- Drawing E-234; Station Synchronizing Diagram; Revision C
- Drawing E-1064; Schematic Diagram Synchronizing – Check; Revision B
- Drawing E-1097; Control Switch Development; Revision L
- Drawing E-1102; Control Switch Development; Revision N
- Drawing E-2893; Control Schematic – 480V Breaker No. 14601; Revision E
- Drawing E-2894; Control Schematic – 480V Breaker No. 14604; Revision E
- Drawing E-2897; Schematic Diagram – Load Shedding Volt Restoring Bus 1-46; Revision C
- Drawing E-3007; AC S/D-480V SWGR Bus 1-46 and Technical Support Center Generator; Revision J
- Drawing E-3002; Schematic Diagram – Technical Support Center Diesel Generator Control; Revision G
- Emergency Work Risk Evaluation; Control Room Air Conditioning Fan "B" Tripped when Control Switch Placed to ON During SP-25-326B
- Kewaunee Nuclear Power Plant System Description 05A; Feedwater System; Revision 4
- Major Activities Agenda List; Week of January 5, 2009
- Major Activities Agenda List; Week of January 26, 2009
- Major Activities Agenda List; Week of February 2, 2009
- Major Activities Agenda List; Week of March 2, 2009
- Major Activities Agenda List; Week of March 9, 2009
- Planned Activities for Monday, January 5, 2009
- Planned Activities for Monday, January 7, 2009
- Planned Activities for Monday, January 8, 2009
- Planned Activities for Monday, January 9, 2009
- Planned Activities for Monday, January 27, 2009
- Planned Activities for Monday, January 28, 2009
- Planned Activities for Monday, January 29, 2009
- Planned Activities for Monday, February 3, 2009
- Planned Activities for Monday, February 4, 2009
- Planned Activities for Monday, February 5, 2009
- Planned Activities for Tuesday, March 2, 2009
- Planned Activities for Tuesday, March 3, 2009
- Planned Activities for Tuesday, March 12, 2009
- Kewaunee Plant Configuration Changes and Relative Core Damage Frequency Safety Monitor Risk Look Ahead Data; January 2, 2009
- Kewaunee Plant Configuration Changes and Relative Core Damage Frequency Safety Monitor Risk Look Ahead Data; January 23, 2009
- Kewaunee Plant Configuration Changes and Relative Core Damage Frequency Safety Monitor Risk Look Ahead Data; January 30, 2009
- Kewaunee Plant Configuration Changes and Relative Core Damage Frequency Safety Monitor Risk Look Ahead Data; February 26, 2009
- Kewaunee Power Station, Dominion Energy Kewaunee; Frequently Asked Questions, Dedicated Operators Draft Revision 10; January 6, 2009 (Withdrawn)
- Kewaunee Power Station eSOMS Station Narrative Logs: March 11-12, 2009

- Kewaunee Power Station Engineering Log; March 11, 2009
- Kewaunee Power Station Unit 1 Shift Orders; Use of Dedicated Operators; March 2009
- NRC Memo; Summary of October 21, 1000 Meeting Between the Nuclear Regulatory Commission (NRC) and Winston and Strawn on Recent Maintenance Rule (MR) Implementation Issues
- NRC Memo of June 3, 2001; Reactor Oversight Process Summary of Public Meeting Held on May 16, 2001

