



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352

May 14, 2013

EA-09-319

Mr. David A. Heacock  
President and Chief Nuclear Officer  
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SUBJECT: KEWAUNEE POWER STATION – NRC INTEGRATED  
INSPECTION REPORT 05000305/2013002

Dear Mr. Heacock:

On March 31, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Kewaunee Power Station. The enclosed inspection report documents the inspection results which were discussed on April 3, 2013, with Mr. A. Jordan, the site Vice President, and other members of your staff.

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

Three NRC identified findings of very low safety significance (Green) were identified during this inspection. These findings were determined to involve violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs), consistent with Section 2.3.2 of the Enforcement Policy. Additionally, one licensee-identified violation is listed in Section 4OA7 of this report.

If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Kewaunee Power Station.

If you disagree with a cross-cutting aspect assigned to 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 the Kewaunee Power Station.

D. Heacock

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and 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 Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Kenneth Riemer, Branch Chief  
Branch 2  
Division of Reactor Projects

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

Enclosure: Inspection Report 05000305/2013002;  
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000305/2013002

Licensee: Dominion Energy Kewaunee, Inc.

Facility: Kewaunee Power Station

Location: Kewaunee, WI

Dates: January 1 through March 31, 2013

Inspectors: R. Krsek, Senior Resident Inspector  
K. Barclay, Resident Inspector  
V. Myers, Health Physicist  
D. Szwarc, Reactor Engineer  
M. Ziolkowski, Reactor Engineer

Approved by: Kenneth Riemer, Branch Chief  
Branch 2  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

Inspection Report (IR) 05000305/2013002, 01/01/2013 – 03/31/2013, Kewaunee Power Station (KPS); Equipment Alignment, Maintenance Risk Assessments and Emergent Work Control, and Identification and Resolution of Problems.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Three Green findings were identified by the inspectors. The findings were considered non-cited violations (NCVs) of NRC regulations. The significance of inspection findings are indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using IMC 0609, "Significance Determination Process [SDP]," dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within the Cross Cutting Areas," dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated January 28, 2013. 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: Mitigating Systems**

- Green. The inspectors identified a finding of very low safety significance and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to assure that appropriate quality standards were specified and included in design documents, and that deviations from such standards were controlled. Specifically, during implementation of Improved Technical Specifications (TSs), the licensee incorrectly specified the ultimate heat sink (UHS) level in the non-conservative direction by one foot. Therefore, since February 24, 2011, the TS 3.7.9.1 value was non-conservative. The licensee initiated a condition report (CR) and performed an operability determination, which included a review of NRC Administrative Letter 98-10 for non-conservative TS.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of Design Control, and adversely affected the Cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee did not assign the appropriate UHS level to assure the safety-related (SR) service water (SW) pumps' operability. Therefore, licensee surveillances were conducted with the incorrect UHS level. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012, and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 2, Mitigating Systems Screening Questions, dated June 19, 2012. The inspectors determined that the SR service water pumps remained operable but non-conforming for the time period in question as the UHS level had not approached 566 feet, 3 inches; therefore, the inspectors answered "Yes" to Mitigating Systems Screening Question 1, and screened the finding as having very low safety significance (Green). The inspectors concluded that there was no cross-cutting aspect with this finding because the failure occurred in 2008, and was not representative of current performance. (Section 1R04.1)

- Green. The inspectors identified a finding of very low safety significance and associated non-cited violation of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Paragraph (a)(4), for the failure to properly assess the risk during scheduled testing of EDG B, on February 25. Specifically, the licensee failed to update the risk model after identifying that the manual bypass switch (MBS) for BRD-109, a risk-significant inverter, was not functioning properly. On February 13, 2013, the licensee identified that the MBS for the output of BRD-109 was broken, and BRD-109 was not powering BRD-115, a non-interruptible bus, even though the "Normal" position was selected. The licensee did not include the alternate switch position in the risk model until prompted by the NRC inspectors on February 26. This resulted in the risk from the EDG B testing being incorrectly assessed as green, when it was actually yellow. The licensee entered the issue into the corrective action program (CAP) and assigned an apparent cause evaluation (ACE) to determine the causes for the organizational failures that occurred. The ACE was not yet complete at the end of this inspection period,

The inspectors determined that the failure to properly assess risk was a performance deficiency. The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Human Performance, 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). The inspectors evaluated this finding using the worksheets from IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," dated May 19, 2005, because the finding is a maintenance risk assessment issue. Flowchart 1, "Assessment of Risk Deficit," requires the inspectors to determine the risk deficit associated with this issue. This finding was determined to be of very low safety significance because the incremental core damage probability deficit was less than  $1 \times 10^{-6}$ . This finding has a cross-cutting aspect in the area of problem identification, corrective action program, because the licensee did not ensure that issues potentially impacting nuclear safety are promptly identified, fully evaluated, and that actions were taken to address safety issues in a timely manner, commensurate with their significance (P.1(c)). (Section 1R13.1)

- Green. The inspectors identified a finding of very low safety significance and associated non-cited violation of 10 CFR Part 50, Appendix R, Section III.G.3, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," for the licensee's failure to meet the requirement for fire detection and a fixed fire suppression system in the control room heating, ventilation, and air conditioning (HVAC) room (fire zone AX-35). Specifically, the licensee failed to provide fire detection and a fixed fire suppression system in the HVAC equipment room. The licensee entered this into the CAP as corrective actions (CA)075268 and CA08365; and CRs CR108948 and CR463976.

The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Protection Against External Factors (Fire), and adversely affected the Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the lack of area-wide detection and suppression systems could increase the response time and complicate fire fighting activities. That could result in a loss of both trains of safe shutdown equipment required

for safe shutdown of the plant. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," dated July 19, 2012. Using Table 3, "SDP Appendix Router," the inspectors answered "Yes" to Question E.2.(2), "Does the finding involve fixed fire protection systems or the ability to confine a fire?" because the finding involved failure to provide fire detection and fixed suppression in the control room HVAC room. As a result, the finding was evaluated using IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated February 28, 2005. A detailed risk evaluation was performed by a Region III Senior Reactor Analyst (SRA), which concluded that the finding was of very low risk significance (green). The inspectors did not identify a cross-cutting aspect associated with this finding, because this was an original design issue, and the finding was not representative of current performance. (Section 4OA2.3)

**B. Licensee-Identified Violations**

One violation of very low safety significance identified by the licensee has been reviewed by inspectors. Corrective actions planned or taken by the licensee have been entered into the licensee's CAP. This violation and corrective action tracking number is listed in Section 4OA7 of this report.

## **REPORT DETAILS**

### **Summary of Plant Status**

Kewaunee Power Station (KPS) operated at full power for the entire inspection period, except for brief downpowers to conduct planned maintenance and surveillance activities.

On February 25, 2013, Dominion Energy Kewaunee submitted a letter to the NRC entitled, "Certification of Permanent Cessation of Power Operations," which documented that KPS will permanently cease power operation on May 7, 2013.

## **1. REACTOR SAFETY**

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

#### **.1 Readiness for Impending Adverse Weather Condition – High Wind Conditions**

##### **a. Inspection Scope**

Since high winds were forecast in the vicinity of the facility for March 4, 2013, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. On March 4, 2013, the inspectors walked down outside areas near SR components, in addition to the licensee's emergency alternating current (AC) power systems, because their SR functions could be affected or required as a result of high winds or tornado-generated missiles or the loss of offsite power. The inspectors evaluated the licensee staff's preparations against the site's procedures, reviewed the licensee's walkdowns and determined that the staff's actions were adequate. During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to respond to specified adverse weather conditions. The inspectors also toured the plant grounds to look for any loose debris that could become missiles during a tornado. The inspectors evaluated operator staffing and accessibility of controls and indications for those systems required to control the plant. Additionally, the inspectors reviewed the Updated Safety Analysis Report (USAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant specific procedures. The inspectors also reviewed a sample of CAP items to verify that the licensee identified adverse weather issues at an appropriate threshold and dispositioned them through the CAP in accordance with station corrective action procedures. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one readiness for impending adverse weather condition sample as defined in Inspection Procedure (IP) 71111.01-05.

##### **b. Findings**

No findings 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:

- Internal Containment Spray Tain 'B';
- Emergency Diesel Generator (EDG) 'A' after testing; and,
- SW Train 'A'.

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 and system diagrams to determine the appropriate system lineup. 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 CAP with the appropriate significance characterization.

Documents reviewed are listed in the Attachment to this report.

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

#### b. Findings

##### Incorrect Ultimate Heat Sink Water Level

Introduction: The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to assure that appropriate quality standards were specified and included in design documents, and that deviations from such standards were controlled. Specifically, during implementation of Improved TSs, the licensee incorrectly specified the UHS level in the non-conservative direction by one foot. Therefore, the value for TS Surveillance 3.7.9.1 was non-conservative since February 24, 2011.

Description: During the equipment alignment inspection of the SW system, the inspectors attempted to verify the UHS level listed in TS Surveillance 3.7.9.1. This TS surveillance was created during the licensee implementation of Improved TSs and previously did not exist under Custom TS. Based on the length of the pump shaft, the inspectors began to question whether or not the TS 3.7.9.1 value of 565 feet, 3 inches was correct for operation of the SW pumps with no circulating water pumps running.

The inspectors determined that Calculation C11220, "Determination Of Forebay Low-Low Level Trip Instrument Accuracy," dated January 18, 2001, was utilized in 2008 by the licensee staff to establish an UHS level of Lake Michigan at 565 feet, 3 inches mean

sea level. However, the inspectors noted that this calculation for circulating water pump level setpoints was based on the more detailed Calculation C11219, "Hydraulic-Model Study Of Water Intake, Kewaunee Nuclear Power Plant, Wisconsin," dated December 2000. This calculation stated that due to vortexing observed during scaled hydraulic testing and a SR calculation performed by a vendor, with no circulating water pumps running, the minimum UHS level of Lake Michigan to support SW pump operability was 566 feet, 3 inches, due to significant vortexing observed in the scaled hydraulic tests.

