



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
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February 6, 2012

Mr. David A. Heacock  
President and Chief Nuclear Officer  
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**SUBJECT: KEWAUNEE POWER STATION - NRC INTEGRATED INSPECTION  
REPORT 05000305/2011005**

Dear Mr. Heacock:

On December 31, 2011, 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 January 4, 2012, with Mr. A. Jordan 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.

Four NRC identified and two self-revealed findings of very low safety significance (Green) were identified during this inspection.

Four of these findings were determined to involve violations of NRC requirements. Further, licensee-identified violations, which were determined to be of very low safety significance, are listed in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest these non-cited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, United States 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 assignment 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, 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 (PARS) component of NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is 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 05000305/2011005  
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: 05000305/2011005

Licensee: Dominion Energy Kewaunee, Inc.

Facility: Kewaunee Power Station

Location: Kewaunee, WI

Dates: October 1, 2011, through December 31, 2011

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Enclosure

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## SUMMARY OF FINDINGS

IR 05000305/2011005, 10/01/2011 – 12/31/2011; Kewaunee Power Station; Flooding, Licensed Operator Requalification Program, Operability Determinations and Functional Assessments, Post-Maintenance Testing, Correction of Emergency Preparedness Weaknesses, and Other Activities.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. The inspectors identified four Green findings, and two Green findings were self-revealed. Four of the findings were considered non-cited violations (NCVs) of NRC regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

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

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

- Green. The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to establish procedures for reduced inventory operations that were appropriate to manage gas accumulation. Specifically, the procedures did not preclude air entrainment into the residual heat removal (RHR) and reactor coolant systems (RCSs). This finding was entered into the licensee's corrective action program (CAP). The licensee's immediate corrective actions included calculating the instrument inaccuracies for RHR flow and refueling level instrument loops, referencing the level inaccuracies based on inactive flow in RCS loops in the associated procedures., evaluating levels, and updating the procedures with a new graph.

The performance deficiency was determined to be more than minor because it was associated with the Initiating Event Cornerstone attribute of procedure quality, and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown operations. Specifically, the failure to establish procedures for reduced inventory operations that were appropriate to preclude air entrainment did not limit the likelihood of events that result from adverse air entrainment into the RHR and RCSs. The finding screened as having very low safety significance (Green) because the Region III Senior Reactor Analysts determined that it reasonably met the safety functions of core heat removal, RCS inventory control, power availability, containment control, and reactivity control; and there had been no actual air entrainment problems that had occurred using the procedures. The finding has a cross-cutting aspect in the area of Problem Identification and Resolution because the licensee did not thoroughly evaluate relevant operating experience. Specifically, the licensee's evaluation of gas-related issues in response to NRC Generic Letter (GL) 2008-01 was deficient in that it did not consider vortexing during reduced inventory operations (P.2(a)). (Section 40A5.5.c(1))

## Cornerstone: Mitigating Systems

- Green. A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to identify and analyze a potential flooding source that was within the Kewaunee licensing basis. Specifically, during the internal flood basis reconstitution in 2005, the licensee failed to realize and assess the potential for fire main piping in the technical support center (TSC) building to be ruptured during a tornado or seismic event. Water from a ruptured fire main had the potential to accumulate in the basement of the TSC building, flow into the attached auxiliary building, and potentially affect safety-related (SR) equipment. The licensee initiated a condition report (CR) and completed calculations and analyses to demonstrate the existing barriers, although not credited at the time, were adequate to support this internal flood scenario. In addition, the licensee performed an extent of condition analysis to determine if any additional internal flood scenarios were missed.

The inspectors determined that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated December 24, 2009, because it was associated with the Mitigating Systems (MS) Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to analyze all potentially credible internal flood sources could affect the availability of SR systems. The inspectors determined that the finding could be evaluated using the significance determination process in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a, for the MS Cornerstone, dated January 10, 2008. The inspectors answered "No" to the MS questions and screened the finding as having very low safety significance (Green). The inspectors did not identify a cross-cutting aspect associated with this finding because the internal flood design basis reconstitution occurred in 2005 and the inspectors determined that there was not an opportunity to identify this deficiency in the past three years. (Section 1R06.1)

- Green. A self-revealed finding associated with operating crew performance on the simulator during a licensee-administered requalification examination was identified. Two of the six crews evaluated during the annual operating tests failed to pass their simulator examinations. As immediate corrective action, the failed operating crews were remediated (i.e., the operating crews were re-trained and successfully re-tested) prior to returning to shift. The licensee entered this issue into the CAP as CR456328.

The inspectors determined that the crew failures constituted a performance deficiency based on the fact that licensed operators are expected to operate the plant with acceptable standards of knowledge and abilities demonstrated through periodic testing as required by 10 CFR 55.59(a)(2). Two out of six crews of licensed operators failed to demonstrate a satisfactory understanding of the required actions and mitigating strategies required to safely operate the facility under normal, abnormal, and emergency conditions. The finding was more than minor because the performance deficiency potentially affects the Human Performance attribute of the MS Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the finding reflected the potential inability of the crews to take appropriate SR action in response to actual

abnormal and emergency conditions. The perceived risk associated with the number of crews failing the annual operating test is provided in the Simulator Operational Evaluation matrix of IMC 0609, Appendix I, "Licensed Operator Requalification SDP." The finding was of very low safety significance (Green) because only two of six of the operating crews failed; the failed operating crews were remediated (i.e., the operating crews were re-trained and successfully re-tested) prior to returning to shift; and because there was not a finding associated with operating crew failures during calendar year 2010. The cause of this finding was directly related to the cross-cutting aspect of personnel training and qualifications in the area of Human Performance – Resources, in that the licensee failed to ensure the adequacy of the training provided to operators to assure nuclear safety (H.2(b)). (Section 1R11.2)

- Green. A finding of very low safety significance was identified by the inspectors for the failure to adequately assess operability of the Control Room Air Conditioning Component (ACC) dampers, ACC-15 and ACC-16, in Operability Determination (OD) 456, Revision 0, "ACC-15 and ACC-16 QA Classification," in accordance with site Procedure OP-AA-102-1001, "Development of Technical Basis to Support Operability Determinations," Revision 4. The licensee entered the issue into their CAP and was completing an apparent cause evaluation at the conclusion of the inspection period.

The finding was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated December 24, 2009, because the finding, if left uncorrected, had the potential to become a more significant safety concern. Specifically, the failure to give the operators written instructions to manually reposition the SR dampers could have lead to situations where the operators would not have been able to rapidly and correctly manually reposition the SR dampers to perform their required safety functions necessary to mitigate design basis accidents. The inspectors determined the finding could be evaluated using IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a, for the MS Cornerstone, dated January 10, 2008. The inspectors answered "No" to the MS questions and screened the finding as having very low significance (Green). The finding has a cross-cutting aspect in the area of Human Performance - Decision-Making, because the licensee failed to communicate decisions and the bases for decisions to personnel who had a need to know the information in order to perform work safely, in a timely manner. Specifically, the licensee failed to communicate in a timely manner to the reactor operators the written instructions in the standing order necessary to manually reposition the dampers to their SR positions after a design basis accident (H.1(c)). (Section 1R15.1)

- Green. A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed for the failure to implement a procedure for an activity affecting quality. Procedure OP-KW-OSP-DGE-003B, "Diesel Generator B Semi-Annual," required electrical maintenance personnel to check only the voltage of the emergency diesel generator (EDG) B output breaker Relay 52C/1-603; however, the electricians checked voltage and then attempted to check resistance of the relay. Specifically, after successfully testing for voltage, an electrician then selected a resistance setting for the volt-ohm meter (VOM) in an attempt to perform a continuity check of the relay, which was not prescribed by the procedure. The electrician's actions resulted in the closure of the EDG output Breaker 1-603, and EDG B was paralleled to the grid out-of-phase. The licensee initiated a CR and took

remedial corrective actions that included additional testing and inspections of EDG B to ensure that no damage occurred to the equipment as a result of the system transient, followed by the successful completion of post maintenance testing. At the end of the inspection period, the licensee was performing a root cause evaluation to determine the cause of the event and to develop additional corrective actions related to the organizational performance issues.

The inspectors determined that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because the finding was associated with the MS Cornerstone attribute of Equipment Performance, and adversely impacted the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the attribute of equipment performance impacted the availability and reliability of EDG B and could have resulted in the catastrophic failure of the generator. The inspectors determined that the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a, for the MS Cornerstone, dated January 10, 2008. The inspectors answered "No" to the MS questions and screened the finding as having very low safety significance (Green). The inspectors determined that this finding has a cross-cutting aspect in the area of Human Performance - Work Practices, because the maintenance personnel and supervision failed to communicate and ensure human error prevention techniques were used, such as holding formal pre-job briefings, and self and peer checking. The licensee also failed to ensure that these techniques were used commensurate with the potential risk of the assigned task, such that work activities were performed safely. Finally, during these maintenance activities, the inspectors concluded that licensee personnel proceeded in the face of uncertainty (H.4(a)). (Section 1R19.1)

#### **Cornerstone: Emergency Preparedness**

- Green. A finding of very low safety significance and associated NCV of 10 CFR 50.54(q) was identified by the NRC for failing to maintain emergency plans that meet the requirements of emergency planning standard 10 CFR 50.47(b)(4). The inspectors determined that a performance deficiency existed in that incorrect assumptions were used in the development of Emergency Action Level (EAL) thresholds associated with containment gas (R12) and containment ventilation (R21) radiation monitors. The licensee entered this issue into its CAP as CR356229 and corrected the errant EAL thresholds in its emergency classification and action level scheme.

This finding was determined to be more than minor because the deficiency, if left uncorrected, could have the potential to lead to a more significant safety concern. Specifically, in the event of a radiological emergency, the deficiency has the potential to increase the risk to the public through a premature and/or unnecessary general emergency declaration and subsequent protective action recommendation of evacuation. This finding was evaluated using IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," Sheet 1, "Failure To Comply." This finding is associated with a failure to meet or implement a regulatory requirement. The deficiency is not greater than Green because it did not result in the Risk-Significant Planning Standard Function being lost or degraded. No cross-cutting aspect is assigned to this finding because it is not indicative of current plant performance. (Section 1EP5.1)

**B. Licensee-Identified Violations**

Violations of very low safety significance identified by the licensee have been reviewed by inspectors. Corrective actions planned or taken by the licensee have been entered into the licensee's CAP. These violations and corrective action tracking numbers are 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, with one exception. On November 25, 2011, KPS reduced power to approximately 97 percent after the failure of the heater drain pump A. KPS returned to full power on November 27.

### 1. REACTOR SAFETY

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

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

##### .1 Winter Seasonal Readiness Preparations

##### a. Inspection Scope

The inspectors conducted a review of the licensee's preparations for winter conditions to verify that the plant's design features and implementation of procedures were sufficient to protect mitigating systems from the effects of adverse weather. Documentation for selected risk-significant systems was reviewed to ensure that these systems would remain functional when challenged by inclement weather. During the inspection, the inspectors focused on plant specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. 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. Cold weather protection, such as heat tracing and area heaters, was verified to be in operation where applicable. The inspectors also reviewed CAP items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures. Documents reviewed are listed in the Attachment to this report. The inspectors' reviews focused specifically on the following plant systems due to their risk significance or susceptibility to cold weather issues:

- circulating water system;
- fire protection system; and
- turbine building and greenhouse ventilation system.

This inspection constituted one winter seasonal readiness preparations sample as defined in Inspection Procedure (IP) 71111.01-05.

##### b. Findings

No findings were identified.

.2 Readiness for Impending Adverse Weather Condition – High Wind Conditions

a. Inspection Scope

Since high winds were forecast in the vicinity of the facility on November 29, 2011, the inspectors reviewed the licensee's overall preparations/protection for the expected weather conditions. On November 29, 2011, the inspectors evaluated the licensee staff's preparations against the site's procedures 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, which included the electrical switchyard, the main transformers, and areas adjacent to the underground fuel oil storage tank vent lines and the emergency diesel fuel oil day tank vent lines, 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. 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 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:

- turbine building and greenhouse ventilation;
- EDG A;
- auxiliary feedwater (AFW) train A;
- service water (SW) train A; and
- internal containment spray (ICS) train B.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety (RS) Cornerstones at the time they were inspected or a risk-significant system that was recently realigned following an extended system outage, maintenance, modification, or testing. 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 five partial system walkdown samples as defined in IP 711111.04-05.

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

On November 17, 2011, the inspectors performed a complete system alignment inspection of the safety injection (SI) system to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment lineups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding work orders (WOs) was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment to this report.

Also, additional activities were performed during this system walkdown that were associated with Temporary Instruction (TI) 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal and Containment Spray Systems." These activities are described in Section 4OA5 of this report.

These activities constituted one complete system walkdown sample as defined in IP 711111.04-05.

b. Findings

No findings were identified.

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 areas:

- AX-36, turbine building, auxiliary building, and reactor containment building heating, ventilation, and air conditioning (HVAC) room;
- TU-22, turbine room;
- TU-94, carbon dioxide tank room; and
- TU-95A, dedicated shutdown panel room.

The inspectors reviewed areas to assess if the licensee had implemented an FP program that adequately controlled combustibles and ignition sources 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, 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 (IPEE) 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 December 1 and December 13, 2011, the inspectors observed a fire brigade activation for a simulated fire in the security building and a simulated fire in the radiation protection (RP) office, respectively. Based on this observation, the inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that licensee staff identified deficiencies; openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. 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.

Documents reviewed are listed in the Attachment to this report.

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

b. Findings

Introduction: The inspectors reviewed the license basis history for fire brigade composition, practicals, training, and conduct of drills. The inspectors required additional information to review and assess the licensee's current procedures and practices.

Description: During the inspection of the fire brigade annual fire drill, the inspectors reviewed past fire drills and noted that in the past two years, only one fire drill was conducted in a SR area. The inspectors also noted that some fire drills were conducted as training sessions and that the annual practical conducted offsite was considered a quarterly drill in the licensee's current drill procedure. The inspectors required additional information to review and assess the licensee's current procedures and practices, as compared to the facility's license basis. Therefore, the inspectors opened an unresolved item (URI) because more information is required to determine if there is a performance deficiency (URI 05000305/2011005-01; Fire Brigade License Basis).

1R06 Flooding (71111.06)

.1 Potential Internal Flood Scenario Due to Postulated Loss of the Technical Support Center

a. Inspection Scope

During the completion of NRC TI 2515/183, "Follow-up to the Fukushima Daiichi Nuclear Station Fuel Damage Event," the inspectors identified a concern related to a potential internal flood scenario in the auxiliary building from a ruptured FP system in the TSC caused by either an earthquake or a tornado. The inspectors reviewed the licensee's evaluation and analysis of the auxiliary building flood scenario to confirm that SR equipment located in the auxiliary building would not be affected.

This inspection was conducted to close URI 05000305/2011003-07 and does not constitute an additional internal flooding sample as defined in IP 71111.06-05.

b. Findings

(1) Unanalyzed Flood Source From Technical Support Center Building

Introduction: A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to identify and analyze a potential flooding source that was within the KPS licensing basis. Specifically, during the internal flood basis reconstitution in 2005, the licensee failed to realize and assess the potential for fire main piping in the TSC building to be ruptured during a tornado or seismic event. Water from a ruptured fire main had the potential to accumulate in the basement of the TSC building, flow into the attached auxiliary building, and potentially affect SR equipment.

Description: During independent walkdowns for an internal flooding inspection and completion of TI 2515/183, "Follow-up to the Fukushima Daiichi Nuclear Station Fuel Damage Event," the inspectors identified that no credited flood barriers existed between the TSC building and the auxiliary building, which were connected through two air lock doors. The inspectors' review found that the fire main piping in the TSC building was not seismically supported, and also determined that the upper portion of the TSC building was not built to withstand a tornado. Therefore, the fire main piping within the TSC building could potentially be ruptured during a tornado. Flood waters from a ruptured fire main could accumulate in the TSC basement and flow into the auxiliary building, which housed multiple SR systems in the below grade basement level.