### 1R15 Operability Evaluations

- CAP 020489; Possibility of Indicating Lamp Failures in Engineered Safeguard System
- CAP 030681; High Energy Line Break Peak Pressure Along Auxiliary Building G-Wall Greater Than Described in Updated Safety Analysis Report
- CR 322689; Steam Exclusion Door 3 Opens in the Direction of Postulated Pressurization
- CR 323273; Questions on RAS 79 Door 3, Steam Exclusion Functionality
- CR 324418; Evaluate "B" Reactor Coolant Pump Inspection Report Results
- CR 325550; NRC Resident Questions Regarding Routing of Component Cooling Water Lines
- CR 325355; PI-923 Safety Injection Pump "B" Discharge Pressure Indicator Malfunction
- RAS000079; NRC Question Related to Door 3 Steam Exclusion Function
- Calculation KPS-70163627-16; Steam Exclusion Boundary Pressure Evaluation; Revision 0
- Extent of Condition Documentation Sheet, CCW Pipes Near Feedwater Line, 2005
- Calculation S-1231-GSS-003; Pressure Resisting Door in Turbine Room Basement; Revision 0
- Licensee Event Report (LER) 94011; Ginna Nuclear Power Plant; Short Circuit in Indicating Lamp Causes Blown Fuse, Resulting in Disabling of Automatic Actuation of Engineered Safety Features Actuation System for "B" Safeguards Logic Train Components
- LER 95001; Point Beach Nuclear Plant; Loss of Automatic Function "A" Train Safeguards Equipment; March 30, 1995
- LER 95002; Point Beach Nuclear Plant; Loss of Automatic Function of "B" Train Safeguards Equipment; April 3, 1995
- OE25276; Calvert Cliffs; Preliminary Loss of Control Power to a Main Steam Feedwater Isolation Motor-Operated Valve; July 12, 2007
- SP-55-155A; Engineered Safeguards Train A Logic Channel Test; Revision 25
- 50.59 Applicability Review of SP-55-155A and B; GNP-03.01.03 Temporary Change
- Document 51-9096295-000; AREVA NP Inc.; Kewaunee Reactor Coolant Pump Inspection Report; Contract A0001081; December 11, 2008
- Drawing M-326; Auxiliary Coolant Piping; Revision AE
- Drawing M-328; Auxiliary Coolant Piping; Revision AJ
- Drawing 113E804 (Westinghouse); Connection Diagram; Rack A - Front
- Drawing E-1919; Schematic Diagram – Damper Valves MD 32367 and MD32368

- Drawing E-2700; Schematic Diagram – Engineered Safeguards System; Revision E
- Drawing E-2710; Relay Diagram – Engineered Safeguards System; Revision AA
- Drawing E-2711; Relay Diagram – Engineered Safeguards System; Revision V
- Drawing E-2713; Relay Diagram – Engineered Safeguards System; Revision P
- Drawing E-2714; Relay Diagram – Engineered Safeguards System; Revision J
- Drawing OPERM-603; Flow Diagram – Air Conditioning; Administration Building and Control Room; Revision BD
- Kewaunee Power Station Updated Safety Analysis Report; Figure 10A.3-27 Routing of Steam Supply to Turbine Driven Auxiliary Feedwater Pump
- Kewaunee Power Station Updated Safety Analysis Report; Figure 10A.4-1 Feedwater Isometric
- Northeast Utilities System Memo; Assignment JFO-94-073 – Credible Failure Modes for Non-QA Bulbs; October 5, 1994
- Topical Design Basis Document; Kewaunee Power Station High Energy Line Break; Table 5.2-1 Steam Exclusion Doors; Revision 2
- Westinghouse Technology Systems Manual; Reactor Coolant System; Revision 1195