The inspectors presented the information to the licensee engineering staff. Upon further review, the licensee staff concurred with the inspectors that the current value of 565 feet, 3 inches for UHS level utilized in TS Surveillance 3.7.9.1 was non-conservative. The licensee initiated a CR and performed an operability determination, which included a review of NRC Administrative Letter 98-10 for non-conservative TSs.

Analysis: The inspectors determined the failure to assure that the UHS level provided for the SW pumps in the TS was a performance deficiency warranting further evaluation. The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Design Control, and adversely affected the Cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee did not assign the appropriate UHS level to assure the SR service water pumps' operability. Therefore, licensee surveillances were conducted with the incorrect UHS level

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012, and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 2, Mitigating Systems Screening Questions, dated June 19, 2012. The inspectors determined that the SR service water pumps remained operable but non-conforming for the time period in question as the UHS level had not approached 566 feet, 3 inches; therefore, the inspectors answered "Yes" to Mitigating Systems Screening Question 1, and screened the finding as having very low safety significance (Green).

The inspectors concluded that there was no cross-cutting aspect associated with this finding because the failure occurred in 2008, and was not representative of current performance.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. These measures shall include provisions to assure that appropriate quality standards were specified and included in design documents and that deviations from such standards were controlled.

Contrary to the above, from February 24, 2011, through January 29, 2013, the licensee failed to assure that appropriate quality standards were specified and included in design documents. Specifically, in creation of Improved TS Surveillance 3.7.9.1, the licensee failed to assure that appropriate quality standards were specified for the minimum UHS

level for the SR service water pumps. Specifically, the licensee established that the specification for the UHS was a lake level of 565 feet, 3 inches; however, Calculation C11219 established that the minimum UHS level for SW pump operability was 566 feet, 3 inches.

Because this violation was of very low safety significance, and it was entered into the licensee's CAP as CR500352, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000305/2013002-01, Incorrect Ultimate Heat Sink Water Level).

The licensee followed NRC Administrative Letter 98-10, and was implementing corrective actions to address the condition at the end of this inspection period.

#### 1R05 Fire Protection (71111.05)

##### .1 Routine Resident Inspector Tours (71111.05Q)

###### a. Inspection Scope

The inspectors conducted fire protection (FP) walkdowns, which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant fire zones:

- Fire Zone SC-70B, screenhouse south;
- Fire Zone TU-98, battery room 1B;
- Fire Zone TU-95A, 480 volt switchgear bus 51 and 52; and,
- Fire Zone TU-90, EDG 1A.

The inspectors reviewed areas to assess if the licensee had implemented an FP program that adequately controlled combustibles within the plant, effectively maintained fire detection and suppression capability, maintained passive FP features in good material condition, and implemented adequate compensatory measures for out-of-service (OOS), degraded or inoperable FP 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 (IPEEE) 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 to this report, 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 were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On March 27, 2013, the inspectors observed a fire brigade activation for an announced fire drill. Based on this observation, the inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies; openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Documents reviewed are listed in the Attachment to this report. Specific attributes evaluated were:

- proper wearing of turnout gear and self-contained breathing apparatus;
- proper use and layout of fire hoses;
- employment of appropriate fire fighting techniques;
- sufficient firefighting equipment brought to the scene;
- effectiveness of fire brigade leader communications, command, and control;
- search for victims and propagation of the fire into other plant areas;
- smoke removal operations;
- utilization of pre-planned strategies;
- adherence to the pre-planned drill scenario; and,
- drill objectives.

These activities constituted one annual fire protection inspection sample as defined in IP 71111.05-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Resident Inspector Quarterly Review of Licensed Operator Regualification (71111.11Q)

a. Inspection Scope

On March 20, 2013, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator regualification training to verify that operator performance was adequate; simulator performance was adequate; evaluators were identifying and documenting crew performance problems; and the evaluator's post-scenario critiques were adequate. The crew's performance 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 regualification program simulator sample as defined in IP 71111.11.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Observation of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On January 18, 2013, the inspectors observed the control room during a downpower in preparation for auxiliary feedwater (AFW) testing. In addition, on March 21, 2013, the inspectors observed the control room during surveillance testing. These were activities that required heightened awareness or were related to increased risk. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- correct use and implementation of procedures;
- control board and equipment manipulations; and,
- oversight and direction from supervisors.

The performance in these areas was compared to pre-established operator action expectations, procedural compliance and task completion requirements. Documents reviewed are listed in the Attachment to this report.

These inspections constituted one quarterly licensed operator heightened activity/risk samples as defined in IP 71111.11.

b. Findings

No findings 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 SR equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- risk assessment on February 21, while work was performed on the electrical switchyard and battery room fan coil unit (FCU) B;
- risk assessment on February 26, during the performance of the train B Reactor Protection Logic Test with the BRD-109 manual bypass switch in the alternate position;
- risk assessment on February 27, during the performance of the train B Engineered Safeguards Logic Test and rebuilding of the charging pump C seal;
- risk assessment on March 14, while work was performed on the electrical switchyard and battery room FCU B; and,

- risk assessment on March 21, while work was performed on the turbine-driven AFW (TDAFW) pump.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstone. 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 that 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

Inadequate Risk Assessment for Degraded Equipment

Introduction: The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Paragraph (a)(4), for the failure to properly assess the risk during scheduled testing of EDG B, on February 25. Specifically, the licensee failed to update the risk model after identifying that the manual bypass switch (MBS) for BRD-109, a risk-significant inverter, was not functioning properly. On February 13, 2013, the licensee identified that the MBS for the output of BRD-109 was broken, and BRD-109 was not powering BRD-115, a non-interruptible bus, even though the "Normal" position was selected. The licensee did not include the alternate switch position in the risk model until prompted by the NRC inspectors on February 26. This resulted in the risk from the EDG B testing being incorrectly assessed as green, when it was actually yellow.

Description: While conducting troubleshooting activities on February 13, 2013, the licensee concluded that even though the MBS for the output of BRD-109 was selected to the Normal position, the actual position of the internal contacts was selected to the "Alternate" position. The licensee entered this issue into the CAP on February 13 and began evaluating appropriate corrective actions. On February 26, the inspectors performed a risk assessment inspection sample and questioned why the alternate configuration of BRD-109 output was not included in the daily risk model. The licensee quickly determined that BRD-109 being in a bypassed state should have been entered into the daily risk model. Initially, the licensee concluded that the risk color would not have changed for the period of time that the risk model was incorrect; however, on February 28, the licensee determined that the risk model input for BRD-109 was not modeled correctly because it did not reflect the as-built configuration of the plant. The BRD-109 risk input did not include the effects of multiple valves going to their failed position; and the fact that the charging pumps, if operating, would shift to minimum speed. The licensee concluded that when EDG B was tested on February 25, the risk to

the plant was actually a yellow risk condition instead of the green risk condition that was modeled that day.

Analysis: The inspectors determined that the failure to properly assess risk was a performance deficiency. The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Human Performance, 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). The inspectors evaluated this finding using the worksheets from IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," dated May 19, 2005, because the finding was a maintenance risk assessment issue. Flowchart 1, "Assessment of Risk Deficit," requires the inspectors to determine the risk deficit associated with this issue. The finding was determined to be of very low safety significance because the incremental core damage probability deficit was less than  $1 \times 10^{-6}$ . This finding has a cross-cutting aspect in the area of problem identification, corrective action program, because the licensee did not ensure that issues potentially impacting nuclear safety are promptly identified, fully evaluated, and that actions are taken to address safety issues in a timely manner, commensurate with their significance. Specifically, the licensee should have thoroughly evaluated problems such that the resolutions addressed causes and extent of conditions, as necessary (P.1(c)).

Enforcement: Title 10 CFR 50.65(a)(4) states, in part, that before performing maintenance activities (including but not limited to surveillance, post-maintenance testing (PMT), and corrective and preventive maintenance), the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities.

Contrary to the above, from February 13 through February 26, 2013, the licensee failed to adequately assess the increase in plant risk for planned maintenance activities with BRD-109 in its alternate configuration. Specifically, on February 25, the risk from planned testing of EDG B was incorrectly assessed as green instead of yellow, due to the risk model not reflecting the actual configuration of BRD-109.

Because this violation was of very low safety significance, and it was entered into the licensee's CAP as CR506532 and CR506849, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000305/2013002-02; Inadequate Risk Assessment for Degraded Equipment).

At the end of this inspection period, the licensee had not completed their ACE to determine the causes for the organizational failures that occurred.

#### 1R15 Operability Determinations and Functional Assessments (71111.15)

##### .1 Operability Evaluations

###### a. Inspection Scope

The inspectors reviewed the following issues:

- CR482324, Steam Leak in Crossunder Steam Line;

- CR505728, Auxiliary Building FCU A is Leaking;
- CR502759, Battery Room FCU A is Dripping 2 Drops Per Day; and,
- CR506439, BRD-109 Stuck in Alternate Will Impact Station Blackout Components Powered By BRD-115.

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 TSs 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 reviewed a sampling of corrective action documents to verify that the licensee had identified and corrected any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

.1 Plant Modifications

a. Inspection Scope

The inspectors reviewed modification UCR-2012-017, "Spent Fuel Pool Cooling," dated January 22, 2013.