The licensee agreed with the inspectors' conclusions and entered the issue into the CAP as CR424708 and CR430931. The licensee's immediate review concluded that both doors were special ventilation doors, with one door having seals that would limit leakage into the auxiliary building because it was also a steam exclusion boundary. The licensee evaluated the fire main piping and found that it would survive a seismic event; however, the licensee concluded that the fire main piping could be damaged during a tornado. The licensee calculated potential flood levels and determined that the two doors between the buildings, which closed into their frames, would not fail during a flood, and that the total leakage past the two doors would not adversely affect SR equipment, nor affect safe shutdown of the plant.

Analysis: The inspectors determined that the licensee's failure to correctly translate the internal flood design basis into specifications, drawings, procedures, or instructions was a performance deficiency warranting a significance evaluation.

The inspectors determined that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated December 24, 2009, because it was associated with the MS Cornerstone attribute of Equipment Performance, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to analyze all potentially credible internal flood sources could affect the availability of SR systems. The inspectors determined that the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a, for the MS Cornerstone, dated January 10, 2008. The inspectors answered "No" to the MS questions and screened the finding as having very low safety significance (Green).

The inspectors did not identify a cross-cutting aspect associated with this finding because the internal flood design basis reconstitution occurred in 2005, and the inspectors determined that there was not an opportunity to identify this deficiency in the past three years.

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.

Contrary to the above requirements, in 2005, the licensee failed to establish measures to assure that applicable regulatory requirements and the design basis were correctly translated into specifications, drawings, procedures, and instructions for the internal flooding design basis. Specifically, the licensee failed to account for internal flood sources from the TSC building into the basement of the auxiliary building, which was part of the license basis and was required to be addressed in specifications, drawings, and procedures. Because this violation was of very low safety significance, and was entered into the licensee's CAP as CRs 424708 and 430931, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000305/2011005-02; Unanalyzed Flood Source From The Technical Support Center Building).

At the end of this inspection, the licensee completed performing calculations and analyses to demonstrate that the existing barriers, although not credited at the time, were adequate to support this internal flood scenario. In addition, the licensee performed an extent of condition analysis to determine if any additional internal flood scenarios were missed.

## .2 Underground Vaults

### a. Inspection Scope

The inspectors selected underground bunkers/manholes subject to flooding that contained cables whose failure could disable risk-significant equipment. The inspectors determined that the cables were not submerged, that splices were intact, and that appropriate cable support structures were in place. In those areas where dewatering devices were used, such as a sump pump, the device was operable, and level alarm circuits were set appropriately to ensure that the cables would not be submerged. In those areas without dewatering devices, the inspectors verified that drainage of the area was available, or that the cables were qualified for submergence conditions. The inspectors also reviewed the licensee's corrective action documents with respect to past submerged cable issues identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed walkdowns of the following underground bunkers/manholes subject to flooding. Documents reviewed are listed in the Attachment to this report.

- tertiary auxiliary transformer supply cable splice pit;
- north underground cable vault adjacent to the northwest corner of the auxiliary building;
- south underground cable vault adjacent to the northwest corner of the auxiliary building.

This inspection constituted one underground vaults sample as defined in IP 71111.06-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On November 28 and 29, 2011, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

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

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

b. Findings

No findings were identified.

.2 Biennial Written And Annual Operating Test Results (71111.11A)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the biennial written examination and the annual operating test, administered by the licensee from October 31, 2011, through December 14, 2011, required by 10 CFR 55.59(a). The results were compared to the thresholds established in IMC 0609, Appendix I, "Licensed Operator Requalification SDP," to assess the overall adequacy of the licensee's licensed operator requalification training (LORT) program to meet the requirements of 10 CFR 55.59.

Completion of this section constituted one biennial and one annual licensed operator requalification inspection sample as defined in IP 71111.11A.

b. Findings

Introduction: A self-revealed Green finding was identified as a result of two of six crews failing the simulator portion of the facility-administered annual operating tests. Based on the licensee's successful remediation and subsequent re-testing of individuals who failed the simulator portion of the annual operating test, no violation of regulatory requirements occurred.

Description: During the facility-administered operating test of licensed operators, the licensee training staff evaluated crew performance during dynamic simulator scenarios. Facility results of crew performance show that two of six crews (33 percent) did not pass their simulator exam. The licensee initiated CR456328 to address the crew failures.

Analysis: The inspectors determined that the crew failures constituted a performance deficiency based on the fact that licensed operators are expected to operate the plant with acceptable standards of knowledge and abilities demonstrated through periodic testing as required by 10 CFR 55.59(a)(2). Two of six crews of licensed operators failed to demonstrate a satisfactory understanding of the required actions and mitigating strategies required to safely operate the facility under normal, abnormal, and emergency conditions. The finding is greater than minor because the performance deficiency potentially affects the Human Performance attribute of the MS Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the finding reflected the potential inability of the crew to take appropriate SR action in response to actual abnormal and emergency conditions.

The perceived risk associated with the number of crews failing the annual operating test is provided in the Simulator Operational Evaluation matrix of IMC 0609, Appendix I, "Licensed Operator Requalification SDP." The matrix was entered based on the number of crews that took the simulator test (six) and the number of crews with unsatisfactory performance (two). Based on a crew failure rate of 33 percent on the dynamic simulator portion of the annual operating test (two crew failures out of the six crews of licensed operators administered simulator operational evaluations), the fact that the failed operating crews were remediated (i.e., the operating crews were re-trained and successfully re-tested) prior to returning to shift, and because there was no finding associated with operating crew failures the previous year, the finding was characterized by the SDP as having a very low safety significance, or Green.

The cause of this finding was directly related to the cross-cutting aspect of personnel training and qualifications in the area of Human Performance – Resources, in that the licensee failed to ensure the adequacy of the training provided to operators to assure nuclear safety. (H.2(b))

Enforcement: This finding does not involve enforcement action because no regulatory requirement violation was identified. Because this finding does not involve a violation and has very low safety significance (Green), it is identified as a finding (FIN 05000305/2011005-03, Two of Six Operating Crew Failures on the Simulator Operational Evaluation Portion of the 2011 Annual Requalification Operating Test).

At the end of the inspection period, the licensee initiated CR456328 to address the crew failures, conducted crew and individual remediations, and began conducting a causal evaluation to develop long term corrective actions.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluation (71111.12Q)

a. Inspection Scope

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

- turbine and screenhouse ventilation;
- instrument air; and
- main steam and atmospheric valves.

The inspectors verified the licensee's actions to address system performance or condition problems in the following areas, as necessary:

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

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

This inspection constituted three quarterly maintenance effectiveness samples as defined in IP 71111.12-05.

b. Findings

The inspectors identified one licensee-identified violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." Licensee procedures did not contain procedural guidance for adequately inspecting, cleaning, and lubricating all auxiliary contacts in SR breaker cubicles. On November 24, 2008, the train B screenhouse exhaust fan failed to run as the result of failed auxiliary contacts in the fan motor breaker cubicle. The violation is documented in Section 4OA7.

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 to verify that the appropriate risk assessments were performed prior to removing equipment for work during the following weeks:

- October 31;
- December 12; and
- December 19.

The activities during these work weeks were selected based on their potential risk significance relative to the RS Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4), and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified 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 three samples as defined in IP 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following operability determinations (ODs) and functionality evaluations:

- CR453750, "Water Present at Bolt Holes on R-17 Detector Shield";
- OD 407, "Resolve Potential Degraded Condition Resulting from Fast Transfer";
- CR437449, "Spent Fuel Pool Pump B Motor Modeled Different Than PTE 98-03";
- CR456059, "ECCS Model Issue – Fuel Thermal Conductivity Degradation"; and,
- OD 456, "ACC-15 and ACC-16 instrument air components not correctly classified as safety related."

The inspectors selected these potential operability issues based on the risk significance of the associated SSCs. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject SSCs remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and USAR to the licensee's evaluations to determine whether the SSCs 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 was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

These operability inspection activities constituted five samples as defined in IP 711111.15-05.

b. Findings

Inadequate Operability Determination of Control Room Air Conditioning Components

Introduction: A finding of very low safety significance was identified by the inspectors for the failure to adequately assess operability of the control room ACC dampers, ACC-15 and ACC-16, in OD-456, Revision 0, "ACC-15 and ACC-16 QA Classification," in accordance with site procedure OP-AA-102-1001, "Development of Technical Basis to Support Operability Determinations," Revision 4.

Description: On October 10, 2011, the licensee initiated CR447013, which documented the licensee's identification that relay room supply damper ACC-15, and relay room exhaust damper ACC-16, and their associated actuators CD34084 and CD34085, were coded as SR; but the necessary support components were incorrectly classified as nonsafety-related (NSR). The dampers have an SR function to open and remain open during normal or emergency operation to cool the relay room. The dampers required instrument air to open and remain open, and had springs that shut the dampers if the air was lost. Therefore, the check valve that isolated the accumulator to the instrument air header, the regulator and the solenoid valve that supplied air to the dampers should have been classified as SR, and maintained in accordance with the appropriate requirements of the Quality Assurance Program, but were not.

The licensee performed OD-456, Revision 0, which was completed and approved on October 14, 2011. On November 1, 2011, the inspectors reviewed OD-456, Revision 0, and found that it directed action that should have been defined as a compensatory measure, but was not designated as such. Specifically, OD-456, Revision 0 directed that written instructions on manually repositioning the dampers be given to the reactor operators as a defense in depth measure. However, the OD failed to designate this action as a required compensatory action as required by Section 3.3.3.b.7 of Operating Procedure (OP) OP-AA-102-1001. Licensee staff informed the inspectors that the reactor operators were issued written instructions for manual repositioning in a standing order. On November 3, the inspectors determined that the standing order had not been issued to the operators and that the onshift operations personnel had no knowledge of the required actions. The inspectors informed operations management, who then

expedited the issuance of Standing Order 11-78 to the reactor operators, which was approximately two weeks after OD-456 was originally issued. The licensee also revised OD-456 and issued Revision 1, which designated the issuance of the written instructions in Standing Order 11-78 as a required compensatory measure. This licensee entered the issue into their CAP as CRs 451256, 455077, and 447013.

Analysis: The inspectors determined that the failure to designate the issuance of the written instructions for manually repositioning the dampers as a compensatory measure in OD-456, Revision 0; and the failure to issue the standing order in a timely manner was contrary to OP-AA-102-1001, and was a performance deficiency warranting a significance evaluation.

The finding was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated December 24, 2009, because the finding, if left uncorrected, had the potential to become a more significant safety concern. Specifically, the failure to give the operators written instructions to manually reposition the SR dampers could have lead to situations where the operators would not have been able to rapidly and correctly manually reposition the SR dampers to perform the required safety functions needed to mitigate design basis accidents. The inspectors determined the finding could be evaluated using IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 Initial Screening and Characterization of Findings," Table 4a for the MS Cornerstone, dated January 10, 2008. The inspectors answered "No" to the MS questions, and screened the finding as having very low significance (Green).

The finding has a cross-cutting aspect in the area of Human Performance - Decision-Making, because the licensee failed to communicate decisions and the bases for decisions to personnel who had a need to know the information in order to safely perform work, in a timely manner. Specifically, the licensee failed to communicate in a timely manner to the reactor operators the written instructions in the standing order necessary to manually reposition the dampers to their SR positions after a design basis accident (H.1(c)).

Enforcement: No violation of regulatory requirements occurred but the inspectors did identify a finding (FIN 05000305/2011005-04, Inadequate Operability Determination of Control Room Air Conditioning System Components).

The licensee entered this issue into their CAP as CRs 451256, 455077, and 447013. The licensee took immediate corrective actions that included revision of the operability evaluation and issuance of the standing order. At the end of the inspection period, the licensee continued to perform a causal evaluation and develop long term corrective actions.

1R18 Plant Modifications (71111.18)

.1 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following modification(s):

- TMOD 2009-11 - RHR Vent Cooler (temporary);
- KW-10-01062-006 - Remove RHR-44, RHR-45, Add Relief Valve, Add Vent Valves, and Close SI-31 (permanent); and
- DCR 3724 - Install RHR Pumps Suction Line Vent Valves Downstream of Valves RHR-4A/B (permanent).

The inspectors reviewed the configuration changes and associated 10 CFR 50.59 safety evaluation screening against the design basis, USAR, and TS, as applicable, to verify that the modifications did not affect the operability or availability of the affected systems. The inspectors, as applicable, observed ongoing and completed work activities to ensure that the modifications were installed as directed and consistent with the design control documents; the modifications operated as expected; post-modification testing adequately demonstrated continued system operability, availability, and reliability; and that operation of the modifications did not impact the operability of any interfacing systems. As applicable, the inspectors verified that relevant procedure, design, and licensing documents were properly updated. Lastly, the inspectors discussed the plant modifications with operations, engineering, and training personnel to ensure that the individuals were aware of how the operation with the plant modification in place could impact overall plant performance. Documents reviewed are listed in the Attachment to this report.

Also, additional activities were performed during the evaluation of the engineering design package that was associated with TI 2515/177. These activities are documented in Section 4OA5 of this report.

This inspection constituted one temporary modification sample and two permanent plant modification samples as defined in IP 71111.18-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing (PMT)

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:

- testing following engineered safeguards train B relay replacement;
- testing following turbine-driven auxiliary feedwater (TDAFW) turbine trip throttle mechanism;
- testing following SW pump A2 modification;
- testing following modification to the EDG A room damper air control system;
- testing following preventive maintenance on the internal containment spray pump B; and,
- EDG B testing following an inadvertent breaker closure which synchronized EDG B to the grid out-of-phase.

These activities were selected based upon the SSCs' ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion); and test documentation was properly evaluated. The inspectors evaluated the activities against TS, USAR, and 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 PMT activities to determine whether the licensee was identifying problems and entering them into the CAP, and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

These inspections constituted six post-maintenance testing samples as defined in IP 71111.19-05.

b. Findings

Unanticipated Closure of Emergency Diesel Generator B Output Breaker

Introduction: A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed for the failure to implement a procedure for an activity affecting quality. Procedure OP-KW-OSP-DGE-003B, "Diesel Generator B Semi-Annual Fast Start Test," required electrical maintenance personnel to check only the voltage of the EDG B output breaker relay 52C/1-603; however, the electricians checked voltage and then attempted to check resistance of the relay. Specifically, after successfully testing for voltage, an electrician then selected a resistance setting for the VOM in an attempt to perform a continuity check of the relay, which was not prescribed by the procedure. The electrician's actions resulted in the closure of the EDG output Breaker 1-603, and EDG B was paralleled to the grid out-of-phase.

Description: On November 7, 2011, licensee personnel performed the semi-annual fast start test on EDG B. The testing of the EDG and system circuitry was required by the TSs and prescribed in Procedure OP-KW-OSP-DGE-003B, "Diesel Generator B Semi-Annual Fast Start Test," Revision 17. The testing was performed by licensee personnel from the operations and maintenance department. Following the start of the EDG, but prior to paralleling the EDG to the grid for load testing, electrical maintenance personnel performed a check of the starting circuitry, to ensure that relays in the actuation system functioned properly. The checks verified that the individual relays exhibited the appropriate voltage, resistance, or in some cases both parameters, to ensure the relays functioned properly.