#### 1R19 Post-Maintenance Testing

- ACE 017352; Service Water Pump A1 Red Run Indication Light Not Lit In Control Room
- ACE 014701; Breaker 14604BKR Automatically Re-closed During Technical Support Center Diesel Generator Monthly Availability Test
- CA 126135; Evaluate Strategy of Rotating Spare PM'd 480 VAC Metal Clad And 4160 VAC Vacuum
- CR 119353; Breaker 14604 Automatically Re-closed During Technical Support Center Diesel Generator Monthly Availability Test
- CR 317178; Auxiliary Building Basement Fan Coil Unit A – Red Lamp Failed to Light During SP-45-949.13
- CR 318324; Service Water Pump A1 Red Run Indication Light Not Lit In Control Room
- CR 325172; Service Water Pump B2
- KW100271073; PM23-527: Inspect/Clean Motor Starter
- KW100271109; PM33-565: Inspect/Clean Motor Starter
- KW100281644; PM33-045: Perform Actuator Maintenance
- KW100281744; PM23-014: Perform Actuator Maintenance
- KW100282718; PM87-134: Calibrate Relay 802200
- KW100376582; Round Terminal Lugs Found During MA-KW-ICP-RCP-010
- MRE 010195; Breaker 1-506: Service Water Pump A1 Red Run Indication Not Lit in Control Room
- ODM 000079; Perform ODM on Breaker Issue Associated with CR 318324
- SP-34-099B; Train B Residual Heat Removal Pump and Valve Test – IST; Revision 17
- SP-47-062A; Reactor Protection Logic Train A Test; Revision 27
- SP-87-274; Validation of MOV Position Indication Operation – IST; Revision 15
- STA Log Entries Report; October 10, 2008 through December 29, 2008
- Condition Reports Pending Review Report; December 30, 2008
- Drawing E-1040; Control Schematic – 4160V Breaker 1-506

- Drawing E-3233; Int. W/D RPS Rack; RR 133 Train A; Front Channel IV Top; Revision J
- Drawing 12-361230; Seismic Recording System Field Wiring Diagram; Revision A
- Drawing 113E449; Reactor Protection System
- Drawing XK-100-1214; Reactor Protection System; Revision 3A
- Maintenance Log; December 29, 2008

### 1R22 Surveillance Testing

- CAP 020611; Need Administrative Controls When the Seismic Monitor Is Removed from Service
- CR 024845; Emergency Diesel Generators Dependent on QA-2 Components for Sustained Operation
- CR 098169; Place-Keeper for the Remaining Assignments from CAP 024845
- CR 319321; Analog Trigger Switch Card S5 Output-Point Out of Acceptance Range
- CR 319418; Analog Trigger Switch Card Output S8 Out of Acceptance Range High
- CR 319434; Analog Trigger Switch Card Output S11 Out of Acceptance Range
- CR 319442; Seismic Monitoring Analog Trigger Point S-6 found Out of Spec High During SP-87-133
- CR 319448; Seismic Monitoring Analog Trigger Point S-9 found Out of Spec High During SP-87-133
- CR 319451; Seismic Monitoring Analog Trigger Point S-12 DBE Found Out of Spec High
- CR 098169; Place-Keeper for the Remaining Assignments from CAP 024845
- CR 321052; 50/51A/1-605BKR Timing Found High During Test
- CR 321054; Relay 50G/1-605 Fails to Meet Acceptance Criteria During Calibration Check
- CR 324230; Air Dryer for "A" Diesel Generator Start Air Has An Air Leak Within the Casing
- CR 326432; Missing Design and Licensing Bases for Emergency Diesel Generator Start Up Air System
- KW100272544; PM87-001 Eighteen Month Calibration Check
- OD 000273; Missing Design and Licensing Bases for Emergency Diesel Generator Start Up Air System
- OP-KW-OSP-DGE-006A; Diesel Generator "A" Start-Up Air Leakage Test; Revision 3
- OP-KW-OSP-DGE-006B; Diesel Generator "B" Start-Up Air Leakage Test; Revision 4
- SP-05B-283A; Motor Driven Auxiliary Feedwater Pump "A" Full Flow Test
- SP-18-043; Containment Pressure Instrument Channels Test; Revision 27
- SP-34-099A; Train "A" Residual Heat Removal Pump and Valve Test
- SP-47-062B; Reactor Protection Logic Train "B" Test
- SP-87-133; Seismic Monitoring System Calibration and Functional Test; Revisions F, G, H, I, J
- 50.59 Applicability Review of SP-87-133; Seismic Monitoring System Calibration and Functional Test; Revisions F, G, H, I
- Calculation C10021; Method for Determining Diesel Generator Damper Operating Times after Loss of Air-Start Compressors; Revision 1