The inspectors reviewed the configuration changes and associated 10 CFR 50.59 safety evaluation screening against the design basis, the USAR, and the TSs, as applicable, to verify that the modification did not affect the operability or availability of the affected systems. The inspectors verified that relevant procedure, design, and licensing documents were properly updated, as applicable. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one permanent modification sample as defined in IP 71111.18-05.

b. Findings

No findings were identified.



## 1R19 Post-Maintenance Testing (71111.19)

### .1 Post-Maintenance Testing

#### a. Inspection Scope

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

- WO100948124, retest after replacement of a bus 2 undervoltage relay on February 16;
- WO100948570, retest after EDG air start valve and strainer maintenance on February 18;
- WO100949587, retest after reactor protection system relay contact replacement on March 11; and,
- WO100863043, PMT for residual heat removal (RHR) pump pit FCU B on March 12.

These activities were selected based upon the structures, systems, and components (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 documents such as TSs, USAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications, to ensure 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 PMTs to determine whether the licensee had identified problems and entered them in the CAP, and that the problems were 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 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 that testing was conducted in accordance with applicable procedural and TS requirements:

- ESP-EHV-002D; Bus 6 loss of voltage relay test on February 1 (Routine Test);
- OSP-AFW-007, TDAFW pump low suction pressure trip test on March 21 (Routine Test);
- OSP-RHR-003B, RHR quarterly Train 'B' from control room on March 27 (Inservice Test (IST)); and,
- OSP-AFW-006, AFW pump B low suction on March 28 (IST).

The inspectors considered the following test attributes, if applicable, while they observed in-plant activities and reviewed procedures and associated records:

- 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, demonstrated operational readiness, and 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 was 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 IST, testing was performed in accordance with the applicable version of American Society of Mechanical Engineers (ASME) code, Section XI, 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 SR 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 two routine surveillance testing samples and two inservice testing samples as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

.1 Training Observation

a. Inspection Scope

The inspector observed a simulator training evolution for licensed operators on March 7, 2013, 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 CAP. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the Attachment to this report.

This inspection of the licensee's training evolution with emergency preparedness drill aspects constituted one sample as defined in IP 71114.06-06.

b. Findings

No findings were identified.

**2. RADIATION SAFETY**

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

This inspection constituted a partial sample as defined in IP 71124.06-05.

.1 Inspection Planning and Program Reviews (02.01)

Event Report and Effluent Report Reviews

a. Inspection Scope

The inspectors reviewed the radiological effluent release reports issued since the last inspection to determine if the reports were submitted as required by the Offsite Dose Calculation Manual (ODCM)/ TSs. The inspectors reviewed anomalous results, unexpected trends, or abnormal releases identified by the licensee for further inspection to determine if they were evaluated, were entered in the CAP, and were adequately resolved.

The inspectors identified radioactive effluent monitor operability issues reported by the licensee as provided in effluent release reports, to review these issues during the onsite

inspection, as warranted, given their relative significance and determine if the issues were entered into the CAP and adequately resolved.

b. Findings

No findings were identified.

Offsite Dose Calculation Manual and Updated Safety Analysis Report Review

a. Inspection Scope

The inspectors reviewed USAR descriptions of the radioactive effluent monitoring systems, treatment systems, and effluent flow paths so they could be evaluated during inspection walkdowns.

The inspectors reviewed changes to the ODCM made by the licensee since the last inspection against the guidance in NUREGs-1301, 1302, and 0133, and Regulatory Guides (RGs) 1.109, 1.21, and 4.1. When differences were identified, the inspectors reviewed the technical bases or evaluations of the change during the onsite inspection to determine whether they were technically justified and maintain effluent releases as-low-as-reasonably-achievable.

The inspectors reviewed licensee documentation to determine if the licensee has identified any non-radioactive systems that have become contaminated as disclosed either through an event report or the ODCM since the last inspection. This review provided an intelligent sample list for the onsite inspection of any 10 CFR 50.59 evaluations, and allowed a determination if any newly contaminated systems have an unmonitored effluent discharge path to the environment, whether any required ODCM revisions were made to incorporate these new pathways and whether the associated effluents were reported in accordance with RG 1.21.

b. Findings

No findings were identified.

Groundwater Protection Initiative Program

a. Inspection Scope

The inspectors reviewed reported groundwater monitoring results and changes to the licensee's written program for identifying and controlling contaminated spills/leaks to groundwater.

b. Findings

No findings were identified.

Procedures, Special Reports, and Other Documents

a. Inspection Scope

The inspectors reviewed Licensee Event Reports (LERs), event reports, and/or special reports related to the effluent program issued since the previous inspection to identify

any additional focus areas for the inspection based on the scope/breadth of problems described in these reports.

The inspectors reviewed effluent program implementing procedures, particularly those associated with effluent sampling, effluent monitor set-point determinations, and dose calculations.

The inspectors reviewed copies of licensee and third party (independent) evaluation reports of the effluent monitoring program since the last inspection to gather insights into the licensee's program and aid in selecting areas for inspection review (smart sampling).

b. Findings

No findings were identified.

.2 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors walked down selected components of the gaseous and liquid discharge systems to evaluate whether equipment configuration and flow paths align with the documents reviewed in 02.01 above and to assess equipment material condition. Special attention was made to identify potential unmonitored release points (such as open roof vents in boiling water reactor turbine decks, temporary structures butted against turbine, auxiliary, or containment buildings), building alterations which could impact airborne, or liquid effluent controls, and ventilation system leakage that communicates directly with the environment.

For equipment or areas associated with the systems selected for review that were not readily accessible due to radiological conditions, the inspectors reviewed the licensee's material condition surveillance records, as applicable.

The inspectors walked down filtered ventilation systems to assess for conditions such as degraded high-efficiency particulate air /charcoal banks, improper alignment, or system installation issues that would impact the performance or the effluent monitoring capability of the effluent system.

As available, the inspectors observed selected portions of the routine processing and discharge of radioactive gaseous effluent (including sample collection and analysis) to evaluate whether appropriate treatment equipment was used and the processing activities align with discharge permits.

The inspectors determined if the licensee has made significant changes to their effluent release points, e.g., changes subject to a 10 CFR 50.59 review or require NRC approval of alternate discharge points.

As available, the inspectors observed selected portions of the routine processing and discharge liquid waste (including sample collection and analysis) to determine if appropriate effluent treatment equipment is being used and that radioactive liquid waste is being processed and discharged in accordance with procedure requirements and aligns with discharge permits.

b. Findings

No findings were identified.

.3 Sampling and Analyses (02.03)

a. Inspection Scope

The inspectors selected effluent sampling activities, consistent with smart sampling, and assessed whether adequate controls have been implemented to ensure representative samples were obtained (e.g. provisions for sample line flushing, vessel recirculation, composite samplers, etc.)

The inspectors selected effluent discharges made with inoperable (declared OOS) effluent radiation monitors to assess whether controls were in place to ensure compensatory sampling was performed consistent with the radiological effluent ODCM/TSs and that those controls were adequate to prevent the release of unmonitored liquid and gaseous effluents.

The inspectors determined whether the facility was routinely relying on the use of compensatory sampling in lieu of adequate system maintenance, based on the frequency of compensatory sampling since the last inspection.

The inspectors reviewed the results of the inter-laboratory comparison program to evaluate the quality of the radioactive effluent sample analyses and assessed whether the inter-laboratory comparison program includes had-to-detect isotopes as appropriate.

b. Findings

No findings were identified.

.4 Instrumentation and Equipment (02.04)

Effluent Flow Measuring Instruments

a. Inspection Scope

The inspectors reviewed the methodology the licensee uses to determine the effluent stack and vent flow rates to determine if the flow rates were consistent with radiological effluent ODCM/TSs or USAR values, and that differences between assumed and actual stack and vent flow rates did not affect the results of the projected public doses.

b. Findings

No findings were identified.

Air Cleaning Systems

a. Inspection Scope

The inspectors assessed whether surveillance test results since the previous inspection for TS required ventilation effluent discharge systems (high-efficiency particulate air

(HEPA) and charcoal filtration), such as the standby gas treatment system and the containment/auxiliary building ventilation system, met TS acceptance criteria.

b. Findings

No findings were identified.

.5 Dose Calculations (02.05)

a. Inspection Scope

The inspectors reviewed all significant changes in reported dose values compared to the previous radiological effluent release report (e.g., a factor of 5, or increases that approach Appendix I criteria) to evaluate the factors which may have resulted in the change.

The inspectors reviewed radioactive liquid and gaseous waste discharge permits to assess whether the projected doses to members of the public were accurate and based on representative samples of the discharge path.

Inspectors evaluated the methods used to determine the isotopes that are included in the source term to ensure all applicable radionuclides are included within detectability standards. The review included the current Part 61 analyses to ensure hard-to-detect radionuclides are included in the source term.

The inspectors reviewed changes in the licensee's offsite dose calculations since the last inspection to evaluate whether changes were consistent with the ODCM and RG 1.109. Inspectors reviewed meteorological dispersion and deposition factors used in the ODCM and effluent dose calculations to evaluate whether appropriate factors were being used for public dose calculations.

The inspectors reviewed the latest Land Use Census to assess whether changes (e.g., significant increases or decreases to population in the plant environs, changes in critical exposure pathways, the location of nearest member of the public, or critical receptor, etc.) have been factored into the dose calculations.

For the releases reviewed above, the inspectors evaluated whether the calculated doses (monthly, quarterly, and annual dose) are within the 10 CFR, Part 50, Appendix I and TS dose criteria.