Step 5.2.24 of Procedure OP-KW-OSP-DGE-003B required an electrician to check only the voltage across Relay 52C/1-603 with an analog VOM. One electrician held the instrument leads on the relay contacts, while a second electrician (lead) held the test instrument. The electrician holding the leads verified the proper voltage, and continued

to hold the leads on the relay until the lead electrician concurred on the voltage reading. The lead electrician did not see the voltage and stated that he was going to check the resistance of the relay without obtaining concurrence of his reading or his contemplated actions. Upon readjusting the analog VOM dial to a resistance setting while the instrument leads were still on the relay contacts, the lead electrician unknowingly completed the actuation circuitry and the EDG B output breaker went closed. Therefore, EDG B was inadvertently paralleled to the electrical grid out-of-phase. Under normal operating conditions protection circuitry prevents the out-of-phase closure of the output breaker; however, in the test configuration at the time, this protection circuitry was bypassed. Within less than a minute, control room operators recognized the unexpected actuation of the EDG B output breaker and immediately shut down the EDG. The licensee spent the next several days gathering prior industry operating experience and developing an inspection and testing plan with the vendor for the EDG B to ensure no damage had occurred.

The licensee's troubleshooting efforts included the following: a review of all standing WOs for the machine; determining how the event happened so short term actions could be put in place for re-testing; visual inspections of the engine, generator and structural components; removal and replacement of the output breaker with a spare; a visual one revolution check of the engine; inspection of the EDG turbo; inspection of the excitation circuitry; megger of the generator; and determination of PMT for the EDG. The licensee also had the vendor onsite to assist with these activities. Following successful completion of the maintenance, functional testing, and PMT, EDG B was returned to service.

While the root cause was not completed at the time of the inspection, interviews with personnel were conducted and those facts were compared to the fundamentals of Maintenance Procedure MM-AA-100. Some of the differences noted based on the interview facts and procedure comparison included: electrical supervision did not verify job readiness prior to the scheduled start of the test and engage in oversight during the performance of work; an informational package assembled by the electrical coordinator for the work activity was never provided to the lead electrician; the two electricians were reassigned to this work the morning of the surveillance and adequate preparation time was not taken; human performance tools were not used appropriately, including a craft specific brief or job site review; and maintenance personnel proceeded to perform the task with some uncertainty regarding the task.

Analysis: The inspectors determined that the failure to appropriately implement a procedure affecting quality that resulted in the paralleling of EDG B out-of-phase was a performance deficiency warranting a significance evaluation.

The inspectors determined that the finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because the finding was associated with the MS Cornerstone attribute of Equipment Performance, and adversely impacted the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the attribute of equipment performance impacted the availability and reliability of EDG B and could have resulted in the catastrophic failure of the EDG. The inspectors determined that the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings,"

Table 4a, for the MS Cornerstone, dated January 10, 2008. The inspectors answered "No" to the MS questions and screened the finding as having very low safety significance (Green).

The inspectors also determined this finding had a cross-cutting aspect in the area of Human Performance - Work Practices, because the maintenance personnel and supervision failed to communicate and ensure human error prevention techniques were used, such as holding formal pre-job briefings, self checking and peer checking. The licensee also failed to ensure that these techniques were used commensurate with the potential risk of the assigned task, such that work activities were performed safely. Finally, during these maintenance activities, the inspectors concluded that licensee personnel proceeded in the face of uncertainty (H.4(a)).

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Procedure OP-KW-OSP-DGE-003B, "Diesel Generator B Semi-Annual Fast Start Test," Revision 17, prescribed actions to test the EDG B output breaker relay circuitry. Specifically, Section 5.2.24, required, in part, that only a voltage check was performed for Relay 52C/1-603.

Contrary to this, on November 7, 2011, after performing the voltage check, an electrician attempted to perform a continuity check of Relay 52C/1-603, which was not prescribed in the procedure steps. Consequently, when the VOM was changed to the resistance setting by the electrician with the instrument leads still connected to the relay, EDG output Breaker 1-603 closed, and EDG B was paralleled to the grid out-of-phase. Because this violation was of very low safety significance, and was entered into the licensee's CAP as CR451698, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000305/2011005-05; Unanticipated Closure of Emergency Diesel Generator B Output Breaker).

The licensee's remedial corrective actions included additional testing and inspections of EDG B to ensure that no damage occurred to the equipment as a result of the system transient, followed by the successful completion of the PMT. At the end of the inspection period, the licensee was performing a root cause evaluation to determine the cause of the event and to develop additional corrective actions related to the organizational performance issues.

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:

- flux mapping (routine);
- TDAFW testing (inservice testing (IST));
- emergency core cooling system (ECCS) safeguards Train B (routine);
- Bus 6 undervoltage (routine);
- RCS leakrate (RCS);
- miscellaneous valves (containment isolation valve (CIV)).

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 activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers (ASME) code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for 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 three routine surveillance testing samples, one inservice testing sample, one reactor coolant system leak detection inspection sample, and one containment isolation valve sample, as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

.1 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

Since the last NRC inspection of this program area, EP, Revisions 35 and 36, and EAL Technical Bases, Revisions 7, 8 and 9, were implemented based on your determination, in accordance with 10 CFR 50.54(q), that the changes resulted in no decrease in effectiveness of the EP, and that the revised EP as changed, continues to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR 50. The inspectors conducted a sampling review of the EP changes and a review of the EAL changes made between December 2010 and November 2011, to evaluate for potential decreases in effectiveness of the EP. However, this review does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspections in their entirety.

This emergency action level and emergency plan changes inspection constituted one sample as defined in IP 71114.04-05.

b. Findings

No findings were identified.

1EP5 Correction of Emergency Preparedness Weaknesses (71114.05)

.1 Correction of Emergency Preparedness Weaknesses

a. Inspection Scope

The inspectors followed up on a URI concerning changes to reactor building ventilation flowrates with potential decreases in the effectiveness of the EP. The inspectors reviewed the licensee's evaluation of the issue and corrective actions. The inspectors verified that the correct EAL thresholds were developed and incorporated into the licensee's standard emergency classification and action level scheme in accordance with 10 CFR 50.54(q) and site-specific procedures.

This correction of emergency preparedness weaknesses inspection constituted no sample as defined in IP 71114.05-05.

b. Findings

Incorrect Assumptions Used in the Development of Emergency Action Level Thresholds

Introduction: A finding of very low safety significance and associated NCV of 10 CFR 50.54(q) was identified by the NRC for failing to maintain an EP that meets the requirements of emergency planning standard 10 CFR 50.47(b)(4). The inspectors determined that a performance deficiency existed, in that incorrect assumptions were

used in the development of EAL thresholds associated with containment gas (R12) and containment ventilation (R21) radiation monitors.

Description: On March 4, 2010, the licensee identified discrepancies in containment purge fan flowrate values between various documents. The source of the discrepancy was determined to be Design Change DCR 947, performed in 1980, which installed flow blockers into the ventilation system and lowered system fan flowrates from 33,000 to 26,000 cfm [cubic feet per minute]. The licensee's evaluation and approval process did not input the new design flowrates into their system drawings and offsite dose calculation manual (ODCM). Therefore, the licensee's initial emergency classification and action level scheme action levels were developed in 1981 using the original but incorrect design system ventilation flowrates.

On November 3, 2009, the licensee identified the discrepancies in containment purge fan flowrates in their CAP as CR356229. The CAP entry identified the errant flowrates and determined that the lower flow had a conservative impact with respect to any related radiological release. Corrective actions were written to determine the correct response to the issue. In June 2010, the licensee completed Calculation C11805, Revision 0, Addendum A. This revised the thresholds for the EAL classifications for radiation monitors (RMs) R-12, R-21, SPING 02-07, and SPING 02-09, based on a reactor building flow of 26,000 cfm, versus the original flow of 33,000 cfm used for the Alert and Unusual Event thresholds; and the original flow of 44,000 cfm used for the Site Area Emergency and General Emergency thresholds. In December 2010, the licensee corrected the errant EAL thresholds in its emergency classification and action level scheme through Revision 7 of its EALs.

In December 2010, the NRC completed IP 71114.05, Correction of Emergency Preparedness Weaknesses. The inspectors acknowledged that not having the correct containment purge fan flowrate universally documented in plant procedures or engineering documents led to the mis-calibration of the containment gas (R12) and containment ventilation (R21) RMs. The initial NRC concern was that these RMs were used to help classify plant emergency conditions for the specific EALs that could have potentially led to classifying emergencies inaccurately, and that the EALs were changed from a correct value to an incorrect value. Additionally, URI 05000305/2010005-05, Changes to Reactor Building Ventilation Flow Rates Potentially Decreases the Effectiveness of the Plan Without Prior NRC Approval, was written to further inspect the issue.

In October 2011, the NRC completed IP 71114.01, Exercise Evaluation, and obtained additional information from the licensee on the issue. The inspectors reviewed the corrective actions from CR371137 and revision of EAL gaseous RM thresholds for Containment Vent Radiogas Monitor R-12, Containment Vent Air Activity Monitor R-21, and Containment Building Mid-range and Hi-range Gas Monitors SPING Channels 02-07 and 02-09, based on the correct reactor building vent flow of 26,000 cfm. During the subsequent weeks, the inspectors addressed the fact that an early classification was not necessarily conservative as previously described by the licensee. The potential existed to increase risk to the public through an unnecessary general emergency declaration and subsequent protective action recommendation of evacuation. Because of the NRC value added to this issue, it was characterized as NRC-identified. The inspectors also determined that the cause of this issue was the 1980 evaluation of DCR 947 and failure

to update affected documents. It was not a failure of the EP change process as the identified concern in URI 05000305/2010005-05.

Analysis: The inspectors concluded that the failure to maintain in effect an EP that included a standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters from 1980 to December 2010 was a performance deficiency. This finding was determined to be more than minor because the deficiency, if left uncorrected, could have the potential to lead to a more significant safety concern. Specifically, in the event of a radiological emergency, the deficiency has the potential to increase the risk to the public through an unnecessary general emergency declaration and subsequent protective action recommendation of evacuation. Traditional enforcement does not apply because there were no actual safety consequences, the violation was not willful, and it did not impact the NRC's ability to regulate, because the inspectors were present and aware of the event. This finding was evaluated using IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," Sheet 1, "Failure to Comply." This finding is associated with a failure to meet or implement a regulatory requirement. The deficiency is not greater than Green because it did not result in the Risk-Significant Planning Standard Function being lost or degraded. No cross-cutting aspect is assigned to this finding because it is not indicative of current plant performance.

Enforcement: Title 10 CFR 50.54(q) requires that the facility licensee follow and maintain in effect EPs which meet the standards in 10 CFR 50.47(b). Title 10 CFR 50.47(b)(4) requires, in part, that emergency response plans include a standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters. Contrary to the above, in 1980, the licensee implemented DCR 947 and established inadequate EAL thresholds in the station's emergency classification and action level scheme. The licensee entered this issue into their CAP as CR356229 and has corrected the errant EAL thresholds in its emergency classification and action level scheme. Because this issue is of very low safety significance (Green) and has been entered into the licensee's CAP, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. (NCV 05000305/2011005-06), Incorrect Assumptions Used in the Development of EAL Thresholds). URI 05000305/2010005-05 is closed in Section 40A5 of this report.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on December 2, 2011, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the TSC to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the CAP. As part of the

inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report.

This emergency preparedness drill inspection constituted one sample as defined in IP 71114.06-05.

b. Findings

No findings were identified.

**2. RADIATION SAFETY**

2RS2 Occupational As-Low-As-Is-Reasonably-Achievable (ALARA) Planning and Controls (71124.02)

The inspection activities supplement those documented in Integrated Inspection Reports (IRs) 05000305/2010004 and 05000305/2011002, and constituted one complete sample as defined in IP 71124.02-05.

.1 Source Term Reduction and Control (02.04)

a. Inspection Scope

The inspectors used licensee records to determine the historical trends and current status of significant tracked plant source terms known to contribute to elevated facility aggregate exposure. The inspectors assessed whether the licensee had made allowances or developed contingency plans for expected changes in the source term as the result of changes in plant fuel performance issues or changes in plant primary chemistry.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

This inspection constituted one complete sample as defined in IP 71124.03-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the plant USAR to identify areas of the plant designed as potential airborne radiation areas and any associated ventilation systems or airborne monitoring instrumentation. Instrumentation review included continuous air monitors (continuous air monitors and particulate-iodine-noble-gas-type instruments) used to identify changing airborne radiological conditions such that actions to prevent an overexposure may be taken. The review included an overview of the respiratory protection program and a description of the types of devices used. The inspectors reviewed USAR, TS, and EP documents to identify location and quantity of respiratory protection devices stored for emergency use.

The inspectors reviewed the licensee's procedures for maintenance, inspection, and use of respiratory protection equipment including self-contained breathing apparatus as well as procedures for air quality maintenance.

The inspectors reviewed reported performance indicators (PIs) to identify any related to unintended dose resulting from intakes of radioactive material.

b. Findings

No findings were identified.

.2 Engineering Controls (02.02)

a. Inspection Scope

The inspectors reviewed the licensee's use of permanent and temporary ventilation to determine whether the licensee uses ventilation systems as part of its engineering controls (in-lieu of respiratory protection devices) to control airborne radioactivity.

The inspectors reviewed procedural guidance for use of installed plant systems, such as containment purge, spent fuel pool (SFP) ventilation, and auxiliary building ventilation, and assessed whether the systems are used, to the extent practicable, during high-risk activities (e.g., using containment purge during cavity flood-up).

The inspectors selected installed ventilation systems used to mitigate the potential for airborne radioactivity, and evaluated whether the ventilation airflow capacity, flow path (including the alignment of the suction and discharges), and filter/charcoal unit efficiencies, as appropriate, were consistent with maintaining concentrations of airborne radioactivity in work areas below the concentrations of an airborne area to the extent practicable.

The inspectors selected temporary ventilation system setups (high-efficiency particulate air/charcoal negative pressure units, down draft tables, tents, metal "Kelly buildings," and other enclosures) used to support work in contaminated areas. The inspectors assessed whether the use of these systems is consistent with licensee procedural guidance and ALARA concept.

The inspectors reviewed airborne monitoring protocols by selecting installed systems used to monitor and warn of changing airborne concentrations in the plant and evaluating whether the alarms and setpoints are sufficient to prompt licensee/worker action to ensure that doses are maintained within the limits of 10 CFR 20 and the ALARA concept.

The inspectors assessed whether the licensee had established trigger points (e.g., the Electric Power Research Institute's "Alpha Monitoring Guidelines for Operating Nuclear Power Stations") for evaluating levels of airborne beta-emitting (e.g., plutonium-241) and alpha-emitting radionuclides.

b. Findings

No findings were identified.

.3 Use of Respiratory Protection Devices (02.03)

a. Inspection Scope

For those situations where it is impractical to employ engineering controls to minimize airborne radioactivity, the inspectors assessed whether the licensee provided respiratory protective devices such that occupational doses are ALARA. The inspectors selected work activities where respiratory protection devices were used to limit the intake of radioactive materials, and assessed whether the licensee performed an evaluation concluding that further engineering controls were not practical and that the use of respirators is ALARA. The inspectors also evaluated whether the licensee had established means (such as routine bioassay) to determine if the level of protection (protection factor) provided by the respiratory protection devices during use was at least as good as that assumed in the licensee's work controls and dose assessment.

The inspectors assessed whether respiratory protection devices used to limit the intake of radioactive materials were certified by the National Institute for Occupational Safety and Health/Mine Safety and Health Administration or have been approved by the NRC per 10 CFR 20.1703(b). The inspectors selected work activities where respiratory protection devices were used. The inspectors evaluated whether the devices were used consistent with their National Institute for Occupational Safety and Health/Mine Safety and Health Administration certification or any conditions of their NRC approval.

The inspectors reviewed records of air testing for supplied-air devices and self-contained breathing apparatus bottles to assess whether the air used in these devices meets or exceeds Grade D quality. The inspectors reviewed plant breathing air supply systems to determine whether they meet the minimum pressure and airflow requirements for the devices in use.

The inspectors selected several individuals qualified to use respiratory protection devices, and assessed whether they have been deemed fit to use the devices by a physician.

Due to limited in-field observations, the inspectors reviewed training curricula for users of respiratory protection devices and requested a demonstration of device use (donning, doffing, functional checks, and device malfunction) from selected individuals.