- Drawing M-213-9; Flow Diagram Diesel Generator Startup Air Compressor A and B and Fish Screen Air; Revision D
- Drawing X-K99235-2(A); Block Diagram of Seismic Recording System; Revision A
- Kewaunee Power Station System Design Basis Document; Table 5.1-1 Key System Parameters, Safety-Related Functions; Revision 2
- Kewaunee Power Station System Design Basis Document; Table 6.3-1 Updated Safety Analysis Report

#### 1EP6 Drill Evaluation

- CR 326331; NRC Senior Resident Comments During EP Table Top Observation
- Kewaunee Power Plant Scenario ID: Technical Support Center Evaluation 5

#### 2OS1 Access Control to Radiologically Significant Areas

- HP-01.016; Radiation Work Permit – Preparation, Issuance, and Termination; Revision 17
- RP-AA-201; Access Controls for High and Very High Radiation Areas; Revision 2
- RP-AA-202; Radiological Posting; Revision 0
- RP-KW-001-004; RCA Entry and Exit; Revision 2
- RP-KW-006-114; Televue Operations; Revision 1
- RP Job Guide No. 56; Administrative Controls for Locked High Radiation Areas and Very High Radiation Areas; Revision 0
- Audit 08-06: Radiological Protection/Process Control Program; September 5, 2008
- SAR000346; 2008 Mid-Cycle Review Report; September 16, 2008
- HP-03.006; In-Vitro Bioassay Measurement; Revision 7
- RP-KW-003-008; Evaluation of Inhalations or Ingestions; Revision 1
- RP-KW-003-009; Calculating Internal Dose from Whole Body Counter Results; Revision 0
- RP-AA-203; Radiological Labeling and Marking; Revision 0
- RP-AA-232; Radioactive Material (RAM) Control; Revision 0
- ALARA and Associated Evaluations Plan 09-001; Kewaunee Power Station Spent Fuel Pool Transfer Canal Work ALARA; January 5, 2009
- Radiation Work Permit 09-0080; Work Associated with the Repair of Fuel Transfer System in the Spent Fuel Pool Transfer Canal; Revision 0
- Radiation Survey 09-0006; SFP Canal Pre Decon Survey; January 7, 2009
- Radiation Survey 09-0007; SFP Canal Post Decon Survey; January 7, 2009
- Radiation Survey 426; SFP Transfer Canal; August 27, 2008
- Time Keeping Tracking Sheets; RWP 07-0071; September 5, 2007
- CR 095988; NRC Observation for Potential Inadequate Extremity Monitoring; April 17, 2008
- CR 094378; KR-29 Radiation Worker Practices Observations; April 2, 2008
- CR 094714; Refuel Worker Received Unplanned Dose Rate Alarm; April 4, 2008
- CR 095446; Dose Rate Alarm Received;
- CR 096150; Individual Receives Dose Rate Alarm; April 19, 2008
- CR 096948; Worker Received an Unanticipated ED Dose Rate Alarm; dated April 27, 2008

- CR 098982; Worker Entered High Radiation Area on Incorrect RWP Task; May 14, 2008
- CR102389; NOD Audit 08-06: Control Locked High Rad Area Emergency Keys Not In Accordance With RP-AA-201; June 26, 2008

#### 4OA1 Performance Indicator Verification

- ACE 3374; Diesel Generator B Exceeds 2800KW During SP-42-312B Kewaunee Mitigating System Performance Index Basis Document; Revisions F and G Issued Reports:
  - Performance Indicator Data Sets, Service Water; January, 2008 – December, 2008
  - Performance Indicator Data Sets, Diesel Generators; January, 2008 – December, 2008
  - Performance Indicator Data Sets, Component Cooling; January, 2008 – December, 2008
  - Performance Indicator Data Sets, Safety Injection; January, 2008 – December, 2008
  - Performance Indicator Data Sets, Residual Heat Removal; January, 2008 – December, 2008
  - Performance Indicator Data Sets, Auxiliary Feedwater; January, 2008 – December, 2008