The inspectors reviewed, as available, records of any abnormal gaseous or liquid tank discharges (e.g., discharges resulting from misaligned valves, valve leak-by, etc.) to ensure the abnormal discharge was monitored by the discharge point effluent monitor. Discharges made with inoperable effluent radiation monitors, or unmonitored leakages were reviewed to ensure that an evaluation was made of the discharge to satisfy 10 CFR 20.1501 so as to account for the source term and projected doses to the public.

b. Findings

No findings were identified.

.6 Problem Identification and Resolution (02.07)

a. Inspection Scope

Inspectors assessed whether problems associated with the effluent monitoring and control program were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee CAP. In addition, they evaluated the appropriateness of the corrective actions for a selected sample of problems documented by the licensee involving radiation monitoring and exposure controls.

b. Findings

No findings were identified.

4. **OTHER ACTIVITIES**

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 Corrective Action Program

a. Inspection 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: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrences reviews were proper and adequate; and, 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 were identified.



.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

These 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 were identified.

.3 Selected Issue Follow-Up Inspection: Noncompliances Identified During 2008 Triennial Fire Protection Inspection

a. Inspection Scope

By letter dated September 21, 2011, Dominion Energy Kewaunee, Inc. applied for a license amendment for KPS. The proposed amendment would adopt National Fire Protection Association Standard 805 (NFPA 805), "Performance-Based Standard for Fire Protection for Light Water Reactor Electrical Generating Plants," 2001 Edition. Subsequently, by letter dated January 13, 2012 (ADAMS Accession Number ML11277A240), KPS withdrew the amendment request, and discontinued transition to NFPA 805.

Upon the KPS withdrawal from NFPA 805, enforcement discretion, as described in Section 9.1 of the NRC Enforcement Policy, no longer applied to KPS. However, certain noncompliances continued to receive enforcement discretion, as described in the Enforcement Guidance Memorandum 09-002 "Enforcement Discretion for Fire Induced Circuit Faults," as outlined in an NRC letter to Mr. D. Heacock, dated February 14, 2012 (ADAMS Accession Number ML120240007).

The inspectors reviewed the three noncompliances that the NRC granted enforcement discretion for during the 2008 triennial FP inspection (see KPS NRC Triennial Fire Protection Baseline NRC IR 05000305/2008008, ADAMS Accession Number ML082910894).

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

b. Observations

The licensee corrected two of the noncompliances identified in NRC IR 05000305/2008008, FIN 05000305/2008008-02, "Post-Fire Shutdown Procedures Failed to Ensure Time-Critical Operator Actions Were Performed in an Expeditious Manner," and FIN 05000305/2008008-03, "Failure to Protect Pressurizer PORV [Power Operated Relief Valve] Control Cable for a Fire Scenario." However, the licensee did not resolve the noncompliance associated with FIN 05000305/2008008-01, "Failure to

Provide Fire Detection and Fixed Fire Suppression in a III.G.3 Area.” As a result, the NRC is treating that issue as an NCV, the details of which are documented below.

c. Findings

Failure to Provide Fire Detection and Fixed Fire Suppressions in a III.G.3 Area

Introduction: The inspectors identified a violation of 10 CFR Part 50, Appendix R, Section III.G.3, “Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979,” for the licensee’s failure to meet the requirement for fire detection and a fixed fire suppression system in the control room’s HVAC room (fire zone AX-35). Specifically, the licensee failed to provide fire detection and a fixed fire suppression system in the HVAC equipment room.

Description: The inspectors originally identified this issue during the 2008 triennial FP inspection and documented the noncompliance as receiving enforcement discretion under the NRC’s Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48) for a licensee in NFPA 805 transition. However, as discussed above, the licensee withdrew their amendment request and discontinued their transition to NFPA 805.

Fire zone AX-35 was comprised of the control room and the HVAC equipment room. The HVAC equipment room was located directly above the control room and was separated from the control room by a reinforced concrete floor. The control room had smoke detectors located inside cabinets and the duct work, but had no fixed suppression system. The HVAC equipment room contained thermal detectors and automatic water deluge systems inside the air filter enclosures, but lacked area-wide fire detection and a fixed fire suppression system.

An exemption for the lack of a fixed suppression system in the control room was granted in 1988 based partly on the condition that the control room is continuously manned and fires would be quickly detected and manually suppressed. However, that exemption did not extend to the HVAC equipment room, as it was not specifically mentioned in the exemption, and also would not be continuously manned. The licensee performed an evaluation of the adequacy of the FP systems in various plant areas (FPEE-049, “Evaluation of Partial Area Suppression/Detection”) in which they took credit for the exemption for fire zone AX-35 and did not perform additional evaluation for the HVAC equipment room. The inspectors were concerned that a fire in the HVAC equipment room may not have been readily detected due to the lack of area-wide detection.

The inspectors noted that one train of redundant cables was located approximately five feet above the compressors, and another less than five feet to the side. The inspectors performed preliminary calculations for the plume temperatures resulting from a compressor fire, and concluded that the plume temperatures could exceed 680 degrees Fahrenheit (°F). That was above the 625°F damage threshold for thermoset cables. The inspectors used the “Estimating Centerline Temperature of a Buoyant Fire Plume” spreadsheet provided in NUREG-1805, “Fire Dynamics Tools,” to estimate the plume temperature of a 200 kW fire source. The 200 kilowatt (kW) fire size was obtained for a ninety-eighth percentile generic small electrical fire from IMC 0609, Appendix F, “Fire Protection Significance Determination Process,” Table 2.3.1, dated February 28, 2005.

The licensee originally entered the issue into the CAP as CR108948, "Adequacy of Suppression and Detection in Control Room HVAC Equipment Room," to evaluate the lack of area-wide fire detection and fixed fire suppression. The licensee established a roving 1-hour fire watch as a compensatory measure. The licensee planned on resolving this issue during the transition to NFPA 805, and was tracking this item under CA 083657, "Evaluate, Document and Determine Lack of Suppression in CR HVAC Equip." The licensee is currently tracking the resolution of this issue under CR463976, "Review Outstanding KPS Appendix R Issue Due to LAR 250 (NFPA 805) Withdrawal," and CA075268, "NFPA 805 Transition Project." On October 10, 2012, the licensee's Plant Health Steering Committee approved a proposal (Request for Engineering Assistance 2012-041) to install a fixed suppression and air sampling system in the Control Room HVAC Equipment Room. The licensee was continuing the roving 1-hour fire watch pending the resolution of this issue.

Analysis: The inspectors determined that the failure to provide area-wide fire detection and fixed fire suppression for fire zone AX-35 was contrary to 10 CFR, Part 50, Appendix R, Section III.G.3, and was a performance deficiency. Specifically, the licensee failed to provide fire detection and a fixed fire suppression system in the control room HVAC equipment room.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of Protection Against External Factors (Fire), and adversely affected the Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the lack of area-wide detection and suppression systems could increase the response time and complicate fire fighting activities. That could result in a loss of both trains of safe shutdown equipment required for safe shutdown of the plant.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," dated July 19, 2012. Using Table 3, "SDP Appendix Router," the inspectors answered "Yes" to question E.2.(2), "Does the finding involve fixed fire protection systems or the ability to confine a fire?" because the finding involved failure to provide fire detection and fixed suppression in the control room HVAC room. As a result, the finding was evaluated using IMC 0609, Appendix F. A detailed risk evaluation was performed by a Region III SRA.

Based on inspector observations and insights, the SRA and inspectors determined that no mitigating systems, other than the control room ventilation, would be affected by a fire in the area. Operators would have at least four hours available upon loss of control room ventilation before they would need to establish alternate means for control room ventilation. In addition, there was no potential that the control room would need to be evacuated due to smoke because the fire would be located outside of the control room ventilation ductwork. The source of fire for the postulated scenarios is an oil fire originating in one of two (1A or 1B) compressors. The consequence of damage is limited to loss of HVAC to the control room. The exposure time is the maximum of one year.

The SRA evaluated the finding using the KPS Standardized Plant Analysis Risk (SPAR) external event model Version 8.20, Systems Analysis Programs for Hands-On Integrated Reliability Evaluations (SAPHIRE) Version 8.0.8.0. The frequency of fire for the postulated scenarios is based on Appendix F, Table A1.3, "Fire Frequency Evaluation Worksheet." For air compressors under 100 horsepower, the frequency is shown as  $1.0\text{E-}4/\text{yr}$  per compressor. The fire frequency for two compressors would be  $2.0\text{E-}4/\text{yr}$ . Fires were evaluated for scenarios where main control room evacuation was not required. Main control room evacuation scenarios were not evaluated based on the SRA's review of the KPS IPEEE Summary Report, June 28, 1994. The report stated that fire-induced disabling of the control room HVAC was not assumed to result in control room uninhabitability. The SRA agreed with the IPEEE statements that the control room is constantly manned and a heating or cooling failure would be noticed, and corrective action would be taken according to plant procedures in a timely manner prior to the need to evacuate.

For scenarios where the main control room evacuation was not required, a conditional core damage probability (CCDP) was calculated using the initiating events assessment feature of the SPAR model. The SRA assumed a plant transient occurred as a result of the fire. The resulting CCDP was  $9.4\text{E-}8$ . Based on this result and the fire frequency, the change in core damage frequency (CDF) is less than  $1\text{E-}6/\text{yr}$ . The SRA determined that the finding was of very low risk significance (Green).

The inspectors did not identify a cross-cutting aspect associated with this finding, because this was an original design issue, and the finding was not representative of current performance.