The inspectors chose multiple respiratory protection devices staged and ready for use in the plant or stocked for issuance for use. The inspectors assessed the physical condition of the device components (mask or hood, harnesses, air lines, regulators, air bottles, etc.) and reviewed records of routine inspection for each. The inspectors selected several of the devices and reviewed records of maintenance on the vital components (e.g., pressure regulators, inhalation/exhalation valves, hose couplings). The inspectors assessed whether onsite personnel assigned to repair vital components have received vendor-provided training.

b. Findings

No findings were identified.

.4 Self-Contained Breathing Apparatus for Emergency Use (02.04)

a. Inspection Scope

Based on the USAR, TS, and emergency operating procedure requirements, the inspectors reviewed the status and surveillance records of self-contained breathing apparatuses staged in-plant for use during emergencies. The inspectors reviewed the licensee's capability for refilling and transporting self-contained breathing apparatus air bottles to and from the control room and operations support center during emergency conditions.

The inspectors selected several individuals on control room shift crews and from designated departments currently assigned emergency duties (e.g., onsite search and rescue duties) to assess whether control room operators and other emergency response and RP personnel (assigned in-plant search and rescue duties or as required by emergency operating procedures or the EP) were trained and qualified in the use of self-contained breathing apparatuses (including personal bottle change-out). The inspectors evaluated whether personnel assigned to refill bottles were trained and qualified for that task.

The inspectors determined whether appropriate mask sizes and types are available for use (i.e., in-field mask size and type match what was used in fit-testing). The inspectors determined whether on-shift operators had no facial hair that would interfere with the sealing of the mask to the face and whether vision correction (e.g., glasses inserts or corrected lenses) was available as appropriate.

The inspectors reviewed the past two years of maintenance records for select self-contained breathing apparatus units used to support operator activities during accident conditions and designated as "ready for service" to assess whether any maintenance or repairs on any self-contained breathing apparatus unit's vital components were performed by an individual, or individuals, certified by the manufacturer of the device to perform the work. The vital components typically are the pressure-demand air regulator and the low-pressure alarm. The inspectors reviewed the onsite maintenance procedures governing vital component work to determine any inconsistencies with the self-contained breathing apparatus manufacturer's recommended practices. For those self-contained breathing apparatuses designated as "ready for service," the inspectors determined whether the required, periodic air cylinder hydrostatic testing was documented and up-to-date, and the re-test air cylinder markings required by the U.S. Department of Transportation were in place.

b. Findings

No findings were identified.

.5 Problem Identification and Resolution (02.05)

a. Inspection Scope

The inspectors evaluated whether problems associated with the control and mitigation of in-plant airborne radioactivity were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee CAP.

The inspectors assessed whether the corrective actions were appropriate for a selected

sample of problems involving airborne radioactivity and were appropriately documented by the licensee.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04)

This inspection constituted one complete sample as defined in IP 71124.04-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the results of RP program audits related to internal and external dosimetry (e.g., licensee's quality assurance audits, self-assessments, or other independent audits) to gain insights into overall licensee performance in the area of dose assessment and focus the inspection activities consistent with the principle of "smart sampling."

The inspectors reviewed the most recent National Voluntary Laboratory Accreditation Program (NVLAP) accreditation report on the vendor's most recent results to determine the status of the contractor's accreditation.

A review was conducted of the licensee procedures associated with dosimetry operations, including issuance/use of external dosimetry (routine, multi-badging, extremity, neutron, etc.), assessment of internal dose (operation of whole body counter, assignment of dose based on derived air concentration-hours, urinalysis, etc.), and evaluation of and dose assessment for radiological incidents (distributed contamination, hot particles, loss of dosimetry, etc.).

The inspectors evaluated whether the licensee had established procedural requirements for determining when external and internal dosimetry is required.

b. Findings

No findings were identified.

.2 External Dosimetry (02.02)

a. Inspection Scope

The inspectors evaluated whether the licensee's dosimetry vendor is NVLAP accredited and if the approved irradiation test categories for each type of personnel dosimeter used are consistent with the types and energies of the radiation present and the way the dosimeter is being used (e.g., to measure deep dose equivalent, shallow dose equivalent, or lens dose equivalent).

The inspectors evaluated the onsite storage of dosimeters before their issuance, during use, and before processing/reading. The inspectors also reviewed the guidance provided to radiation workers with respect to care and storage of dosimeters.

The inspectors assessed whether non-NVLAP accredited passive dosimeters (e.g., direct ion storage sight read dosimeters) were used according to licensee procedures that provide for periodic calibration, application of calibration factors, usage, reading (dose assessment) and zeroing.

The inspectors assessed the use of active dosimeters (electronic personal dosimeters) to determine if the licensee uses a “correction factor” to address the response of the electronic personal dosimeter as compared to the passive dosimeter for situations when the electronic personal dosimeter must be used to assign dose and whether the correction factor is based on sound technical principles.

The inspectors reviewed dosimetry occurrence reports or CAP documents for adverse trends related to electronic personal dosimeters, such as interference from electromagnetic frequency, dropping or bumping, failure to hear alarms, etc. The inspectors assessed whether the licensee had identified any trends and implemented appropriate corrective actions.

b. Findings

Introduction: The inspectors identified that the licensee’s use of thermoluminescence dosimeters (TLDs) may not be consistent with the methods used by the NVLAP accreditation process. As a result, the inspectors identified a URI for the apparent noncompliance with 10 CFR 20.1501(c)(2) because the accreditation process for the types of radiation included in the NVLAP program may not approximate the types of radiations for which the individual wearing the TLD is monitored.

Discussion: The licensee used a vendor to supply and process dosimeters used to measure radiation exposure for the monitored workers. This vendor is NVLAP-accredited for beta, gamma, neutron, mixture of beta/gamma, and mixture neutron/gamma radiations. However, the licensee used the TLDs when workers may be exposed to beta, gamma, and neutron radiations within the same monitoring period. The inspectors determined that this mixture of three radiation types may not be aligned with the accreditation process.

The issue is categorized as a URI pending NRC evaluation of this practice and determination whether a single TLD can accurately measure occupational dose to three types of radiation (URI 05000305/2011005-07; Use of TLDs May Not Be Consistent With The Methods Used By The NVLAP Accreditation Process).

.3 Internal Dosimetry (02.03)

Routine Bioassay (In Vivo)

a. Inspection Scope

The inspectors reviewed procedures used to assess the dose from internally deposited nuclides using whole body counting equipment. The inspectors evaluated whether the procedures addressed methods for differentiating between internal and external contamination, the release of contaminated individuals, the route of intake and the assignment of dose.

The inspectors reviewed the whole body count process to determine if the frequency of measurements was consistent with the biological half-life of the nuclides available for intake.

The inspectors reviewed the licensee's evaluation for use of its portal radiation monitors as a passive monitoring system to determine if instrument minimum detectable activities were adequate to determine the potential for internally deposited radionuclides sufficient to prompt additional investigation.

The inspectors selected several whole body counts and evaluated whether the counting system used had sufficient counting time/low background to ensure appropriate sensitivity for the potential radionuclides of interest. The inspectors reviewed the radionuclide library used for the count system to determine its appropriateness. The inspectors evaluated whether any anomalous count peaks/nuclides indicated in each output spectra received appropriate disposition. The inspector's reviewed the licensee's 10 CFR 61 data analyses to determine whether the nuclide libraries included appropriate gamma-emitting nuclides. The inspectors evaluated how the licensee accounts for hard-to-detect nuclides in the dose assessment.

b. Findings

No findings were identified.

Special Bioassay (In Vitro)

a. Inspection Scope

There were no internal dose assessments obtained using in vitro monitoring for the inspectors to review. The inspectors reviewed and assessed the adequacy of the licensee's program for in vitro monitoring (i.e., urinalysis and fecal analysis) of radionuclides (tritium, fission products, and activation products), including collection and storage of samples.

The inspectors reviewed the vendor laboratory quality assurance program and assessed whether the laboratory participated in an industry recognized cross-check program including whether out-of-tolerance results were resolved appropriately.

b. Findings

No findings were identified.

Internal Dose Assessment – Airborne Monitoring

a. Inspection Scope

The inspectors reviewed the licensee's program for airborne radioactivity assessment and dose assessment, as applicable, based on airborne monitoring and calculations of derived air concentration. The inspectors determined whether flowrates and collection times for air sampling equipment were adequate to allow lower limits of detection to be obtained. The inspectors also reviewed the adequacy of procedural guidance to assess internal dose if respiratory protection was used.

b. Findings

No findings were identified.

Internal Dose Assessment – Whole Body Count Analyses

a. Inspection Scope

The inspectors reviewed several dose assessments performed by the licensee using the results of whole body count analyses. The inspectors determined whether affected personnel were properly monitored with calibrated equipment and that internal exposures were assessed consistent with the licensee's procedures.

b. Findings

No findings were identified.

.4 Special Dosimetric Situations (02.04)

Declared Pregnant Workers

a. Inspection Scope

The inspectors assessed whether the licensee informs workers, as appropriate, of the risks of radiation exposure to the embryo/fetus, the regulatory aspects of declaring a pregnancy, and the specific process to be used for (voluntarily) declaring a pregnancy.

The inspectors selected individuals who had declared pregnancy during the current assessment period and evaluated whether the licensee's radiological monitoring program (internal and external) for declared pregnant workers is technically adequate to assess the dose to the embryo/fetus. The inspectors reviewed exposure results and monitoring controls employed by the licensee and with respect to the requirements of 10 CFR 20.

b. Findings

No findings were identified.

Dosimeter Placement and Assessment of Effective Dose Equivalent for External Exposures

a. Inspection Scope

The inspectors reviewed the licensee's methodology for monitoring external dose in non-uniform radiation fields or where large dose gradients exist. The inspectors evaluated the licensee's criteria for determining when alternate monitoring, such as use of multi-badging, was to be implemented.

The inspectors reviewed dose assessments performed using multi-badging to evaluate whether the assessment was performed consistently with licensee procedures and dosimetric standards.

b. Findings

No findings were identified.

Shallow Dose Equivalent

a. Inspection Scope

The inspectors reviewed shallow dose equivalent dose assessments for adequacy. The inspectors evaluated the licensee's method (e.g., VARSKIN or similar code) for calculating shallow dose equivalent from distributed skin contamination or discrete radioactive particles.

b. Findings

No findings were identified.

Neutron Dose Assessment

a. Inspection Scope

The inspectors evaluated the licensee's neutron dosimetry program, including dosimeter types and/or survey instrumentation.

The inspectors reviewed neutron exposure situations (e.g., independent spent fuel storage installation operations or at-power containment entries) and assessed whether: (a) dosimetry and/or instrumentation were appropriate for the expected neutron spectra; (b) there was sufficient sensitivity for low dose and/or dose rate measurement; and (c) neutron dosimetry was properly calibrated. The inspectors also assessed whether interference by gamma radiation had been accounted for in the calibration and whether time and motion evaluations were representative of actual neutron exposure events, as applicable.

b. Findings

No findings were identified.

Assigning Dose of Record

a. Inspection Scope

For the special dosimetric situations reviewed in this section, the inspectors assessed how the licensee assigns dose of record for total effective dose equivalent, shallow dose equivalent, and lens dose equivalent. This included an assessment of external and internal monitoring results, supplementary information on individual exposures (e.g., radiation incident investigation reports and skin contamination reports), and radiation surveys and/or air monitoring results when dosimetry was based on these techniques.

b. Findings

No findings were identified.

.5 Problem Identification and Resolution (02.05)

a. Inspection Scope

The inspectors assessed whether problems associated with occupational dose assessment are being identified by the licensee at an appropriate threshold and are properly addressed for resolution in the licensee's CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee involving occupational dose assessment.

b. Findings

No findings were identified.

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08)

This inspection constituted one complete sample as defined in IP 71124.08-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the solid radioactive waste system description in the USAR, the process control program, and the recent radiological effluent release report for information on the types, amounts, and processing of radioactive waste disposed.

The inspectors reviewed the scope of any quality assurance audits in this area since the last inspection to gain insights into the licensee's performance and inform the "smart sampling" inspection planning.

b. Findings

No findings were identified.

.2 Radioactive Material Storage (02.02)

a. Inspection Scope

The inspectors selected areas where containers of radioactive waste are stored, and evaluated whether the containers were labeled in accordance with 10 CFR 20.1904, "Labeling Containers," or controlled in accordance with 10 CFR 20.1905, "Exemptions to Labeling Requirements," as appropriate.

The inspectors assessed whether the radioactive material storage areas were controlled and posted in accordance with the requirements of 10 CFR 20, "Standards for Protection against Radiation." For materials stored or used in the controlled or unrestricted areas, the inspectors evaluated whether they were secured against unauthorized removal and controlled in accordance with 10 CFR 20.1801, "Security of Stored Material," and 10 CFR 20.1802, "Control of Material Not in Storage," as appropriate.

The inspectors evaluated whether the licensee established a process for monitoring the impact of long term storage (e.g., buildup of any gases produced by waste

decomposition, chemical reactions, container deformation, loss of container integrity, or re-release of free-flowing water) that was sufficient to identify potential unmonitored, unplanned releases or nonconformance with waste disposal requirements.

The inspectors selected containers of stored radioactive material, and assessed for signs of swelling, leakage, and deformation.

b. Findings

No findings were identified.

.3 Radioactive Waste System Walkdown (02.03)

a. Inspection Scope

The inspectors walked down accessible portions of select radioactive waste processing systems to assess whether the current system configuration and operation agreed with the descriptions in the USAR, ODCM, and process control program.

The inspectors reviewed administrative and/or physical controls (i.e., drainage and isolation of the system from other systems) to assess whether the equipment which is not in service or abandoned in place would not contribute to an unmonitored release path and/or affect operating systems or be a source of unnecessary personnel exposure. The inspectors assessed whether the licensee reviewed the safety significance of systems and equipment abandoned in place in accordance with 10 CFR 50.59, "Changes, Tests, and Experiments."

The inspectors reviewed the adequacy of changes made to the radioactive waste processing systems since the last inspection. The inspectors evaluated whether changes from what is described in the USAR were reviewed and documented in accordance with 10 CFR 50.59 as appropriate, and to assess the impact on radiation doses to members of the public.

The inspectors selected processes for transferring radioactive waste resin and/or sludge discharges into shipping/disposal containers, and assessed whether the waste stream mixing, sampling procedures, and methodology for waste concentration averaging were consistent with the process control program, and provided representative samples of the waste product for the purposes of waste classification as described in 10 CFR 61.55, "Waste Classification."

For those systems that provide tank recirculation, the inspectors evaluated whether the tank recirculation procedures provided sufficient mixing.

The inspectors assessed whether the licensee's process control program correctly described the current methods and procedures for dewatering and waste stabilization (e.g., removal of freestanding liquid).

b. Findings

No findings were identified.

.4 Waste Characterization and Classification (02.04)

a. Inspection Scope

The inspectors selected the following radioactive waste streams for review:

- resin;
- SFP filter; and
- dry active waste.

For the waste streams listed above, the inspectors assessed whether the licensee's radiochemical sample analysis results (i.e., a 10 CFR 61 analysis) were sufficient to support radioactive waste characterization as required by 10 CFR 61, "Licensing Requirements for Land Disposal of Radioactive Waste." The inspectors evaluated whether the licensee's use of scaling factors and calculations to account for difficult-to-measure radionuclides was technically sound and based on current 10 CFR 61 analyses for the selected radioactive waste streams.

The inspectors evaluated whether changes to plant operational parameters were taken into account to: (1) maintain the validity of the waste stream composition data between the annual or biennial sample analysis update; and (2) assure that waste shipments continued to meet the requirements of 10 CFR 61 for the waste streams selected above.

The inspectors evaluated whether the licensee had established and maintained an adequate quality assurance program to ensure compliance with the waste classification and characterization requirements of 10 CFR 61.55 and 10 CFR 61.56, "Waste Characteristics."

b. Findings

No findings were identified.