#### 4OA2 Identification and Resolution of Problems

- ACE 014701; Breaker 14604BKR Automatically Re-closed During Technical Support Center Diesel Generator Monthly Availability Test
- ACE 017352; Service Water Pump A1 Red Run Indication Light Not Lit in Control Room
- CA 126135; Evaluate Strategy of Rotating Spare PM'd 480 VAC Metal Clad and 4160 VAC Vacuum
- CAP 013104; Component Cooling Surge Tank Level Transmitter 24041 Drift and Nonlinearity
- CAP 022656; Component Cooling Surge Tank Level Alarm
- CAP 025970; Transmitter Out of Tolerance
- CAP 026088; Component Cooling Surge Tank Level High/Low
- CAP 026730; Control Room Received Annunciator 47024-H Component Cooling Surge Tank Level Hi/Low
- CAP 027174; Rework Issue from Component Cooling Surge Tank Level Alarm
- CAP 030136; Out of Spec During Partial ICP 31-01 (Component Cooling Surge Tank Level Alarms)
- CAP 031770; Failure of Component Cooling Surge Tank Level Indication
- CAP 035808; Transmitter Out of Tolerance
- CAP 041004; Flash of Component Cooling Surge Tank Level High/Low Alarm
- CAP 042782; Transmitter LT-618 (24041) Out of Calibration Each Time Over 16 Years
- CR 013408; Terminal Box 1319 Not Labeled
- CR 022737; LT-618 Found Out of Calibration Under ICP-31-01
- CR 028686; DCR 3712: Component Cooling Surge Tank Level Transmitter Replacement (LT618)
- CR 028716; Work Orders on the Schedule Not Available for Walk Down by T-6
- CR 102402; Component Cooling Surge Tank Level Transmitter 24041 Out of Spec During ICP-31-01
- CR 104930; This Condition Report Documents a Negative Trend Identified by the System Health Report

- CR 317178; Auxiliary Building Basement Fan Coil Unit A, Red Lamp Failed to Light During SP-45-049.13
- CR 318324; Service Water Pump A1 Red Run Indication Not Lit in Control Room
- CR 119353; Breaker 14604BKR Automatically Re-closed During Technical Support Center Diesel Generator Monthly Availability Test
- CR 320570; Inaccurate QA – Typing Component Cooling Bistable LC 618 A/B (#4864901)
- CR 325172; Service Water Pump B2
- DCR 3712; Component Cooling Surge Tank Level Transmitter Replacement (24041)
- 50.59 Applicability Review of DCR 3712; Component Cooling Surge Tank Level Transmitter Replacement (24041)
- ICP-31-01; Component Cooling Surge Tank Level Loop 618 Calibration; Revision P
- ICP-31-01; Component Cooling Surge Tank Level Loop 618 Calibration; Revision Q
- KW100282718; PM87-134: Calibrate Relay 802200
- MRE010195; Breaker 1-506: Service Water Pump A1 Red Run Indication Not Lit in Control Room
- ODM 000079; Perform ODM on Breaker Issue Associated with CR 318324
- QA1-12; Section 12; Quality Assurance Plan Master Classification List
- QA1P-120; Quality Assurance Master List of Type 1 Components and Structures
- STA Log Entries Report; October 10, 2008 through December 29, 2008
- Calculation C11023; Verify That the Residual Heat Removal Pumps are Provided with Sufficient Net Positive Suction Head During the Recirculation Phase Following a Loss of Coolant Accident
- Calculation C11432; Determine/Document Operability of the Emergency (Service Water) Make-Up to the Component Cooling System
- Condition Reports Pending Review Report; December 30, 2008
- Drawing E-1040; Control Schematic – 4160V Breaker 1-506
- Kewaunee Power Station Asset Report 24041; Transmitter- Component Cooling Surge Tank Level Transmitter
- Maintenance Log; December 29, 2008