Enforcement: Title 10 CFR 50.48(b)(2) requires, in part, that all nuclear power plants licensed to operate prior to January 1, 1979, must satisfy the applicable requirements of Appendix R to this part, including specifically the requirements of Sections III.G, III.J, and III.O. Appendix R, Section III.G.3 requires, in part, that alternative of dedicated shutdown capability and its associated circuits, independent of cables, systems, or components in the area, room, or zone under consideration should be provided where the protection of systems whose function is required for hot shutdown does not satisfy the requirement of paragraph G.2 of this section. In addition, fire detection and a fixed fire suppression system shall be installed in the area, room, or zone under consideration.

Contrary to the above, as of April 3, 2013, the licensee failed to meet the requirements of 10 CFR, Part 50, Appendix R, Section III.G.3. Specifically, the licensee failed to provide area-wide fire detection and fixed fire suppression in the control room HVAC equipment room.

This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy, because it was of very low safety significance and was entered into the licensee's CAP as CA075268, CA083657, CR108948, and CR463976. (NCV 05000305/2013002-03, Failure to Provide Fire Detection and Fixed Fire Suppression in a III.G.3 Area). As a remedial corrective action, the licensee continues to implement compensatory measures for this noncompliance.

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

##### .1 (Closed) LER 05000305/2012-001-00: Pressurizer PORV and Reactor Coolant System Vent Valves Appendix R Spurious Operation Concerns

On February 22, 2012, the licensee identified additional concerns regarding a condition originally identified in CR109107 and discussed in LER 2008-001-00, associated with cable separation concerns related to pressurizer power-operated relief valves (PORVs)/PR-2A and PR-2B. On February 28, 2012, the licensee identified additional concerns related to pressurizer valve PR-33A and head vent valves RC-45A and RC-46. The licensee determined that the control cables for the valves were not adequately protected from potential fire damage in the relay room and the 480 volt bus 51/52 area, and the valves could spuriously operate in the event of a fire in those areas. The enforcement aspects of this finding are discussed in Section 4AO7. This LER is closed.

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

#### 4OA5 Other Activities

##### .1 (Closed) Unresolved Item (URI) 05000305/2011005-01; Fire Brigade License Basis

The inspectors determined that no further performance deficiencies existed with this URI. The performance deficiencies identified as a result of this URI were previously documented in NRC IR 05000305/2011007 (ADAMS Accession No. ML13063A397), dated March 4, 2013. This URI is closed.

##### .2 (Closed) URI 05000305/2012002-02; Potential Mobile Crane Heavy Load Risk Modeling Error

The inspectors determined after further review with Office of Nuclear Reactor Regulation staff, that the licensee's procedures follow the guidance of NRC Regulatory Issue Summary 05-025, "Clarification of NRC Guidelines for Control of Heavy Loads." This URI is closed.

#### 4OA6 Management Meetings

##### .1 Exit Meeting Summary

On April 3, 2013, the inspectors presented the inspection results to Mr. A. Jordan, Site Vice President, 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

Interim exits were conducted for:

- the inspection results for the area of radioactive gaseous and liquid effluent treatment with Mr. R. Simmons, Plant Manager, on March 1, 2013.

The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.

#### 4OA7 Licensee-Identified Violations

The following violation of very low significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

##### .1 Pressurizer PORV and Reactor Coolant System Vent Valves Appendix R Spurious Operation Concerns

Title 10 CFR 50.48(b)(2) requires, in part, that all nuclear power plants licensed to operate prior to January 1, 1979, must satisfy the applicable requirements of Appendix R to this part, including specifically the requirements of Sections Section III.G, III.J, and III.O.

Section III.G.3 of 10 CFR, Part 50, Appendix R, requires, in part, that alternative of dedicated shutdown capability and its associated circuits, independent of cables, systems, or components in the area, room, or zone under consideration should be provided where the protection of systems whose function is required for hot shutdown does not satisfy the requirement of Paragraph G.2 of this section.

Contrary to the above, prior to February 28, 2012, the licensee failed to ensure that alternative of dedicated shutdown capability and its associated circuits were independent of cables in the area. Specifically, the licensee failed to ensure that, in the event of a fire in the relay room or the 480V bus 51/52 area, fire damage to the cables and circuits for the PORV valve PR-2B, pressurizer valve PR-33A, and reactor head vent valves RC-45A and RC-46 would not cause spurious operation of the valves.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Protection Against External Factors (Fire) and affected the Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The risk associated with this issue was determined to be of very low safety significance (Green) based on the initiating fire event frequencies and the probability of hot shorts occurring for the valves affected. The licensee entered this issue into the CAP as CR464393, "Appendix R Fire Spurious Operation Concern for PR-33A, RC-45A, and RC-46," and expanded a roving hourly fire watch to include the 480V bus 51/52 area.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

A. Jordan, Site Vice President  
R. Simmons, Plant Manager  
S. Yuen, Decommissioning Director  
J. Stafford, Safety and Licensing Director  
B. Harris, EP Manager  
M. Hale, Radiation Protection Manager  
J. Grau, Maintenance Manager  
B. Gauger, Operations OMA  
T. Olson, Engineering Director  
D. Pederson, Nuclear Oversight  
D. Asbel, Manager, Outage and Planning Manager  
M. Haese, Licensing  
J. Palmer, Training Manager  
J. Madden, Engineering Manager  
R. Repshas, Licensing Manager

#### Nuclear Regulatory Commission

K. Riemer, Branch Chief, Reactor Projects Branch 2

## LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

### Opened

05000305/2013002-01	NCV	Incorrect Ultimate Heat Sink Water Level (Section 1R04.1)
05000305/2013002-02	NCV	Inadequate Risk Assessment for Degraded Equipment (Section 1R13.1)
05000305/2013002-03	NCV	Failure to Provide Fire Detection and Fixed Fire Suppression in a III.G.3 Area (Section 4OA2.3)

### Closed

05000305/2013002-01	NCV	Incorrect Ultimate Heat Sink Water Level (Section 1R04.1)
05000305/2013002-02	NCV	Inadequate Risk Assessment for Degraded Equipment (Section 1R13.1)
05000305/2013002-03	NCV	Failure to Provide Fire Detection and Fixed Fire Suppression in a III.G.3 Area (Section 4OA2.3)
05000305/2012-001-00	LER	Pressurizer PORV and Reactor Coolant System Vent Valves Appendix R Spurious Operation Concerns (Section 4OA3.1)
05000305/2012002-02	URI	Potential Mobile Crane Heavy Load Risk Modeling Error (Section 4OA5.2)
05000305/2011005-01	URI	Fire Brigade License Basis (Section 4OA5.1)



## LIST OF DOCUMENTS REVIEWED

The following is a partial list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspector 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

- CA240430; Determine, Document And Resolve Revisions To GMP-172
- GMP-172; Tornado Missile Hazard Inspection; Revision 11
- Missile Hazard Inspection Results For March 4, 2013
- Site Monthly Missile Hazard Inspection Results; January And February 2013

### 1R04 Equipment Alignment

- Calculation No. C11220; Determination Of Forebay Low-Low Level Trip Instrument Accuracy; January 18, 2001
- Calculation No. C11882; Capability Of The Kewaunee Circulating Water Intake Structure's Auxiliary Intakes To Provide Required Flow To The Service Water Pumps (1A1, 1A2, 1B1, 1B2); September 2, 2009
- CE000003; NRC Resident Inspector Requested We Re-Review The Adequacy Of The Trip Of Circulating Water Pumps On Lo Forebay Level
- CR475771; Primary Met Tower 10M Wind Direction And Speed Indication Bad
- CR482022; 2012 MCR: Two Enhancements To GMP-172 Were Identified
- CR492956; Primary Tower 60 Meter Wind Speed Indicates BAD
- CR497915; Entry Into AOP-GEN-004 Due To High Winds
- CR500145; EAL Chart Table H-2 Uses 1955 IGLD For Lake Level
- CR500352; NRC Question On UHS LCO
- CR501307; 4Q12 Inspection-Proposed NRC NCV: EP, Potential For Late Declaration
- Drawing OPERM-213-9; Diesel Generator Startup Air Compressor A & B And Fish Screen Air; Revision K
- Drawing OPERM-217; Internal Containment Spray System; Revision AU
- Drawing OPERM-220; Fuel Oil Systems; Revision BA
- E-0; Reactor Trip Or Safety Injection; Revision 45
- Establishment Of International Great Lakes Datum (1985), By The Coordinating Committee On Great Lakes Basic Hydraulic And Hydrologic Data; December 1995
- GMP-172; Tornado Missile Hazard Inspection; Revisions 10 And 11
- Great Lakes Water Level Data; 9087068, Kewaunee, WI; December 1 To December 14, 2012
- HU1; Hazards And Other Conditions Affecting Plant Safety; Revision 9
- Kewaunee Power Station Improved Technical Specification Question Number 20 for SR 3.7.9.1; November 21, 2008
- KPS USAR 2.6; Hydrology; Revision 24, November 13, 2012
- Lake Michigan Lake Level 1996 – 2012; Corps Of Engineers Monthly Lake Level Bulletin Values; November 1995 To November 2012
- N-ICS-23-CL; Containment Spray System Prestartup Checklist; Revision 34
- NRC-01-055; Correspondence From M. Reddemann, NMC, LLC, To NRC; Subject: Lake Michigan Low Level Emergency Action Level Modification; May 2, 2001
- NRC-01-081; Correspondence From M. Reddemann, NMC, LLC, To NRC; Subject: Lake Michigan Low Level Emergency Action Level Modification; July 18, 2001