.5 Shipment Preparation (02.05)

a. Inspection Scope

The inspectors observed shipment packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifest, shipping papers provided to the driver, and licensee verification of shipment readiness. The inspectors assessed whether the requirements of applicable transport cask certificate of compliance had been met. The inspectors evaluated whether the receiving licensee was authorized to receive the shipment packages. The inspectors evaluated whether the licensee's procedures for cask loading and closure procedures were consistent with the vendor's current approved procedures.

The inspectors assessed whether the shippers were knowledgeable of the shipping regulations and whether shipping personnel demonstrated adequate skills to accomplish the package preparation requirements for public transport with respect to:

- the licensee's response to NRC Bulletin 79-19, "Packaging of Low-Level Radioactive Waste for Transport and Burial," dated August 10, 1979;

- Title 49 CFR 172, “Hazardous Materials Table, Special Provisions, Hazardous Materials Communication, Emergency Response Information, Training Requirements, and Security Plans,” Subpart H, “Training.”

Due to limited opportunities for direct observation, the inspectors reviewed the technical instructions presented to workers during routine training. The inspectors assessed whether the licensee’s training program provided training to personnel responsible for the conduct of radioactive waste processing and radioactive material shipment preparation activities.

b. Findings

No findings were identified.

.6 Shipping Records (02.06)

a. Inspection Scope

The inspectors evaluated whether the shipping documents indicated the proper shipper name; emergency response information and a 24-hour contact telephone number; accurate curie content and volume of material; and appropriate waste classification, transport index, and UN number for the following radioactive shipments:

- Shipment 101909-1; Areva equipment, October 19, 2009;
- Shipment 051310-1; incore detectors, May 13, 2010;
- Shipment 1059-C-0002; resin liner, April 5, 2011; and
- Shipment 092309-1; SFP trash, September 23, 2009.

Additionally, the inspectors assessed whether the shipment placarding was consistent with the information in the shipping documentation.

b. Findings

No findings were identified.

.7 Identification and Resolution of Problems (02.07)

a. Inspection Scope

The inspectors assessed whether problems associated with radioactive waste processing, handling, storage, and transportation, were being identified by the licensee at an appropriate threshold, were properly characterized, and were properly addressed for resolution in the licensee CAP. Additionally, the inspectors evaluated whether the corrective actions were appropriate for a selected sample of problems documented by the licensee that involve radioactive waste processing, handling, storage, and transportation.

The inspectors reviewed results of selected audits performed since the last inspection of this program and evaluated the adequacy of the licensee’s corrective actions for issues identified during those audits.

b. Findings

No findings were identified.

**4. OTHER ACTIVITIES**

**Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness**

4OA1 Performance Indicator (PI) Verification (71151)

.1 Reactor Coolant System Leakage

a. Inspection Scope

The inspectors sampled licensee submittals for the RCS Leakage performance indicator for the period from the third quarter 2010 through the third quarter 2011. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's operator logs, RCS leakage tracking data, CRs, event reports, and NRC Integrated Inspection Reports (IRs) for the period of the third quarter 2010 through the third quarter 2011 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CAP to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one reactor coolant system leakage sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Safety System Functional Failures

a. Inspection Scope

The inspectors sampled licensee submittals for the Safety System Functional Failures PI for the period from the fourth quarter 2010 through the third quarter 2011. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73" to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's operator narrative logs, operability assessments, maintenance rule records, maintenance WOs, CRs, and event reports for the period from the fourth quarter 2010 through the third quarter 2011 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CAP to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one safety system functional failures sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors sampled licensee submittals for the RCS specific activity PI for KPS for the period from the fourth quarter 2010 through the third quarter 2011. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's RCS chemistry samples, TS requirements, CRs, event reports and NRC Integrated IRs for the period from the fourth quarter 2010 through the third quarter 2011 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CAP to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze an RCS sample. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one reactor coolant system specific activity sample as defined in IP 71151 05.

b. Findings

No findings were identified.

.4 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals for the occupational radiological occurrences PI for the period from the fourth quarter 2010 through the third quarter 2011. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's assessment of the PI for occupational radiation safety to determine if indicator related data was adequately assessed and reported. To assess the adequacy of the licensee's PI data collection and analyses, the inspectors discussed with RP staff, the scope and breadth of its data review and the results of those reviews. The inspectors independently reviewed electronic personal dosimetry dose rate and accumulated dose alarms and dose reports and the dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized occurrences. The inspectors also conducted walkdowns of numerous locked high and very high radiation area entrances to determine the adequacy of the controls in place for these areas. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one occupational exposure control effectiveness sample as defined in IP 71151-05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

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

.1 Routine Review of Items Entered into the 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: the complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's CAP as a result of the inspectors' observations are listed 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

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 KPS daily CR packages.

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

b. Findings

No findings were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in Section 40A2.2, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the 6-month period of May 2011 through November 2011, although some examples expanded beyond those dates where the scope of the trend warranted.

The review also included issues documented outside the normal CAP in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's CAP trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

The inspectors reviewed a previous human performance trend, the failure to follow procedures, to determine the effectiveness of corrective actions. During this period, many departments through their Department Self Assessment Meetings (DSEMs) reported a stable or improving trend in document quality, procedure use, or procedure adherence; however, Operations Department initiated action to place procedure use and adherence into a Performance Improvement Item and to develop an improvement plan. Additionally, some departments have identified a related human performance issue, clear communications, as requiring either monitoring or performance improvement. The inspectors will be reviewing the effectiveness of corrective actions in these two areas during future inspections.

This review constituted a single semi-annual trend inspection sample as defined in IP 71152-05.

b. Findings

No findings were identified.

.4 Annual Sample: Review of Operator Workarounds

a. Inspection Scope

The inspectors evaluated the licensee's implementation of their process used to identify, document, track, and resolve operational challenges. Inspection activities included, but were not limited to, a review of the cumulative effects of the operator workarounds (OWAs) on system availability and the potential for improper operation of the system, for

potential impacts on multiple systems, and on the ability of operators to respond to plant transients or accidents.

The inspectors performed a review of the cumulative effects of OWAs. The documents listed in the Attachment to this report were reviewed to accomplish the objectives of the inspection procedure. The inspectors reviewed both current and historical operational challenge records to determine whether the licensee was identifying operator challenges at an appropriate threshold, had entered them into their CAP and proposed or implemented appropriate and timely corrective actions which addressed each issue. Reviews were conducted to determine if any operator challenge could increase the possibility of an Initiating Event, if the challenge was contrary to training, required a change from long-standing operational practices, or created the potential for inappropriate compensatory actions. Additionally, all temporary modifications were reviewed to identify any potential effect on the functionality of MS, impaired access to equipment, or required equipment uses for which the equipment was not designed. Daily plant and equipment status logs, degraded instrument logs, and operator aids or tools being used to compensate for material deficiencies were also assessed to identify any potential sources of unidentified OWAs.

This review constituted one operator workaround annual inspection sample as defined in IP 71152-05.

b. Findings

No findings were identified.

.5 Selected Issue Follow-Up Inspection: Repetitive Problems with Primary Sampling Valve Closure Timing

a. Inspection Scope

During the routine reviews of items entered in the licensee's CAP, the inspectors recognized multiple corrective action items documenting the failure of RC-423, Reactor Coolant System Hot Leg Primary Sample Valve to close within the TS-required time. The licensee's initial conclusion was that the valve position indication for RC-423 was not functioning properly. After the licensee experienced additional timing problems following adjustments to the position indication components, the licensee recommenced the troubleshooting process. The inspectors' review assessed the effectiveness of the licensee's corrective actions.

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

b. Findings

The inspectors concluded that one licensee-identified design control violation existed, which is documented in Section 4OA7.

.6 Selected Issue Follow-Up Inspection Associated with TI 2515/177, “Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems”

a. Inspection Scope and Documentation

The inspectors reviewed a sample of selected issues associated with gas accumulation identified by the licensee, which had been entered into the CAP. The inspectors reviewed these issues to verify an appropriate threshold for identifying issues and to evaluate the effectiveness of corrective actions related to gas intrusion. In addition, the inspectors verified the selected CAP entry acceptably addressed the areas of concern associated with the scope of NRC GL 2008-01, “Managing Gas Accumulation In Emergency Core Cooling, Decay Heat Removal, And Containment Spray Systems.” Also, additional activities were performed during this review associated with TI 2515/177. These activities are described in Section 4OA5 of this report.

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

b. Findings

No findings were identified.

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

.1 Event Notification 47476: 4160-Volt Alternating Current Busses Declared Inoperable

a. Inspection Scope

The inspectors reviewed the plant’s response to a November 24, 2011, event in which the licensed operators declared both 4160-Volt alternating current (AC) busses inoperable due to voltages being high outside of the procedurally directed band. While the control board indications for SR Busses 5 and 6 indicated less than 4400 Volts, a laptop installed as part of Temporary Modification TMOD-2011-05 that more accurately measured voltage at the back of the meter indicated values that were out of the specified range prescribed in Procedure OP-KW-OSP-MISC-002, Attachment D. As a result, at 3:15 a.m., the operators declared Busses 5 and 6 inoperable per TS 3.8.9, declared offsite power sources as inoperable per TS 3.8.1, and entered the requirements of TS 3.0.3, which required action to commence a unit shutdown within one hour if operability could not be restored. At 4:10 a.m., the load tap changers for the supply transformers to Busses 5 and 6 were adjusted to reduce the emergency bus voltages to within their procedurally required operating bands and the aforementioned TSs were exited.

As part of the review, the inspectors reviewed control room logs and available indications, interviewed operations staff onshift during the event, and reviewed operations procedures and engineering technical evaluations. At the end of the inspection period, the licensee continued to conduct a root cause evaluation. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report (LER) 05000305/2011-006-00: Misapplication of Testing Allowance Results in Condition Prohibited by Technical Specifications

This event, which occurred on August 30, 2011, involved the inspectors' identification that the licensee misapplied a TS note for TS Limiting Condition for Operation 3.1.6. The facts surrounding this event and the performance deficiency identified by the inspectors were previously documented in Section 1R22.1 of NRC Integrated IR 05000305/2011004. The inspectors did not identify any new performance deficiencies in the review of the subject LER. Documents reviewed are listed in the Attachment to this report. This LER is closed.

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

40A5 Other Activities

.1 (Closed) Unresolved Item (URI) 05000305/2011004-04: Inconsistent Maintenance Rule Evaluations Performed on Containment Isolation Valves

The licensee's review of the inspectors' concern found that previous evaluations were inconsistent in classifying Valves LD-4A, LD-4B, and LD-4C as high risk-significant or low risk-significant. The licensee's containment isolation maintenance rule system basis document was incorrect; and 2-inch CIVs should be classified as low risk-significant, which is consistent with the KPS probabilistic risk assessment notebook. The inspectors also identified that the difference in component risk significance would not have changed the functional failure assessments for the valves. Lastly, for the maintenance rule evaluation that was not performed, the total containment penetration leakage following the as found test failure was below the licensee requirement to perform a maintenance rule evaluation. The inspectors determined that no performance deficiency existed; therefore, this URI is considered closed.

.2 (Closed) URI 05000305/2010005-05: Changes to Reactor Building Ventilation Flow Rates Potentially Decreases the Effectiveness of the Plan Without Prior NRC Approval

This URI was opened in the fourth quarter of 2010 by the inspectors. Additional inspection and documentation of a performance deficiency for this URI is documented in Section 1EP5.1 of this report. Therefore, this URI is considered closed.

.3 (Closed) URI 05000305/2011003-07: Potential Internal Flood Scenario Due to Postulated Loss of the Technical Support Center

This URI was opened in the second quarter of 2011 by the inspectors. Additional inspection and documentation of a performance deficiency for this URI is documented in Section 1RO6.1 of this report. Therefore, this URI is closed.

.4 (Closed) URI 05000305/2011003-06: Kewaunee Condensate Storage Tank Minimum Volume Analysis

The inspectors determined that the required minimum usable volume that is contained in TS is a bounding and conservative value. The inspectors reviewed the KPS TS bases prior to the licensee's transition to Improved TSs, as well as tank calculations and recent volume diagrams, specifically for Station Blackout (SBO), and noted a difference between the calculational analysis and the TS Surveillance Requirement for the minimum usable volume in the condensate storage tank (CST). In addition, the inspectors reviewed the USAR and safety evaluation reports (SERs) that documented the licensee's transition to TS and the agency's acceptance of the licensing basis changes. In response to this issue, NRR staff concluded that because the language in the November 20, 1990, SER didn't require the licensee to update the CST volume verified by the TS Surveillance Requirement to ensure the SBO coping time is met and is consistent with the TS Surveillance Requirement value, the evaluations that documented the apparent inconsistency between TS and the SBO procedure required volumes were acceptable.

The inspectors consulted the previous and current Kewaunee Project Managers, TS Branch staff, and Balance of Plant Branch staff in NRR regarding the licensing basis for the minimum usable volume requirement for the CST. The NRR staff confirmed that the current TS SR for CST level/volume of 41,500 gallons met the regulatory requirement for the TS and was consistent with the SBO licensing basis, minimum volume requirement for reactor decay heat removal for the four hour coping period. The licensee performed evaluation CA200851 to establish the basis for the actual volume required for the station blackout coping period, to ensure the CST inventory is administratively controlled such that the SBO required volume of approximately 60,000 gallons is maintained available.

The inspectors determined that no performance deficiency existed; therefore, this URI is closed.

.5 (Closed) NRC TI 2515/177, "Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter 2008-01)"

a. Inspection Scope

The inspectors verified that the onsite documentation, system hardware, and licensee actions were consistent with the information provided in the licensee's response to GL 2008-01, "Managing Gas Accumulation in Emergency Core Cooling (ECCS), Decay Heat Removal (DHR), and Containment Spray (CS) Systems." Specifically, the inspectors verified that the licensee had implemented or was in the process of implementing the commitments, modifications, and programmatically controlled actions described in the licensee's response to GL 2008-01. The inspection was conducted in accordance with TI 2515/177, "Managing Gas Accumulation in ECCS, DHR, and CS Systems (NRC GL 2008-01)," and considered the site-specific supplemental information provided by Office of Nuclear Reactor Regulations (NRR) to the inspectors.

Documents reviewed are listed in the Attachment to this report.

b. Inspection Documentation

The selected TI areas of inspection were licensing basis, design, testing, and corrective actions. The documentation of the inspection effort and any resulting observations are below.

- (1) Licensing Basis: The inspectors reviewed selected portions of licensing basis documents to verify they were consistent with the NRR assessment report and they were processed by the licensee. This review included a verification of selected portions of TS, TS basis, USAR, and Technical Requirements Manual (TRM). The inspectors also verified the applicable documents that described the plant and plant operation, such as calculations, piping and instrumentation diagrams (P&IDs), procedures, and CAP documents, addressed the areas of concern and were revised, if needed, following plant changes.

The inspectors also confirmed the frequency of selected surveillance procedures were at least as frequent as required by the TRM. The inspectors also confirmed the licensee's CAP captured the commitment to monitor the status of the industry Technical Specifications Task Force (TSTF) traveler to be developed as a follow up to GL 2008-01 and evaluate supplementing or replacing TS or TRM within 12 months of NRC approval of the TSTF. This commitment was captured in the CAP as LA001171.

The inspectors also conducted licensing basis verification in an earlier inspection period associated with a number of corrective action items documenting various issues regarding monthly ECCS venting and ultrasonic testing (UT) examinations. This additional activity counted towards the completion of this TI and was documented in IR 05000305/2010005.