#### 40A3 Follow-up of Events

- ACE 017353; Determine the Cause of Steam Exclusion Door 141 Discrepancy That Resulted in TRM 3.0.9 Nonconformance and a Potential Violation for Untimely Corrective Action
- CA 090827; Review PMP 08-19 for Adequacy and Frequency of Performance
- CAP 025761; Bumper Installation Near the FW Bypass Line/USAR Figure 10A.4-6
- CAP 025762; Walkdown Concerns Regarding Lines in Proximity of High Energy Lines
- CAP 025764; Jet Impingement Barrier Design on B MS Line
- CAP 025765; HELB Piping USAR Figure 10A.4-1 Does Not Show “Goliath”
- CR 093883; Battery Room “A” Work Stopped Due to Steam Exclusion Barrier Concerns
- CR 117765; Door 9 Seal is Degraded
- CR 117879; Door Seal at bottom of Door 197 Is Very Loose
- CR 316752; Kick Plate on Door 140 Missing Screw – Causes Door to Stick Open

- CR 316847; Part of Door 187 Interlock Latch Broken
- CR 318446; Door 141 to Control Room Air Conditioning Room Has a Loose Door Sweep
- CR 318595; Door 001 Strip Falling Off
- CR 319052; Door 118 Has Greater than 3/16" Gap Towards the Bottom of Door
- CR 321523; Door 5 (SE) Found Non-Functional
- CR 322644; Door 244 Steam Exclusion Gap Seal Issue
- CR 327317; 22 OCB Tripped Open
- EN 44718; Both Trains of ESF Equipment Were Inoperable Due to Degradation of a Steam Exclusion Boundary Door in the Auxiliary Building
- EN 44832; Both Trains of ESF Equipment Were Inoperable Due to Degradation of a Steam Exclusion Boundary Door in the Turbine-Driven Auxiliary Feedwater Pump Room
- EN 44929; Non-Functional Steam Exclusion Barrier
- EN 44938; Non-Functional Steam Exclusion Barrier; March 26, 2009
- eSOMS Station Narrative Logs; March 26, 27, 2009
- HELB Walk Down Criteria and Team Comments Data; March 31, 2005
- MA-KW-MPM-FP-030C; Dry Test of CO2 System for Hose Reel Stations; Revision 0
- ODM 000079; Perform ODM on Breaker Issue Associated with CR 318324
- OP-KW-AOP-GEN-005; Barrier Control; Revision 1
- Kewaunee LER 2008-002-00; Blocked Open Steam Exclusion Door Results in Postulated Inoperability of Safety Systems; December 18, 2008
- Kewaunee LER 2008-003-00; Door Bottom Seal Failure Results in Inoperability of Control Room Ventilation System; February 27, 2009
- Kewaunee LER 2009-001-00; Emergency Diesel Generators Inoperable Requiring Notice of Enforcement Discretion; March 24, 2009
- Kewaunee LER 2009-002-00; Steam Exclusion Door Blocked Open During Maintenance Activities; March 30, 2009
- Kewaunee Power Station Amendment Request 247: Emergency Diesel Generator Fuel Oil Technical Specification Changes; Supplement 2
- Kewaunee Power Station Amendment Request 247: Emergency Diesel Generator Fuel Oil Technical Specification Changes; Supplement 3
- Kewaunee Power Station Cycle 29 – Reactor Engineering Monthly Report
- Drawing 12-361230; Seismic Recording System Field Wiring Diagram; Revision A

#### 40A3 Notices of Enforcement Discretion

- Institute of Electrical and Electronics Engineers (IEEE) Standard 308-1971; IEEE Standard Criteria for Class IE Electrical Systems for Nuclear Power Stations; 1971
- Pioneer Service and Engineering Company to Wisconsin Public Service; Criteria for Failure of Safeguards Systems; June 6, 1969
- Safety Guide 6: Independence Between Redundant Standby (onsite) Power Sources and between Their Distribution Systems; March 10, 1971
- Safety Analysis Report; Section 8.2.3: Emergency Power; May 12, 1972
- Safety Evaluation Report (SER) of the Kewaunee Nuclear Power Plant; Section 8.3.1; Through Supplement 2; May 10, 1973
- Weekly Instrument Checks; Number 151; November 28, 1973
- Regulatory Guide 1.60; Design Response Spectra for Seismic Design of Nuclear Power Plants; December 1973