- OD 520; Document Operability of Ultimate HeatSink; Dated January 29, 2013
- OP-KW-AOP-CW-001; Abnormal Circulating Water System Operation, System No. 04; Revision 8
- OP-KW-AOP-DGM-001A; Diesel Generator A Prestartup Checklist; Revision 10
- OP-KW-AOP-DGM-002A; Abnormal Diesel Generator A Operation; Revision 7
- OP-KW-AOP-GEN-004; Response To Natural Events; Revision 11
- OP-KW-ARP-47052-M; Forebay Level Low, System No. CW-04; Revision 3
- OP-KW-MOP-SW-001A, Service Water Header A Maintenance Screenhouse; Revision 6
- OP-KW-MOP—SW-001A; Service Water Header A Screenhouse Maintenance; Revision 6
- OP-KW-NCL-SW-001, Service Water System Pre-Startup Checklist; Revision 5
- OP-KW-NCL-SW-001; Service Water System Prestartup Checklist;
- OP-KW-NOP-SW-001, Service Water System; Revision 10
- OP-KW-NOP-SW-001; Service Water System
- OP-KW-ORT-MISC-005; Cold Weather Operations; Completed December 4, 2012
- Report No. 288; Hydraulic-Model Study Of Water Intake, Kewaunee Nuclear Power Plant, Wisconsin; Submitted By Iowa Institute Of Hydraulic Research; December 2000
- Single Point Trend; CW Intake Forebay Level; Various Dates From December 15, 2011 To December 17, 2012

#### 1R05 Fire Protection

- Active FP System Impairment No. 13-016; RTM-11; February 23, 2013
- Active FP System Impairment No. 13-017; RTM-11; February 25, 2013
- CA022184; Fire Prot. Eng. To Develop Appendix R Qualified Penetration Seal Detail For PEN752
- CA220280; Penetration 443 Degraded Following Repairs
- CR025823; Unqualified Appendix R Penetration Seal – PEN752
- CR380323; Diesel Generator 1A CO2 Supervisory Control Light Cover Missing
- CR460411; Self Contained Breathing Apparatus (SCBA) #42 Failed Functional Check
- CR460673; NEIL Inspection Report KW-110525PER Should Recommendation TSC 11-05-TSC
- CR462230; One Unsatisfactory Item During Fire Drill
- CR466875; Fire Drill Observation
- CR471783; CV31363 Supervisory Light Burnt Out, Light Cover Missing
- CR482593; Focused Observation Of Fire Drill And Briefing Of KFD
- CR484910; Communication Issues During Fire Drill
- CR495589; Control Room Record Storage Room Fire Detector Actuated
- CR499436; SCBA Cylinder Has Possible Damage To Outer Coating
- CR501299; Fire Alarms Failed To Activate
- CR503374; Ionization Detector Loose From Electrical Conduit Base
- CR506256; Three Secondary Objectives Not Met On Fire Drill 12/05/12
- CR506263; DG 'A' Supervisory Light Out For CO2 Actuation, Bulb Replaced And Light Lit
- CR506305; Hose On Hose Reel Station #5 Has Two Minor Cracks On Outer Rubber Coating
- CR506307; Structural Engineering Review Of penetrations 43, 56, And 63, 1A EDG Room
- CR507012; Emergency Backup Light (EBL) RTB10 Remote Lamp Failed To Light
- CR508724; Fire Pump 'B' Started At A High Out-Of-Band Pressure
- CR508877; Fire Cart #2 In Turbine Building Basement Has Two Flat Tires
- CR509710; Observation Of Fire Brigade Drill
- Drawing E-1606; Turbine Building & Screenhouse Vent System; Revision AJ
- Drawing M-636; Ventilation, Screenhouse & Diesel Generator Rooms; Revision N
- Fire Watch Inspection List; March 28, 2013

- FPP-08-08; FP – Control Of Transient Combustible Materials; Revision 11
- FPP-08-18; Pre-Fire Plan; Revision 2
- KPS Fire Protection program Analysis; Revision 10
- KPS Fire Protection Program Plan; Revision 11
- KPS USAR 5.2; Revision 24.01
- MA-KW-MPM-FP-021C, Attachment C; Dampers With Door Access; Revision 3
- PFP-13; A-544; battery Rooms 1A And 1B; Revision D
- PFP-4; A-535; Screen House; Revision C
- PFP-5; A-536; 1A Diesel Generator And DG Day Tank Rooms; Revision C
- SA-KW-FPP-010; Fire Drills; Revision 2
- WO KW100311016; Unqualified Appendix R Penetration Seal – PEN752
- WO KW100601164; Visual Inspection Of Fire Dampers (During Plant Shutdown Only)
- WO KW100650445; PM08-852: Operability Test (Group 3-A Train) – Fire Dampers
- WO KW100869631; Regulator 36074 Replacement

#### 1R11 Licensed Operator Requalification Program

- CR475139; Entered AOP-GEN-001 For FW-7B Not Controlling Properly
- CR484353; Potential Trend In Precise Control Of Plant Evolutions
- CR502356; Briefing Area Contributes To “At-Risk” Behaviors
- CR503508; Non-Conservative Technical Specification Limit In SR 3.7.9.1
- LRC-13-SE203; Licensed Operator Requalification Cycle 13-02 Crew Performance Exercise; Revision 0
- OP-AA-100; Conduct Of Operations; Revision 22
- PI-AA-5000; Human Performance Event Free Tool – Pre-Job Briefings (Conditional Tool); Revision 7

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

- ACE019300; Non Cited Violation – Inadequate Evaluation Of A Heavy Load Evolution
- CA135823; Procedure MA-KW-MPM-FP-030C Questions
- CA256307; NRC Question For Door 401
- Control Room Log; February 26, 2013
- CR490172; Incorrect Input To Online Maintenance Risk Assessment
- CR491721; NRC Non Cited Violation – Inadequate Evaluation Of A Heavy Load Evolution
- CR494059; Possible Weakness In 10CFR50.65(a)(4) Program
- CR501410; NRC Identifies Procedure Errors While Reviewing MA-KW-ISP-SI-040
- CR505378; Non-Safety Inverter BRD-109 Aligned To Alternate Source Due To Degraded Switch
- CR506532; BRD-109 In Alternate Not Evaluated In PRA
- CR506583; NRC Question For Door 401
- CR506849; BRD109 Is Modeled incorrectly In PRA Model
- CR506849; BRD109 Is Modeled Incorrectly In PRA Model
- CR507443; KPS NOD Questions Possible Adverse Trend In PRA Modeling
- KPS Probabilistic Risk Assessment Notebook, Part V PRA Risk Analysis; Volume KPS-RA.033 – Risk Deficit Due To Not Including BRD-109 In Risk Profile; Revision 1
- KPS Probabilistic Risk Assessment Notebook, Part V PRA Risk Analysis; Volume KPS-RA.033 – Risk Assessment Of Diesel Generator B Work On 2/25/13; Revision 0
- Log Entries Report; February 27, 2013
- Major Activities For Work Weeks 1309-1310; February 24 To March 9, 2013
- MA-KW-MPM-FP-030A; Dry Test Of CO2 System; Revision 7

- NF-AA-PRA-370; Probabilistic Risk Assessment Procedures And Methods: MRule (a)(4) Risk Monitor Guidance; Revision 15
- OD 000512; Train B EDG Start Up Air System Components Not Qualified For Harsh Environment
- POD For CR499682; Door 401 Shall Not Be Blocked Open; December 12, 2012
- Scheduler's Evaluation For Kewaunee On-Line Schedule; February 26 And February 27, 2013
- WM-AA-100; Work Management; Revision 17
- WM-AA-20; Risk Assessment Of Maintenance Activities; Revision 1
- WM-AA-301; Operational Risk Assessment; Revision 8

#### 1R15 Operability Determinations and Functional Assessments

- CR482324; Steam Leak In Crossunder Steam Line
- CR502759; Battery Room Fan Coil Unit A Is Dripping 2 Drops Per Second
- CR505378; NonSafety Inverter Aligned To Alternate Source Due To Degraded Switch
- CR505728; Auxiliary Building Mezzanine Fan Coil Unit A Is Leaking
- CR506439; BRD109 Stuck In Alternate Will Impact SBO Components Powered By BRD115
- CR506740; Additional Equipment Impacts Identified During Review Of BRD-109 Issue
- CR506744; Equipment Important To EP Potentially Impacted By BRD-109 Issue
- CR506849; BRD109 Is Modeled Incorrectly In PRA Model
- Drawing E-233; DC Aux. And Emergency AC; Revision AY
- Drawing E-260; 480V MCC 1-52C, 152E & 1-62C; Revision BY
- Drawing E-3626; Circuit Diagrams Non-Safeguards DC Auxiliary; Revision F
- Drawing E-640; W/D External Connections, Batteries & Equipment; Revision BD
- KPS Asset Report For 23010; Transmitter-Aux FW To STM Gen 1A F XMTR; February 27, 2013
- NRC-92-080; Letter From Wisconsin Public Service Corporation To NRC; Subject: Regulatory Guide 1.97, Accident Monitoring Instrumentation; July 1, 1992
- ODM 264; Steam Leak In Crossunder Steam Line
- ODM 285; ODM To System Engineering For Battery Room Fan Coil Unit A
- ODM 287; ODM For BRD-109 Aligned To Alternate Source Due To Degraded Switch
- RAS 221; 1A Battery Room Fan Coil Unit Leak Update; Revision 1
- RAS 233; Auxiliary Building Mezzanine Fan Coil Unit A Is Leaking
- Regulatory Guide 1.97; Accident Monitoring Instrumentation Plan; Revisions 2 And 21
- Standing Order 13-09; ODM For Battery Room A Fan Coil Unit Leakage
- Standing Order 13-11; Effects of Potential Loss of BRD-109; February 25, 2013
- Standing Order 13-12; ODM 287 – Manual Bypass Switch For BRD-109 Stuck in the Alternate Position; March 7, 2013
- Standing Order No. 13-10; Effects Of Potential Loss Of BRD-109; February 25, 2013