- (2) Design: The inspectors reviewed selected design documents, performed system walkdowns, and interviewed plant personnel to verify the design and operating characteristics were addressed by the licensee. Specifically:

- (a) The inspectors assessed the licensee's efforts for identifying the applicable gas intrusion mechanisms and noted an example where the licensee failed to recognize a gas intrusion mechanism. Specifically, the procedures used during reduced inventory operations did not contain appropriate instructions to preclude air entrainment into the RHR and RCS. Specifically, the procedures relied on a graph that related decay heat removal (DHR) flow-rates and reactor vessel level that permitted 2 percent to 5 percent air entrainment. In addition, the licensee had not accounted for instrument uncertainties. The details and enforcement of this issue are discussed in Section 4OA5.5.c(1) of this report.

Additional activities were performed during these reviews that were associated with IP 71111.18, "Plant Modifications." These additional activities are described in Section 1R18 of this report. The inspectors also verified the licensee had identified the gas intrusion mechanisms associated with operability evaluations OD-198, "Gas Void Found in RHR Pump 'A' Minimum Flow Recirculation Line," and OD-201, "Gas Void Found in SI Pump Bypass/Flushing Line," in an earlier inspection period. These additional activities counted towards the completion of this TI and were documented in IR 05000305/2010004.

- (b) The inspectors assessed if the licensee's void acceptance criteria was consistent with NRR's void acceptance criteria and noted the following:
- (i) The licensee did not have a basis for the void acceptance criterion used for design purposes. The licensee's nine-month response to GL 2008-01 stated void volumes of less than 0.01 cubic feet were considered negligible. The inspectors noted the licensee used this value as a generic acceptance criterion for design unless a less restrictive value was determined to be acceptable by a high point-specific analysis. The inspectors were concerned because the lack of calculations to support the generic acceptance criterion does not ensure the surveillance activities demonstrate the design basis and specified functions of the system are met and that locations excluded from periodic monitoring based on the generic criterion have been adequately managed with respect to gas accumulation. As a result, the licensee performed an evaluation using the NRR's methodology for establishing void acceptance criteria and determined the most limiting acceptance criterion was 0.012 cubic feet, which is slightly less restrictive than the generic 0.01 cubic feet criterion. Therefore, this issue was determined to be a minor design control deficiency and was captured in the licensee's CAP as CR453323.
  - (ii) The licensee incorrectly translated the industry interim pump gas ingestion criteria provided by EC-1866, "Pump Interim Gas Ingestion Tolerance Criteria," into the station's nine-month response to GL 2008-01 and Technical Report ME-0181, "Evaluation of Gas Accumulation in ECCS, CS and RHR Systems for GL 2008-01." Specifically, the licensee did not translate the limitations of the acceptance criteria with respect to pump operation with respect to rated performance. The inspectors were concerned because the licensee relied in these criteria to determine system operability following the discovery of a void that exceeded the design acceptance criterion (e.g., a void greater than 0.01 cubic feet). As a result, the licensee reviewed operability determinations of voids found to exceed the design acceptance criterion and concluded the applicable flow ranges were within the applicability limitations of the interim pump gas ingestion criteria. The inspectors performed an independent review and noted the flow-rates were expected to gradually increase from values that would not result in void transport to values sufficient to transport the voids to the pump. Therefore, the entire void volumes were not expected to transport all at once. As a result, this issue was determined to be a minor design control deficiency and was captured in the CAP as CR455364.
  - (iii) The inspectors confirmed the licensee's CAP captured the commitment to monitor the results of industry testing and analytical programs related to gas accumulation and pump suction acceptance criteria to determine if any changes to licensing basis documents are required. This commitment was captured in the CAP as LA001172. In addition, the inspectors noted the CAP was tracking an action to update the suction void acceptance criteria contained in Technical Report ME-0181 with the more recent guidance given in NEI 09-10, "Guidelines for Effective Prevention and Management of System Gas Accumulation." This action was captured in the CAP as CR415404.

The inspectors also reviewed the void acceptance criteria used by the licensee in operability evaluations OD-198, "Gas Void Found in RHR Pump A Minimum Flow Recirculation Line," and OD-201, "Gas Void Found in SI Pump Bypass/Flushing Line," in an earlier inspection period. These additional activities counted towards the completion of this TI and were documented in IR 05000305/2010004.

- (c) The inspectors reviewed selected documents, including calculations, and engineering evaluations, with respect to gas accumulation in the subject systems. Specifically, the inspectors verified these documents addressed venting requirements, void control during system realignments, and the effect of debris on strainers in containment emergency sumps causing accumulation of gas under the upper elevation of strainers and the impact on net positive suction head (NPSH) requirements.
- (d) The inspectors conducted a walkdown of selected regions of SI in sufficient detail to assess the licensee's walkdowns. The inspectors also verified the information obtained during the licensee's walkdown was consistent with the items identified during the inspector's independent walkdown. The inspectors also assessed if the P&IDs accurately described the subject systems and were up-to-date with respect to recent hardware changes. In addition, the inspectors assessed if the licensee had isometric drawings to describe the configurations of the GL 2008-01 scoped systems and had confirmed the accuracy of the drawings.

Additional activities were performed during this system walkdown that were associated with IP 71111.04, "Equipment Alignment." These additional activities are described in Section 1R04 of this report. The inspectors also conducted a similar walkdown of selected portions of RHR in earlier inspection periods. These additional activities counted towards the completion of this TI and were documented in IRs 05000305/2009005 and 05000305/2010005.

- (e) The inspectors verified licensee's walkdowns have been completed and locations that were physically inaccessible (e.g., segments of piping within walls) were evaluated. In addition, the inspectors selectively verified information obtained during the licensee's walkdowns were addressed in procedures, the CAP, and training documents.
- (3) Testing: The inspectors reviewed selected surveillance and PMT procedures and results to assess if the licensee approved and was using procedures that were adequate to address the issue of gas accumulation and/or intrusion in the subject systems. Specifically:
- (a) The inspectors reviewed procedures used for conducting void periodic monitoring and determination of void volumes to ensure that the void criteria was satisfied and will be reasonably ensured to be satisfied until the next scheduled void surveillance. The inspectors noted an example where the void monitoring program was deficient. Specifically, the inspectors identified several instances where the quarterly pump surveillance of SI Train B occurred just before the monthly gas monitoring surveillance of the discharge of the SI system. The inspectors were concerned because this practice was considered preconditioning. Specifically, the pump surveillance used flow-rates sufficient to flush any voids that could be present in its flow path affecting the as-found

condition of the gas monitoring surveillance. This issue was determined to be a minor test control deficiency because the gas monitoring results in-between pump surveillances provided reasonable assurance that gas was not accumulating in the flow path of the pump surveillance and an adverse trend was not identified. This issue was captured in the CAP as CR454722.

- (b) The inspectors reviewed selected procedures used for void control, such as filling and venting, following conditions which may have introduced voids into the subject systems to verify the procedures addressed testing for such voids and provided processes for their reduction or elimination. The inspectors noted the following examples where the void control program was deficient.
  - (i) The licensee used a Froude number value to evaluate the acceptability of flowrates used during dynamic venting that was lower than current industry and NRC guidance. This was a concern because the Froude number value used was not high enough to ensure the voids would be flushed out of the system. As a result, the licensee evaluated the existing margin and concluded the flow-rates used during dynamic vents met current Froude number values acceptable for flushing. Therefore, this issue was determined to be a minor deficiency and was captured in the CAP as CR453180.
  - (ii) The licensee established in DCR-3750, "GL 2008-01, Gas Accumulation Venting and Risk Mitigation Capabilities for SI, RHR and ICS," that tubing vent extensions were limited to a maximum of 50 feet of length to ensure adequate flow to sweep the voids. However, the inspectors noted this restriction was not translated into all the applicable procedures. This issue was determined to be a minor procedure deficiency because the tubing vent extensions installed at the time of this inspection did not exceed the 50-foot limit. This issue was captured in the CAP as CR453154.

The inspectors also review selected portions of procedures used during a surveillance testing of RHR in an earlier inspection period. This additional activity counted towards the completion of this TI and was documented in IR 05000305/2010005.

- (4) Corrective Actions: The inspectors reviewed selected licensee's assessment reports and CAP documents to assess the effectiveness of the licensee's CAP when addressing the issues associated with GL 2008-01. The licensee's self-assessment conducted in preparation for this inspection identified the following deficiencies:
  - (a) The licensee did not have an implementing program procedure for gas accumulation management to provide a comprehensive view on how the program was structured. For instance, the licensee's method for assessing periodic monitoring frequency was not controlled by procedures. However, the inspectors noted examples where engineering personnel assessed and implemented more restrictive gas monitoring frequencies on a case-by-case basis. This minor licensee-identified deficiency was captured in the CAP as CRs 450309 and 450307.
  - (b) The licensee was not trending void sizes obtained during periodic monitoring using a systematic process. Specifically, when a void was detected at a location,

the licensee reviewed CAP documents for voids found previously at the same location. However, this practice did not facilitate an effective understanding of the void accumulation history in order to preemptively identify degrading conditions. This minor licensee-identified deficiency was captured in the CAP as CR450313.

- (c) The February 2011 revision of procedure GNP-08.02.12, "Post Maintenance Testing/Operations Retest," removed a step used to implement licensee's commitment to the NRC to verify the fill and vent activity following maintenance was successful. The inspectors reviewed the completed maintenance packages for the affected time period and found UTs were performed for all of the affected maintenance activities. Therefore, this licensee-identified issue was determined to be a minor procedure deficiency, and was captured in the CAP as CR454722.

In addition, the inspectors verified that selected corrective actions identified in the licensee's 9-month and supplemental reports were documented. The inspectors also verified commitments were included in the CAP.

Additional activities were performed during these reviews that were associated with IP 71152, "Identification and Resolution of Problems." These additional activities are described in Section 4OA2 of this report. The inspectors also conducted a similar review of CAP documents in an earlier inspection period. This additional activity counted towards the completion of this TI and was documented in IR 05000305/2010005.

Based on this review, the inspectors concluded there is reasonable assurance that the licensee will complete all outstanding items and incorporate this information into the design basis and operational practices. Therefore, this TI is closed

c. Findings

(1) Procedures for Reduced Inventory Operations Were Not Appropriate to Preclude Air Entrainment

Introduction: A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors for the failure to establish procedures for reduced inventory operations that were appropriate to manage gas accumulation. Specifically, the procedures did not preclude air entrainment into RHR and RCS.

Description: On July 9, 1987, the NRC issued GL 87-12, "Loss of RHR While the RCS Is Partially Filled," to communicate the lessons learned from the April 10, 1987, Diablo Canyon loss-of-RHR event. Among the lessons learned, the GL discussed vortexing and air ingestion from the RCS into the RHR suction line while in reduced inventory operations. Specifically, it stated the Diablo Canyon RHR pumps exhibited erratic current indications and stated the condition was terminated by increasing RCS level. In addition, the GL stated additional phenomena appeared to occur under air ingestion conditions. Specifically, the RHR pumps were reported to handle several percent air with no discernible flow or pump current change from that of single-phase operation while the RCS level was observed to increase after it was lowered. The GL explained the later observation by postulating that air in the RHR and RCS can migrate causing unexpected level changes and noted failure to understand such behavior could lead

operators to mistrust level instrumentation and to perform operational errors. In the GL 87-12, the NRC requested the licensee to provide a description of the operation of the plant during the approach to a partially filled RCS condition and during operation with a partially filled RCS. On September 18, 1987, the licensee responded by stating, in part, procedures used for reduced inventory operations included flow limitations and cautions to compare the readings on the different instruments measuring RCS parameters. The description of the procedures also included guidance to maintain RCS indicated level between 10.2 percent and 11.2 percent. In addition, the licensee stated procedures contained guidance to recognize and respond to pump cavitation.

On October 17, 1988, the NRC issued GL 88-17, "Loss of DHR," in response to subsequent similar industry events associated with loss of DHR during nonpower operations. This GL provided a number of recommendations to address deficiencies in procedures, hardware, and training. In addition, it requested each addressee to provide a description to the NRC of the actions taken (i.e., expeditious actions) and future enhancements (i.e., program enhancements) to implement these recommendations. On January 3, 1989, the licensee provided their response addressing the GL 88-17 expeditious actions. It stated, in part, training to operators will include maximum recommended RHR flow-rates versus RCS levels to avoid air entrainment and possible vortex formation. On February 2, 1989, the licensee provided their response addressing the GL 88-17 program enhancements. It stated, in part, the instruction contained in procedures included provisions such that "The total RHR system flowrate must not exceed the recommended flowrate in order to avoid air ingestion."

On January 11, 2008, the NRC requested each addressee of GL 2008-01 to evaluate its ECCS, DHR, and containment systems licensing basis, design, testing, and corrective actions, to ensure gas accumulation was maintained less than the amount that would challenge the operability of these systems, and take appropriate actions when conditions adverse to quality were identified. Vortexing was identified in GL 2008-01 as a gas intrusion mechanism. In addition, GL 2008-01 included GL 88-17 in its list of related generic communications. As a result, the licensee performed Technical Report ME-0181 to evaluate the design and operation of the systems identified in GL 2008-01 for their susceptibility to gas accumulation. However, although Technical Report ME-0181 considered vortexing as a gas intrusion mechanism, it did not evaluate reduced inventory operations for the potential of gas related issues.

On November 22, 2011, the inspectors identified the instructions contained in procedures NOP-RHR-002, "RHR Operation at a Reduced Inventory Condition," and AOP-RHR-003, "Loss of RHR While Operating at Reduced Inventory Conditions," incorrectly defined the acceptable region of operation to avoid air entrainment. These procedures directed the operators to operate within the region defined as acceptable by a graph of RCS level versus RHR flow included in the attachments. The graph was based on Figure 2-12 of WCAP-11916, "Loss of RHR Cooling While the RCS is Partially Filled," which established the minimum RCS hot leg water level for RHR operations. However, the inspectors noted the following:

- The procedures incorrectly translated Figure 2-12 of WCAP-11916, in that, the graph was shifted down and to the right. For instance, Figure 2-12 of WCAP-11916 stated the maximum acceptable flowrate at the hot leg centerline was approximately 2,075 gpm whereas the graph incorporated in the station procedures limited the flow to a maximum of 2,250 gpm for that elevation.

- The procedures did not account for instrument uncertainties. Specifically, the RCS level versus RHR flow graph contained in NOP-RHR-002 and AOP-RHR-003 was based on Figure 2-12 of WCAP-11916 as printed in the WCAP without accounting for instrument uncertainties for RHR flow loops and refueling water level loops.
- The criterion used when developing Figure 2-12 of WCAP-11916 was the more limiting of level at which air is ingested on a continuous basis but not more than 2 percent by volume of intake flowrate or in sporadic gulps which do not exceed 5 percent by volume of intake flowrate. This criterion was inconsistent and less conservative than the licensee's position that the total RHR system flowrate must not exceed the recommended flowrate in order to avoid air ingestion (i.e., 0 percent air entrainment) stated in responses to GL 87-12 and GL 88-17. The criterion used by WCAP-11916 was intended to address pump operation only. However, the operating experience contained in GL 87-12 and GL 88-17 was also concerned with additional phenomena related to RCS behavior under air ingestion conditions with no discernible RHR flow or pump current change.

The licensee captured the inspectors' concerns in the CAP as CRs 453612 and 454320. The corrective actions considered at the time of this inspection included calculating the instrument inaccuracies for RHR flow and refueling level instrument loops, referencing the level inaccuracies based on inactive flow in RCS loops in the associated procedures, evaluating levels, and updating the procedures with a new graph.

Analysis: The inspectors determined failure to establish procedures for reduced inventory operations that were appropriate to manage gas accumulation was contrary to 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," and was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the Initiating Event Cornerstone attribute of procedure quality and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown operations. Specifically, the failure to establish procedures for reduced inventory operations that were appropriate to manage gas accumulation did not limit the likelihood of events that result from adverse air entrainment into the RHR and RCS. Operating experience has shown that air entrainment during reduced inventory operations can lead to loss of RHR and undesired RCS instrument behavior that could lead to inappropriate operator response.