- American National Standards Institute (ANSI) ANS-59/ANSI N195-1976; American National Standard Fuel Oil Systems for Standby Diesel Generators; April 12, 1976
- Regulatory Guide 1.137; Revision 1; Fuel-Oil Systems for Standby Diesel Generators; October 1979
- Wisconsin Public Service to U.S. NRC; Proposed Amendment 88 to Kewaunee Nuclear Power Plant Technical Specifications: Limiting Conditions For Operation of the Diesel Fuel Oil System; June 12, 1989
- SP 87-151; Weekly Instrument Channel Checks; Revisions X; September 19, 1989
- SP 87-151; Weekly Instrument Channel Checks; Revisions Y; March 20, 1990
- SP 87-151; Weekly Instrument Channel Checks; Revisions 49; May 1, 2008
- SP 87-151; Weekly Instrument Channel Checks; Revisions 50; May 2, 2008
- U.S. NRC to Wisconsin Public Service; Safety Evaluation of the In-Service (IST) Program for Pumps and Valves for Kewaunee Nuclear Power Plant; September 13, 1990
- U.S. NRC to Wisconsin Public Service; Amendment 83 to Facility Operating License No. DPR-43 (for proposed Amendment 88); October 25, 1989
- C-10033; Safeguard's Diesel Fuel Oil Storage Volume Calculation; March 24, 1992
- Updated Safety Analysis Report (USAR) Change Request; UCR 93-031; September 18, 1992
- Wisconsin Public Service to U.S. NRC ; 10 CFR 50.71(e); Revisions to USAR; July 20, 1993
- Technical Specification 3.7 and Basis, Initial Licensing; Amendment 122; December 21, 1995
- Regulatory Guide 1.9; Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants; March 2007
- Annunciator Number 47093-F; DGM10; Diesel Generator B Fuel Oil Level Abnormal; Revision A; March 15, 2007
- Kewaunee Power Station USAR; Section 8.1.1.1; Emergency Power; Revision 20; April 2007
- CFR 50.72; Event Notification 44182; April 30, 2008
- Condition Report CR 097378; Emergency Diesel Generator Main Fuel Oil Storage Tank Siphon Line Potential Problem; April 30, 2008
- Work Order KW1000381690; Emergency Diesel Generator Main Fuel Oil Storage Tank Siphon Line Problem; May 1, 2008
- Procurement Technical Evaluation No. 10000001653; Emergency Diesel Generator Transfer Pump Assembly; May 3, 2008
- Licensee White Paper for Questions Asked by Resident Inspector; June 2008
- Condition Report CR 103254; USAR Description of Emergency Diesel Generator Fuel Oil System appears Inaccurate; July 9, 2008
- Licensing White Paper; Kewaunee Power Station Emergency Diesel Generator Fuel Oil Licensing Basis

## LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Document Access Management System
AFW	Auxiliary Feedwater
ALARA	As-Low-As-Is-Reasonably-Achievable
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CLB	Current Licensing Basis
CIV	Containment Isolation Valve
CR	Condition Report
DRP	Division of Reactor Projects
EDG	Emergency Diesel Generator
EN	Event Notification
FAQ	Frequently Asked Question
HELB	High Energy Line Break
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
IST	Inservice Testing
LER	Licensee Event Report
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NOED	Notice of Enforcement Discretion
NUMARC	Nuclear Management and Resources Council
ODM	Operational Decision-Making
PARS	Publicly Available Records
PI	Performance Indicator
PI&R	Problem Identification and Resolution
PRA	Probabilistic Risk Assessment
QA	Quality Assurance
RHR	Residual Heat Removal
SDP	Significance Determination Process
SGBT	Steam Generator Blowdown Task
SRA	Senior Reactor Analyst
SSC	Structure, System, and Component
SW	Service Water
TS	Technical Specification
USAR	Updated Safety Analysis Report
URI	Unresolved Item