#### 1R18 Plant Modifications

- 50.59/72.48 Applicability Review For USAR Change KPS-UCR-2012-017; January 22, 2013
- KPS-UCR-2012-017; SAR Change Request
- License Basis Document Change Request NLAR 40; February 8, 2011
- SCRIN 03-0146-00; 10 CFR 50.59 Screening
- UCR-2012-017; Spent Fuel Pool Cooling; February 21, 2013
- UCR-2012-017; Spent Fuel Pool Cooling; January 22, 2013

## 1R19 Post-Maintenance Testing

- CR505012; Unexpected Time Results During PMT Of 62/RB/VD Relay Replacement In RR143
- CR505861; Diesel Generator A Started With Non-Selected Air Start Motors
- CR506366; Inadequate Lighting Identified During PMT For DCR 3720 Room 231  
Appendix R EBL's
- Drawing 113E449; Reactor Protection System
- Drawing E-1011; bus 1-2, Undervoltage & Under-Freq. Detection; Revision N
- Drawing E-2037; Reactor Coolant System
- Drawing E-224; 4160V Switchgear Buses 1-1 & 1-2 Source Breakers; Revision X
- Drawing OPERM-213-9; Diesel Generator Startup Air Compressor A & B And Fish Screen Air; Revision K
- GNP-03.01.01-1; Tracking And Processing Record For OP-KW-NOP-DGM-001A, Diesel Generator A Remote Operation; November 13, 2007
- High Risk Contingency Plan Actions: KW100949587 – LC461B/XB Contact OR Relay Replacement And LC461B/XB Is Steam Generator A Lo-Lo Level Logic Relay; Completed March 11, 2013
- KPS Asset Report For 27AX1/B2; March 29, 2013
- KPS TRM 3.8.1; AC Sources – Operating; Amendment No. 207
- KPS USAR 7.2.2.4; Protective Actions; Revision 24
- KPS USAR 7; Instrumentation And Control; Revision 24
- KPS USAR 8.2.3; Emergency Power; Revision 24
- KW1008663043; PM17-07: Inspect/Clean RHR Pump Pit Fan Coil Unit 1B
- Log Entries Report; February 18 To February 19, 2013
- MA-KW-ESP-DGE-004A; Redundant Air Start Feature Test; Revision 8
- MA-KW-PMP-MAE-005, Attachment A; M&TE Calibration By Vendor Equipment Transfer Data Sheet; Completed March 7, 2012
- OP-KW-NOP-DGM-001A; Diesel Generator A Remote Operation; Completed February 19, 2013
- OP-KW-ORT-DGM-001A, Attachment A; Emergency Diesel Generator 1A Operation Log; February 18, 2013
- SP-47-062B; Reactor Protection Logic Train B Staggered Quarterly Test; Completed March 11, 2013
- TagOut 33-17M19-R; Clear TagOut 27B-MUP-MECH-19 To Inspect/Clean RHR Pump Pit Fan Coil Unit 1B
- Termination Report of WO KW100949587; March 11, 2013
- Tracking And Processing Record For MA-KW-ESP-EHV-001B – Bus 1-2 4KV Voltage And Frequency Test And Calibration; July 9, 1997
- Tracking And Processing Record For MA-KW-ESP-EHV-001B – Bus 1-2 4KV Voltage And Frequency Test And Calibration; October 18, 2012
- Tracking And Processing Record For SP-47-062B – Reactor Protection Logic Train B Staggered Quarterly Test; January 29, 2013
- TS 3.3.1; RPS Instrumentation; Amendment No. 207
- WO KW100919135; PM-39-095: Perform Bus 1-2 UV/UF Relay Test
- WO KW100948124; Relay 27AX1/B2 Replacement
- WO KW100948570; Diesel Generator 1A, Inspect Air Start Valve & Supply strainer On Left Bank (#2)
- WO KW100949587; LC461B/XB Contact Replacement

## 1R22 Surveillance Testing

- CR463968; Unexpected Procedural Latent Issues Found During Management Observation
- CR464509; Charging Motor On SI Pump B Breaker Did Not Stop Following Breaker Closure
- CR466551; Missed Timing MS-102 OSP-AFW-002
- CR466555; Discharge Gauge AFW Pump B
- CR469351; FW-10B Failed Closing Time Test
- CR470395; RHR Pump Flow Transmitter Calibration Issue
- CR471017; Premature Turnover Of FW-12B (MOV) To Operations
- CR472152; Unable To Reduce RHR Flow Into Required Band Of OSP-RHR-002B
- CR472789; FW-10B Timing Results
- CR486396; Vibration Data Point Reading Taken During SP Test Exceeded Alert Limits
- CR502039; Vibrations On Service Water Pump A2
- CR502980; Recommend Performing Vibration Readings On The AFWP B, Aux Lube Oil Pump And Motor
- CR503217; A EDG RPM Meter Not Reading In Control Room
- CR505811; As Found Inspection Of 1A Diesel Start Up Air Compressor Check Valves Had Grease
- CR505861; Diesel Generator A Started With Non-Selected Air Start Motors
- CR509074; Lessons Learned During Monthly Diesel Generator B Run
- Drawing E-1884; Voltage Restoring Bus 1-6; Revision N
- Drawing E-1885; Bus 6 Voltage Restoring; Revision AA
- Drawing E-2051-1; Power Range Nuclear Instrumentation; Revision Q
- Drawing E-2251; Relay Settings; Revision M
- Drawing E-801; W/D-N.I.S. Rack CR110 (CH II) White Nuclear Instrumentation System; Revision X
- Drawing XK100-144; Reactor Trip Signals; Revision 5D
- Drawing XK-100-693; Nuclear Instrumentation Intermediate Range N-35 Functional Block Diagram; Revision 5C
- Drawing XK-100-694; Nuclear Instrumentation System, Power Range N-41 Functional Block Diagram; Revision 7C
- Drawing XK-100-699; Detector Locations, Nuclear Instrumentation System (NIS); Revision 4A
- ER-AA-IST-10, Attachment 1; Applicable ASME Codes For Each Dominion Site; Revision 2
- ER-AA-IST-PMP-101; ASME IST Program – Inservice Testing Of Pumps Revisions 1 And 3
- ICP-82B-129; ICE – Fluke 45 Dual Display And Extech Multimeters Calibration; Completed January 10, 2013
- KPS Basis Document; Inservice Testing Program – Fourth Interval; Revision 13
- KPS Inservice Testing Basis Valve Data Sheet; Safety Injection System; Valve ID SI-302B
- KPS Inservice Testing Basis Valve Data Sheet; Safety Injection System; Valve ID SW-601B
- KPS TS 3.3.1; RPS Instrumentation; Amendment No. 207
- KPS TS 3.3.5; DG Start Instrumentation; Amendment No. 207
- KPS TS Bases B 3.3.1; RPS Instrumentation; LC000407; February 12, 2011
- KPS USAR 1.3; Revision 24
- KPS USAR 5.3; Reactor Containment Vessel Isolation Systems; Revision 24.01
- KPS USAR 6.2; Residual Heat Removal System Design; Revision 24.01
- KPS USAR 6.6; Auxiliary Feedwater System; Revision 24.01
- KPS USAR 7.2.2.4; Protective Actions; Revision 24
- KPS USAR 7.4; Nuclear Instrumentation; Revision 24
- MA-KW-ISP-NI-287A-7; Intermediate Range N-35 Channel Operability Test; Completed March 13, 2013

- NRC RG 1.192; Operation And Maintenance Code Case Acceptability, ASME OM Code; June 2003
- OP-KW-OSP-AFW-006; Auxiliary Feedwater Pump B Low Suction Pressure Trip Test & AFW/SW Valve IST: Revision 4; Completed March 28, 2013
- OP-KW-OSP-RHR-003B; Train B RHR Pump And Valve Test – IST; Completed March 27, 2013
- OP-KW-OSP-RHR-003B; Train B RHR Pump And Valve Test – IST; Revision 2
- OSP-AFW-007; TDAFW Pump Low Suction Pressure Trip And SW Valve Test; Completed on March 21, 2013
- PI-AA-5000, Attachment 10; Human Performance Event Free Tool – Pre-Job Briefings; Revision 7
- Residual Heat Removal Pump 1B; Inservice Testing Of Pumps, Vibration Measurements; April 24, 2012 To March 27, 2013
- SP-48-004F, Attachment B; New Calibration Currents Data Sheet – Flux Map Number 3212; November 14, 2012
- SP-48-004F, Attachment B; New Calibration Currents Data Sheet – Flux Map Number 3215; February 6, 2013
- SP-48-004H; Nuclear Power Range Channel 2 (White) N42 Ion Current Calibration And Channel Operational Test (COT); Performed February 11, 2013
- SP-48-004J; Nuclear Power Range Channel 4 (Yellow) N44 Ion Current Calibration And Channel Operational Test (COT); Performed February 12, 2013
- WO KW100916673; PM39-165: Perform Bus 1-6 UV Relay Test
- WO KW100925878; PM05B675: TDAFW Low Suction Pressure Trip Test And SW Valve Test

#### 1EP6 Drill Evaluation

- Associated Simulated Paperwork For Simulator Evaluation on March 7, 2013
- Licensed Operator Requalification Program Scenario LRC-12-SEE10; Simulator Session March 7, 2013; Revision A