The Region III senior reactor analysts (SRAs) evaluated the finding in accordance with IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process." Table 1, "Losses of Control," includes criteria for assessing loss of thermal margin and loss of level. This finding did not meet any of the criteria for Losses of Control since no event occurred. The SRAs performed further evaluation using IMC 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Operational Checklists for Both PWRs and BWRs." The checklists were developed for different plant operational states defined by operational mode, time to boiling, reactor coolant system level, and reactor coolant system configuration. The checklist most applicable to this finding was Checklist 3, "Cold Shutdown and Refueling Operation RCS Open and Refueling Cavity Level < 23' OR RCS Closed and No Inventory in Pressurizer Time to Boil < 2 hours." The SRAs and inspectors reviewed the deficiency against the safety functions of core heat removal, RCS inventory control, power availability, containment control, and reactivity control as described in Checklist 3. The SRAs

determined the licensee reasonably met these safety functions and there have been no actual air entrainment problems that have occurred using the procedures. Therefore, this finding is best characterized as having very low safety significance (Green).

The inspectors determined this finding had a cross-cutting aspect in the area of Problem Identification and Resolution because the licensee did not thoroughly evaluate relevant operating experience. Specifically, the licensee's evaluation of gas related issues in response to GL 2008-01 was deficient, in that, it did not consider vortexing during reduced inventory operations. (P.2(a))

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed and accomplished by procedures appropriate to the circumstances.

Contrary to the above, as of November 22, 2011, Procedures NOP-RHR-002 and AOP-RHR-003 were not appropriate to the circumstances. Specifically, the instructions contained in these procedures were not appropriate to prevent adverse air entrainment during reduced inventory operations. Because this violation was of very low safety significance and was entered into the licensee's CAP as CRs 454320 and 453612, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000305/2011005-08, Procedures for Reduced Inventory Operations Were Not Appropriate to Preclude Air Entrainment).

.6 Institute of Nuclear Power Operations (INPO) Plant Assessment Report Review

The inspectors reviewed the final report for the INPO plant assessment of Kewaunee Power Station conducted in June 2011. The inspectors reviewed the report to ensure that issues identified were consistent with the NRC perspectives of licensee performance and to verify if any significant safety issues were identified that required further NRC follow-up.

40A6 Management Meetings

.1 Exit Meeting Summary

On January 4, 2012, the inspectors presented the inspection results to Mr. S. Scace, Mr. A. Jordan, 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

- The results of the occupational ALARA planning and controls, in-plant airborne radioactivity control and mitigation, occupational dose assessment, radioactive solid waste processing and radioactive material handling, storage, and transportation inspection, and verification of occupational radiation safety and RCS activity performance indicators with Site Vice-President, Mr. S. Scace on December 2, 2011;
- the results of the Emergency Preparedness program inspection and URI 05000305-2010005-05 were discussed with Mr. S. Scace on November 29, 2011;

- the licensed operator requalification training annual operating test results with the License Operator Lead Examination Writer, Mr. A. Fahrenkrug, on December 15, 2011; and
- the results of the inspection, NRC TI 2515/177, “Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter 2008-01),” were presented to Mr. S. Scace and other members of the licensee staff on December 2, 2011. The licensee acknowledged the issues presented.

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 violations of very low significance (Green) or SL IV were identified by the licensee and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

##### .1 Procedure Deficiency Leads To Service Water Pump Room Ventilation Fan Failure

Title 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” states, in part, that activities affecting quality shall be prescribed and accomplished by documented instructions or procedures of a type appropriate to the circumstances.

Contrary to this, prior to November 24, 2008, GMP-251, “Common Electrical Preventative Maintenance Tasks (QA-1)” did not contain documented instructions that were appropriate to the circumstances. Specifically, GMP-251 did not contain procedural guidance for adequately inspecting, cleaning, and lubricating all auxiliary contacts in SR breaker cubicles. On November 24, 2008, the licensee found that the control power fuses were blown on the train B screenhouse exhaust fan and the fan was not running. The licensee’s investigation found that higher than normal currents caused by the broken auxiliary contacts caused control power fuses to blow. The auxiliary contacts failed from long term wear and a lack of proper lubrication.

The inspectors answered “No” to the MS Cornerstone questions and screened the finding as having very low safety significance (Green) in accordance with IMC 0609, “Significance Determination Process,” Attachment 0609.04, “Phase 1 – Initial Screening and Characterization of Findings,” Table 4a, dated January 10, 2008.

The licensee documented this violation in CR119979. The licensee performed an apparent cause evaluation which determined that GMP-251 was inadequate and implemented corrective actions that included revision of the procedure.

##### .2 Incorrect Valve Design Leads To Slow Closing Containment Isolation Valves

Title 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” requires, in part, that “measures shall be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the SR function of structures, systems, and components.”

Contrary to this, in 1985, the licensee installed solenoid operated valves into an application that did not meet the minimum flow and/or differential pressure requirements needed to ensure the technical specification timing requirements for valve closure were met. Specifically, the licensee replaced RC-422 and RC-423, the inside and outside CIVs in the RCS Hot Leg Primary Sample Line, with new valves that were not appropriate for the flowrates and differential pressure experienced in the sample line. In early 2011, the licensee had ongoing timing problems with both valves and after multiple troubleshooting attempts, which included vendor interface, identified the design control error.

The inspectors answered “No” to the MS Cornerstone questions and screened the finding as having very low safety significance (Green) in accordance with IMC 0609, “Significance Determination Process,” Attachment 0609.04, “Phase 1 – Initial Screening and Characterization of Findings,” Table 4a, dated January 10, 2008.

The licensee documented this violation in their CAP as CRs 430865 and 432199. The licensee performed an apparent cause evaluation, which concluded that the design error was the cause of the slow to close valves. The licensee’s planned corrective actions included replacing the valves with a design appropriate for the application.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

S. Scace, Site Vice-President  
A. Jordan, Site Vice-President  
R. Simmons, Plant Manager  
S. Yuen, Director, Engineering  
J. Stafford, Director, Safety and Licensing  
A. Christensen, Emergency Planning  
A. Fahrenkrug, Examination Writer  
A. Maly, Health Physicist  
B. Harris, Manager, Site Emergency Planning  
B. Hoffner, Manager, Fleet Emergency Planning  
B. Wakeman, ISFSI Project Engineer  
D. Asbel, Outage and Planning Manager  
D. Jeanquart, Nuclear Fuel Handling Supervisor  
D. Lawrence, Operations Manager  
E. Collins, Emergency Planning  
J. Egdorf, Emergency Planning  
J. Gadzala, Licensing  
J. Grau, Manager Maintenance  
J. Hale, Radiation Protection Manager  
C. Olson, Radiation Protection Supervisor  
J. Helfenberger, Lead Reactor Engineer  
J. Langan, Manager Nuclear Oversight  
J. Madden, Manager System Engineering  
J. Palmer, Manager Training  
K. Morris, Manager Security  
K. Patek, Systems Engineer  
M. Aulik, Engineering Design Manager  
J. Hale, Radiation Protection and Chemistry Manager  
M. Hovis, Radiation Protection Supervisor  
M. Jo Haese, Licensing  
R. Repshas, Licensing  
T. Breene, Licensing Manager

#### Nuclear Regulatory Commission

K. Riemer, Chief, Division of Reactor Projects, Branch 2  
A. M. Stone, Chief, Division of Reactor Safety, Engineering Branch 2  
D. McNeil, Senior Operations Engineer  
N. J. Félix Adorno, Reactor Engineer

## LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

### Opened

05000305/2011005-01	URI	Fire Brigade License Basis (Section 1R05.2)
05000305/2011005-02	NCV	Unanalyzed Flood Source From Technical Support Center Building (Section 1R06.1)
05000305/2011005-03	FIN	Two of Six Operating Crew Failures on the Simulator Operational Evaluation Portion of the 2011 Annual Requalification Operating Test (Section 1R11.2)
05000305/2011005-04	FIN	Inadequate Operability Determination of Control Room Air Conditioning System Components (Section 1R15.1)
05000305/2011005-05	NCV	Unanticipated Closure of Emergency Diesel Generator B Output Breaker (Section 1R19.1)
05000305/2011005-06	NCV	Incorrect Assumptions Used in the Development of Emergency Action Level Thresholds (Section 1EP5.1)
05000305/2011005-07	URI	Use of TLDs May Not Be Consistent With the Methods Used By the NVLAP Accreditation Process (2RS4.2)
05000305/2011005-08	NCV	Procedures for Reduced Inventory Operations Were Not Appropriate to Preclude Air Entrainment (Section 4OA5.5.c(1))

### Closed

05000305/2010005-05	URI	Changes to Reactor Building Ventilation Flow Rates Potentially Decreases the Effectiveness of the Plan Without Prior NRC Approval (Section 1EP5.1)
05000305/2011003-06	URI	Kewaunee Condensate Storage Tank Minimum Volume Analysis (Section 4OA5.4)
05000305/2011003-07	URI	Potential Internal Flood Scenario Due to Postulated Loss of the Technical Support Center (Section 1R06.1)
05000305/2011004-04	URI	Inconsistent Maintenance Rule Evaluations Performed on Containment Isolation Valves (Section 4OA5.1)
05000305/2011005-02	NCV	Unanalyzed Flood Source From Technical Support Center Building (Section 1R06.1)
05000305/2011005-03	FIN	Two of Six Operating Crew Failures on the Simulator Operational Evaluation Portion of the 2011 Annual Requalification Operating Test (Section 1R11.2)
05000305/2011005-04	FIN	Inadequate Operability Determination of Control Room Air Conditioning System Components (Section 1R15.1)
05000305/2011005-05	NCV	Unanticipated Closure of Emergency Diesel Generator B Output Breaker (Section 1R19.1)
05000305/2011005-06	NCV	Incorrect Assumptions Used in the Development of Emergency Action Level Thresholds (Section 1EP5.1)
05000305/2011005-08	NCV	Procedures for Reduced Inventory Operations Were Not Appropriate to Preclude Air Entrainment (Section 4OA5.5.c(1))

05000305/2011-006-00	LER	Misapplication of Testing Allowance Results in Condition Prohibited by Technical Specifications (Section 4OA3.2)
TI 2515/177		Managing Gas Accumulation in Emergency Core Cooling, Decay Heat Removal, and Containment Spray Systems (NRC Generic Letter 2008-01) (4OA5.5)

Discussed

None.

## 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

- CR385515; Water Intrusion To DG B Room During Rain Storm
- CR435059; Possible Tornado Missile Hazard Area Enhancements
- CR450052; UH-4F not working properly
- CR450965; Plant Helper Cold Weather Ops Walkdown
- GMP-172; Tornado Missile Hazard Inspection; Revision 10
- National Weather Service Watches, Warnings & Advisories; November 29, 2011 3:30 AM
- OP-KW-AOP-GEN-004; Response To Natural Events; Revision 11
- OP-KW-ARP-47034-22; TLA-27 Circ Water Inlet Temperature High, System No. 04; Revision 0
- OP-KW-ORT-MISC-005, Cold Weather Operations; Revision 4

### 1R04 Equipment Alignment

- CR363677; Valve From LP Tank To Heaters In The ISFSI Building Was Closed
- CR374361; CW-53C2 Found CLOSED
- CR387329; Troubleshooting CR387309, Ups Pwr Supply Reset Toggled Without Other Paperwork
- CR388947; DPI 11033J, (HDP 1B Suct Strainer D/P), Found Isolated And Equalized
- CR402113; "A" Emergency Diesel Generator Air Compressor, Two Belts Were Found Detached
- CR413322; Lock Out Of 1-127 Shield Bldg. Vent Fan A
- Drawing M-205; Flow Diagram Feedwater System; Revision BJ
- Drawing OPERM-202-1; Flow Diagram Service Water System; Revision CN
- Drawing OPERM-202-2; Flow Diagram Service Water System; Revision CY
- Drawing OPERM-213-13; Instrument Air System Diesel Generator A And B Ventilation Damper; Revision 0
- Drawing OPERM-213-9; Startup Air Compressor A & B And Fish Screen Air; Revision H
- Drawing OPERM-217; Flow Diagram Internal Containment Spray System; Revision AP/3450-1
- Drawing OPERM-220; Flow Diagram Fuel Oil Systems; Revision AU
- Drawing OPERM-601; Flow Diagram Turbine & AUX BLDG. Ventilation; Revision DG
- M-933; Safety Injection Pumps Suction Piping; Revision E
- M-934-1; Safety Injection Pumps Discharge To Pen 28N, 28E And RWST; Revision B
- M-934-2; Safety Injection Pumps Discharge To Pen 28N, 28E And RWST; Revision B
- M-944; CVC From Vol. Cont Tank To CVC Charging Pumps 1A, 1B And 1C; Revision B
- M-992-1; Safety Injection Pumps Suction Piping; Revision E/3750-1
- M-992-2; Safety Injection Pumps Suction Piping; Revision E
- M-993; Safety Injection Pumps Disch. Piping To Pen 28N, 28E & RWST; Revision A
- N-ICS-23-CL; Containment Spray System Prestartup Checklist; Revision 34
- OPERXK-100-28; Flow Diagram – Safety Injection System; Revision BA
- OPERXK-100-29; Flow Diagram – Safety Injection System; Revision AN

- OP-KW-NCL-AFW-001; Auxiliary Feedwater System Prestartup Checklist, System No. 05B; Revision 2
- OP-KW-NCL-DGM-001A; Diesel Generator A Prestartup Checklist, System No. 10; Revision 7
- OP-KW-NCL-SW-001; Service Water System Prestartup Checklist, System 02; Revision 3
- OP-KW-NCL-TAV-001; Turbine Building And Screenhouse Ventilation System Checklist; Revision 4

#### 1R05 Fire Protection

- Appendix A To Branch Technical Position APCS 9.5-1, "Guidelines For Fire protection For Nuclear Power Plants Docketed Prior To July 1, 1976" (August 23, 1976); February 24, 1977
- Audit Checklist – Nuclear Oversight; 11-04: Fire Protection QA Program And Surry Refueling
- CR404889; NRC Questions Why Some Fire Fighting Equipment Is Not Listed In Area Fire Plan
- CR411104; Fire Door 508 Does Not Have A Working Closure
- CR420227; 20 Gallon Drum Of Used Oil In MARS Area (Aux Bldg 606' Across From The Loading Dock) Without Transient Combustible Permit
- CR428489; Controls For Storage Of Combustibles Not Followed
- CR446453; NRC Identifies Potential Issue For Flammable Gas Bottles Located In Aux Bldg
- CR450967; Door #60 Is Missing A Latching Mechanism And The Door Knob Is Loose
- Drawing PFP-11; Turbine Building Basement; Revision G
- Drawing PFP-12 A-543; Turbine Building Mezzanine; Revision F
- Drawing PFP-14 A-545; Turbine Building – Operating Floor; Revision D
- Drawing PFP-27 A-558; Hot Chem Lab And Shield Building Filer Assembly Area; Revision D
- Drawing PFP-29 A-560; Auxiliary Building And Turbine Building Fan Room; Revision C
- Drawing PFP-7 A-538; Co<sub>2</sub> Storage Tank Room; Revision D
- Drawing PFP-8 A-539; 480V Switchgear Bus 1-51 And 1-52 Room; Revision C
- FPP-08-08; FP – Control Of Transient Combustible Materials; Revision 10
- FPP-08-10; Fire Drills; Revision B
- GNP-01.31.01; Plant Cleanliness And Storage; Revision 27
- KNI-364.1; Letter From A. Schwencer, Chief, NRC, To E. W. James, Senior Vice President, Wisconsin Public Service Corporation; Subject: Amendment No. 23 To Facility Operating License No. DPR-43 For The Kewaunee Nuclear Power Plant; December 12, 1978
- KPS Fire Protection Program Analysis; Fire Zone Summary; AX-36 Turbine Building, Aux. Building And RC Building HVAC Equipment Rooms; Revision 9
- KPS Fire Protection Program Analysis; Fire Zone Summary; TU-22 Turbine Room; Revision 9
- KPS Fire Protection Program Analysis; Fire Zone Summary; TU-94 Co<sub>2</sub> Tank Room; Revision 9
- KPS Fire Protection Program Analysis; Fire Zone Summary; TU-95A Dedicated Shutdown Panel Room; Revision 9
- Letter From A. Schwencer, Chief, NRC, To E. W. James, Senior Vice President, Wisconsin Public Service Corporation; Subject: Kewaunee Nuclear Power Plant; February 14, 1978
- Letter From A. Schwencer, Chief, NRC, To E. W. James, Senior Vice President, Wisconsin Public Service Corporation; Subject: Kewaunee Nuclear Power Plant; August 19, 1977
- Letter From E. W. James, Senior Vice President, Wisconsin Public Service Corporation TO A. Schwencer, Chief, NRC; Subject: Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls & Quality Assurance; May 15, 1978
- Letter From E. W. James, Senior Vice President, Wisconsin Public Service Corporation TO A. Schwencer, Chief, NRC; Subject: Response To Request For Additional Information On Fire Protection; February 15, 1979
- OP-KW-AOP-FP-001; Abnormal Operating Procedure – Fire; System No. FP-08; Revision 6