#### 2RS6 Radioactive Gaseous and Liquid Effluent Treatment

- CR418660; Alignment Of R-21 Samples Directly From Containment; March 2011
- CR440914; Confusion Over ODCM Compensatory Sampling; September 1, 2011
- CR458167; Evaluate Determination/Quantification Of Ni-63 In Liquid Effluent Streams; January 6, 2012
- CR478252; Gaseous Effluent Particulate Sample Alpha Recounts Not Performed; June 6, 2012
- HP-05.015; Miscellaneous Gaseous Radwaste Releases; Revision 13
- RP-KW-005-004; Effluent Monitoring And Sampling Requirements; Revision 13
- RP-KW-005-014; Airborne Radioactivity Sample Analysis; Revision 8
- SP-32-115; Doses From Liquid Effluents; Revision 15
- SP-32A-136; Radiological Liquid Discharges (Batch Mode); Revision 40
- SP-32A-266; Effluent Dose Limit Verification; Revision 12
- SP-32B-116; Gaseous Radioactive Effluents – Reports For Batch Releases; Revision 36
- SP-45-290; Radioactive Gaseous Effluent Monitoring Instrumentation, Compensatory Actions For Channel Out Of Service; Revision 8

#### 4OA2 Identification and Resolution of Problems

- Calculation NAI-1380-001; Kewaunee NPP Auxiliary Building Zone SV Cooling Analysis; July 28, 2008

- Calculation No. NAI-1200-001; GOTHIC Model For CREZ Heat Up At The Kewaunee Nuclear Power Plant; Revision 1
- CR107231; Steps Pulling Fuses For Pressurizer PORVs In AOP-FP-002/003 Do Not Specify Critical Time
- CR464976: Review Outstanding KPS Appendix R Issues Due To LAR 250 (NFPA 805)
- GNP-05.16.06; Validation Of Time Dependant Operator Actions; Revision 8
- OP-KW-AOP-ACC-001; Abnormal Control Room A/C System Operation; Revision 2
- OP-KW-AOP-FP-002; Fire In Alternate Fire Zone; Revision 13
- OP-KW-AOP-FP-002; Fire In Alternate Fire Zone; Revision 2
- OP-KW-AOP-FP-003; Fire In Dedicated Fire Zone; Revision 10
- OP-KW-AOP-FP-003; Fire In Dedicated Fire Zone; Revision 2
- OP-KW-ORT-MISC-014; Validation Of Time Critical Actions; Revision 2

#### 4OA3 Follow-Up of Events and Notices of Enforcement Discretion

- Calculation NAI-1380-001; Kewaunee NPP Auxiliary Building Zone SV Cooling Analysis; July 28, 2008
- CR107231; Steps Pulling Fuses For Pressurizer PORVs In AOP-FP-002/003 Do Not Specify Critical Time
- CR464976: Review Outstanding KPS Appendix R Issues Due To LAR 250 (NFPA 805)
- GNP-05.16.06; Validation Of Time Dependant Operator Actions; Revision 8
- OP-KW-AOP-ACC-001; Abnormal Control Room A/C System Operation; Revision 2
- OP-KW-AOP-FP-002; Fire In Alternate Fire Zone; Revision 13
- OP-KW-AOP-FP-002; Fire In Alternate Fire Zone; Revision 2
- OP-KW-AOP-FP-003; Fire In Dedicated Fire Zone; Revision 10
- OP-KW-AOP-FP-003; Fire In Dedicated Fire Zone; Revision 2
- OP-KW-ORT-MISC-014; Validation Of Time Critical Actions; Revision 2

#### 4OA5 Other Activities

- 1016744; EPRI Configuration Risk Management Forum – 2008 Research Task; An Approach For Evaluating Heavy Load Lifts And Related Maintenance Tasks In Maintenance Rule (a)(4)
- Dominion Probabilistic Risk Assessment Notebook; Part V, Volume DOM-RA.001; Appropriateness Of PRA Evaluations For Load Lifts In MRule (a)(4); Revision 0
- Dominion Probabilistic Risk Assessment Notebook; Part V, Volume RA.027; Heavy Load Lift Over Screenhouse; Revision 0
- GNP-08.12.02; Controls For Use Of Cranes Within The Protected Area; Revision 27
- ML082460291; NRC RIS 2008-28; Endorsement Of Nuclear Energy Institute Guidance For Reactor Vessel Head Heavy Load Lifts; December 1, 2008
- NF-AA-PRA-101-3081; Probabilistic Risk Assessment Procedures And Methods: Configuration Risk Assessment Of Load Lifts; Revision 1
- Risk Evaluations

#### 4OA7 Licensee-Identified Violations

- CA228956; Determine Actions To Restore Full Qualification
- CR464393; Appendix R Fire Spurious Operation Concern For PR-33A, RC-45A and RC-46

#### NRC-Identified Condition Reports

- CR501302; 4Q12 Inspection - Proposed NRC NCV: Design Control, Separation Of EDG A&B Dampers



- CR501304; 4Q12 Inspection – Proposed NRC NCV: Violation Of 10CFR50.59, SFP Cooling Calc
- CR501307; 4Q12 Inspection – Proposed NRC NCV: EP, Potential For Late Declaration Of An Alert
- CR501340; Containment Leak Rate Testing Program (CLRTP) Document Contains Incorrect Value
- CR502445; Three Cross Cutting Aspects In Human Performance Resources – Documentation H.2(c)
- CR502665; Potential White Finding – Ability To Assess EALs Due To SPING Failures In 2011
- CR502722; NRC Questions Current OAI (Operations Aggregate Impact) Value
- CR503384; Minor Discrepancy With Maximum RWST Volume Listed In USAR
- CR503581; Improper Relay Room Ladder Storage
- CR503598; NRC Questions Safety Related Cabling In Approved Storage Areas
- CR504511; Incorrect Value For Flood Barrier In Maintenance Procedures
- CR504533; Battery Sample Caps Cracked
- CR504706; Revision 2 Of SA-KW-FPP-010 Fire Drills Not Properly Updated – Fire Plan Updates
- CR505320; NRC Question On Sealing Of Chain Operated Valves
- CR505529; Proposed NRC Violations Associated With URI 2011005-1, Fire Brigade
- CR505558; NRC Questions The Use Of Wheels Chocks And An Unsecured Ladder
- CR506262; 2012 CDBI NRC Non-Cited Violation – 125 Vdc Battery Service Test Procedures
- CR506263; DG 'A' Supervisory Light Out For CO2 Actuation, Bulb Replaced And Light Lit
- CR506264; 2012 CDBI NRC Non Cited Violation – Non-Conservative Voltage Calculations MOVs
- CR506265; 2012 CDBI NRC Con Cited Violation – Failed To Consider Multiple Failures In ES-1.3
- CR506266; 2012 CDBI NRC Non Cited Violation – Time Critical Operator Actions
- CR506305; Hose On Hose Reel Station #5 Has Two Minor Cracks On Outer Rubber Coating
- CR506307; Structural Engineering Review Of Penetration 43 1A EDG Room
- CR506532; BRD-109 In Alternate Not Evaluated In PRA
- CR506583; NRC Question For Door 401
- CR506633; NRC Questions Non-Safety Related Components Attached To A Safety Related System
- CR506740; Additional Equipment Impacts Identified During Review Of BRD-109 Issue
- CR506744; Equipment Important To EP Potentially Impacted by BRD-109 Issue
- CR506814; Structural Engineering Review Of Penetration 63 In The 1A EDG Room
- CR506871; NRC Question Re: Entry Into AOP-GEN-004 Based On High Wind Speeds
- CR507507; Penetration 519 Has Flamemastic Coating Cracked, NRC Identified
- CR509432; Lost Document
- CR509444; NRC Questions "86" Lockout Relay Failures Impact On KPS App \$ Design Description
- CR509520; NRC RI Question Regarding Fire Watch In The Bus 51/52 Area

## LIST OF ACRONYMS USED

°F	Degrees Fahrenheit
AC	Alternating Current
ACE	Apparent Cause Evaluation
ADAMS	Agencywide Document Access Management System
AFW	Auxiliary Feedwater
ASME	American Society of Mechanical Engineers
CA	Corrective Action
CAP	Corrective Action Program
CCDP	Conditional Core Damage Probability
CDF	Delta Core Damage Frequency
CFR	Code of Federal Regulations
CR	Condition Report
DRP	Division of Reactor Projects
EDG	Emergency Diesel Generator
FCU	Fan Coil Unit
FP	Fire Protection
HEPA	High-Efficiency Particulate Air
HVAC	Heating, Ventilation, & Air Conditioning
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IPEEE	Individual Plant Examination of External Events
IR	Inspection Report
IST	Inservice Testing
KPS	Kewaunee Power Station
kW	Kilowatt
LER	Licensee Event Report
MBS	Manual Bypass Switch
NCV	Non-Cited Violation
NFPA	National Fire Protection Association
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
OOS	Out-of-Service
PARS	Publicly Available Records System
PMT	Post-Maintenance Testing
PORV	Power-Operated Relief Valve
RG	Regulatory Guide
RHR	Residual Heat Removal
SAPHIRE	Systems Analysis Programs for Hands-On Integrated Reliability Evaluations
SDP	Significance Determination Process
SPAR	Standardized Plant Analysis Risk
SR	Safety-Related
SRA	Senior Reactor Analyst
SSC	Systems, Structures, and Components
SW	Service Water
TDAFW	Turbine-Driven Auxiliary Feedwater
TS	Technical Specification
UHS	Ultimate Heat Sink
URI	Unresolved Item
USAR	Updated Safety Analysis Report

D. Heacock

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Sincerely,

**/RA/**

Kenneth Riemer, Branch Chief  
Branch 2  
Division of Reactor Projects

Docket No. 50-305  
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Letter to D. Heacock from K. Riemer dated May 14, 2013

SUBJECT: KEWAUNEE POWER STATION – NRC INTEGRATED  
INSPECTION REPORT 05000305/2013002

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