- PFP-11; TU-22, 96 / Turbine Building Basement; Revision April 25, 2007
- PFP-12; TU-22 (606') / Turbine Building Mezzanine; Revision December 19, 2007
- PFP-14; TU-22 (626') / Turbine Building Operating Floor; Revision September 17, 2007
- PFP-27; AX-23A, 34, 36, (642') / Hot Chem Lab And Shield Building Filter Assembly Area; Revision August 23, 2006
- PFP-29; AX-23A, 36, (657') / Auxiliary Building And Turbine Building Fan Rooms; Revision November 17, 2004
- PFP-7; TU-94 / Co<sub>2</sub> Storage Tank Room; Revision November 17, 2004
- PFP-8; TU-95A / 480V Switchgear Bus 1-51 And 1-52 Area; Revision November 17, 2004
- Record ID 12121978; Record Change Notice; Amendment No. 23 To Facility Operating License; Dated December 12, 1978
- RP-KW-002-002; Respiratory Protection Equipment; Revision 1
- SA-KW-FPP-010; Fire Drills; System No. 08; Revision 0

#### 1R06 Internal Flooding

- CR396342; Water In TST To TAT Pulling Pit
- CR424708; Identification Of Previously Unanalyzed Flooding Source
- CR430931; Additional TSC Flood Source
- CR453077; Water Found In TAT Cable Vault
- Calculation C11999; Seismically Qualify Piping And Pipe Supports Of Fire Protection Line Running Through The Technical Support Center (TSC), Kewaunee Power Station; November 1, 2011

#### 1R11 Licensed Operator Regualification Program

- Annual Operating Test Results, 2011
- SEG LRC-11-SEE03; Simulator Exam Guide; Revision B
- SEG LRC-11-SEE01; Simulator Exam Guide; Revision A
- Crew Simulator Evaluation Summary – Cycle 11-05; November 28, 2011
- Crew Simulator Evaluation Summary – Cycle 11-05; November 29, 2011

#### 1R12 Maintenance Effectiveness

- A1E000121; Perform MR (a)1 Eval For SD-3B Exceeding MR Unavailability; February 22, 2011
- ACE14080; The Screen House Exhaust Fan B Failed To Operate
- ACE18776; Battery Room FCU 1A Motor High Vibration
- CA209096; Review PM Basis Regarding Insulation Resistance Checks For Small Motors 25hp
- CR119979; Loss Of B Screenhouse Exhaust Fan
- CR409722; SD-3B Exceeds Maintenance Rule Unavailability Criteria
- CR428207; Screen House Exhaust Fan B Abnormal Indications
- CR435463; Abnormal Noise Coming From Battery Room "A" FCU
- CR437173; Insulation Resistance Checks Not Perform On Small Ventilation Fan Motors
- ER-AA-PRS-1003; Equipment Reliability Component Classifications; Revision 4
- Instrument And Service Air System Health Report For Third Quarter Of 2011
- Main Steam System Health Report For Third Quarter Of 2011
- Maintenance Rule Scoping Questions; 16 Turbine Building And Screenhouse Ventilation; Attachment A; Revision 2; November 17, 2011
- Maintenance Rule System Basis; Revision 10
- Maintenance Rule Unavailability Alert Summary, 18 Month Rolling; October 31, 2011

- MRE007342; MRE For Screen House Exhaust Fan B Inoperable
- MRE013779; For Screen House Exhaust Fan B Abnormal Indications
- MRE014015; Abnormal Noise Coming From Battery Room "A" FCU
- SRP98031; Fax Memorandum From S. Pauly, Technical Support Manager, Target Rock To B. Pribeck, Kewaunee; Subject: Position Switch Enrichment; February 3, 1998
- SSC Performance Criteria Sheet; 16 Turbine Building And Screenhouse Ventilation; Attachment B; Revision 5; November 17, 2011
- System Health Report; 16-TAV – Turbine Building And Screenhouse Vent; November 22, 2011
- Vendor Technical Manual; Reliance Electric Co. B-3645-4; RELIA-0013 (278-1, 141422-1, 141422-2, 141422-3, 141422-4); Revision 5
- WO KW05-006200; KR-30. Replace Or Refurbish Motor 1-116 Due To Age And Lack Of Condition Monitoring
- WO KW100452259; Screen House Exhaust Fan B Will Not Operate
- WO KW100683694; PM37-014: Replace Coil, Ref, EQ-TARG-1 (EQ – No Grace)

### 1R13 Maintenance Risk

- Planning and Scheduling, Work Week Risk and Work Schedule Documentation for the Weeks of October 31, December 12, and December 19, 2011

### 1R15 Operability Evaluations

- CR453750; Water Present At Bolt Holes On R-17 Detector Shield
- EP-AA-303; Equipment Important to Emergency Response; Revision 4
- OD407; CR414092; Reserve Auxiliary Transformer (RAT) And RAT Supply Transformer (RST); October 12, 2011
- ETE-NAF-2011-0025; Evaluation Of Kewaunee Power Station (KPS) Emergency Core Cooling System (ECCS) Operability Requirements For Improved Technical Specification (ITS) Mode 4 Operating Conditions; February 9, 2011
- CR437449; Spent Fuel Pool Pump B Motor Modeled Different Than PTE 98-03
- CR46059; ECCS Model Issue – Fuel Thermal Conductivity Degradation
- KPS Flux Map Results For Flux Map Taken On November 11, 2011
- KPS Core Performance Characteristics Report Dated November 2011
- NRC Information Notice 2009-023; Nuclear Fuel Thermal Conductivity Degradation
- WCAP-15708; Best Estimate Analysis Of The Large Break LOCA For Kewaunee Nuclear Power Plant To Support Upgrading And Transitioning To Westinghouse Fuel
- CR447013; ACC 15 And 16 Components Not Correct QA Classification
- CR451001; NRC Identified USAR Stated All Of IA System Is Non-Safety Related
- GNP 4.3.4; Calculation C11286; Updated Control Room Habitability Evaluation Report; Performed August 7, 2001
- OD 000456; Perform For ACC-15 And ACC-16 Instrument Air Supply Classification
- OP-KW-ARP-47034-33; TLA-33 Relay Rack Temperature High; System No. 25; Revision 0
- POD 456; Safety Related Dampers Operable Despite Non-Safety Related Components; Revisions 0 And 1
- Request For FSRC; OD ACC-15 And ACC-16 QA Classification Revision 1; December 2, 2011
- Standing Order 11-78; ACC 15 And 16 Instrument Air Supply Components Not Correctly QA classified; November 3, 2011

## 1R18 Modifications

- DCR 3724; Install RHR Pumps Suction Line Vent Valves Downstream Of Valves RHR-4A/B; March 25, 2008
- KW-10-01062-006; Remove RHR-44, RHR-45, Add Relief Valve, Add Vent Valves, And Close SI-31; March 12, 2011
- OP-KW-MOP-RHR-007; Operation of Sample Cooler for Cooling RHR Components (TMOD 2009-11); Revision 1
- OP-KW-NOP-RHR-001; Residual Heat Removal System Operation; Revision 14
- TMOD 2009-11; RHR Vent Cooler; October 13, 2009
- WO KW100341088; DCR KW-10-01062 Permanently Remove RHR-44/RHR-45 And Associated ¾" Piping; March 23, 2011
- WO KW100341098; DCR KW-10-01062 Install Relief Valve Upstream Of RHR-11; March 23, 2011
- WO KW100347786; DCR 3724 Install ¾" Vent Valve On Suction Pipe To The 1A RHR Pump; March 4, 2008
- WO KW100347791; DCR 3724 Install ¾" Vent Valve On Suction Pipe To The 1B RHR Pump; May 5, 2008

## 1R19 Post-Maintenance Testing

- AD-AA-102; Procedure Use And Adherence; Revision 5
- Briefing No. 1203 (OP-KW-OSP-DGE-003B Diesel Generator B Semi-Annual Fast Start Test)
- Briefing No. 12564; Pre-Job Briefing (OP-KW-OSP-DGE-005B Diesel Generator B Operability Test)
- Briefing No. 1484; Pre-Job Briefing (OP-KW-OSP-AFW-007)
- CR428470; Runout On Outboard Generator Collector Ring Is Out Of Acceptance Range
- CR428638; Diesel Generator B Retest Issue While Testing Switch 55106
- CR428680; SA-2011B Found Leaking At The Seat During Post Maintenance Testing
- CR453706; Expected Indication Not Received During ESF Testing
- DCN KW-10-01101; EDG Ventilation Air Supply Modification (Capital); April 18, 2011
- Drawing E-1052; Control Schematic 4160V Breaker 1-603; Revision V
- Drawing E-2702; Schematic Diagram, Engineered Safeguards System, Logic Trip Relays; Revision D
- Drawing E-2710; Schematic Diagram, Engineered Safeguards System, Safety Injection Scheme; Revision AC
- ER-KW-STP-DGM-002A; Post-Tie-In Testing For DC KW-10-01101, Train A, System No. 10; Performed November 28, 2011
- Field Service Report; Engine Systems, Inc; Trip Report Summary Of Inadvertent Closure Of 1B EDG OP Breaker At Kewaunee Power Station; November 8 To 9, 2011
- GMP-251; Common Electrical Preventive Maintenance Tasks; Revision 30
- GMP-251-01; Electrical Component Lubrication Information; Revision 22
- IB 04-60; Power Equipment Associates, Inc. Information Bulletin; EDG Out Of Phase Event – Inspections And Findings; October 6, 2004
- MA-KW-EPM-ELV-002; Racking 480 Volt Breakers, System No. 40; Revision 1
- MA-KW-GIP-016B; Reactor Protection Or Engineered Safeguards BF And BFD Type Relay Replacement; Revision 0
- OP-KW-OSP-AFW-007; Turbine Driven AFW Pump Low Suction Pressure Trip Test & SW Valve IST
- OP-KW-OSP-DGE-001A; Diesel Generator A Monthly Availability Test, System No. 42; Revision 13

- OP-KW-OSP-DGE-003B – Diesel Generator B Semi-Annual Fast Start Test; Completed November 8, 2011
- OP-KW-OSP-ICS-003B; Train B Containment Spray Pump And Valve Test – IST, System No. 23; Revision 0
- PI-AA-5000; Human Performance (HU); Revision 6
- PI-AA-5000; Human Performance; Revision 6
- PI-AA-5000; Human Performance (HU)
- PMP-23-07; ICS – Containment Spray Motor Electrical Maintenance (QA-1); Revision 3
- Pre-Job Briefing No. 1245; OP-KW-OSP-DGE-001A – Diesel Generator A Monthly Availability Test; November 22, 2011
- SA-AA-125; Electrical Safety; Revision 2
- SP-02-138A; Train A Service Water Pump And Valve Test – IST; Performed November 29, 2011
- SP-55-155B; Engineered Safeguards Train B Logic Channel Test; Performed November 22, 2011
- Tracking And Processing Record (OP-KW-ORT-DGM-001B Emergency Diesel Generator 1B Operation Log); Completed September 17, 2011
- Tracking And Processing Record (OP-KW-OSP-DGE-005B Diesel Generator B Operability Test); Completed November 8, 2011
- Tracking And Processing Record For GIP-016A; Reactor Protection And Engineered Safeguards Relay Bench Testing And Receipt Inspection; November 22, 2011
- WM-AA-301 – Attachment A; Managing Medium Risk Significant Activities; Completed November 9, 2011
- WO KW100667336; PM23-521; Inspect/Clean/Lube Motor
- WO KW100844828; Replace/Refurbish Existing (SR) 4160V Vac Breaker
- WO KW100844866; Perform Megger Test Of Diesel Generator B
- WO KW100844868; Inspection Diesel Generator 1B
- WO KW100848812; Replace Relay, Expected Indication Not Received During ESF Testing; November 22, 2011

#### 1R22 Surveillance Testing

- CA201992; ODCA To Elec/I&C Systems To Det & Initiate Actions To Restore Full Qualification
- CA208348; RHR 1A Ground Overcurrent Relay Was Out Of Tolerance Band
- CA210995; Review Non-Conformance And Determine If Additional Actions Are Required
- CR344360; Received TLA-21, Safeguards Bus Voltage Abnormal, For Bus 1-51 Voltage High
- CR344674; Received TLA-21, Safeguards Bus Voltage Abnormal For Bus 62
- CR347488; Control Room Received TLA-21, Safeguards Bus Voltage Abnormal (High)
- CR355373; TLA-21 Safeguards Bus Voltage Abnormal Received Unexpectedly
- CR362081; Received Annunciator 47032-11, TLA-21 Safeguards Bus Voltage Abnormal
- CR363134; Received TLA-21 Safeguards Bus Voltage Abnormal
- CR377363; TLA-21, Safeguards Bus Voltage Abnormal, For Bus 1-51 Voltage High At 511 VAC
- CR387551; TLA-21, Safeguards Bus Voltage Abnormal, For Bus 1-51 Voltage High At 509 VAC
- CR389273; Received TLA-21 Safeguards Bus Voltage Abnormal
- CR392004; TLA-21, Safeguards Voltage Abnormal Alarm Received. Annunciator 47034-11
- CR393930; Request Engineering Evaluate SI Mini-Flow Recirculation Line
- CR395620; Change Needed In SI System Operation (From Follow Up To NRC Question)
- CR403054; SP-34-099B, Train B RHR Pump And Valve Test – IST, Rev. 27, Requires Revision

- CR407992; Bus 51 High Voltage Alarm. TLA-21 Received
- CR414283; Received TLA-21 Safeguards Bus Voltage Abnormal
- CR416721; BRB 101 Terminal Voltage Found At 131.3 VDC
- CR420062; TLA-21 Bus 51 High Voltage Alarm
- CR425387; BRB-010 As Found Terminal Voltage Low During Weekly Surveillance
- CR426386; Weekly TS Batt. Volts "A" Battery Found Outside Desired Band But Not < TS
- CR426783; Steam Flow 464A Bistable Found Out Of Spec During SP-47-316A Red Channel
- CR428519; Out Of Spec On Diesel Generator Frequency Transducer
- CR429138; As Found Voltage On BRB 101, "B" Battery, Slightly Low But > Min Tech Spec
- CR430816; PDMA Voltage Not Recovered After Data Captured On 1A EDG Fuel Oil Transfer Pump
- CR436131; RHR 1A Overcurrent Relay Out Of Tolerance Band
- CR436137; RHR 1A Ground Overcurrent Relay Was Out Of Tolerance Band
- CR439227; Dedicated Shutdown Panel Rack SD-103 Reference Bus Bar
- CR441391; Received TLA-21 Safeguards Bus Voltage Abnormal
- CR441459; Received TLA-21 Safeguards Bus Voltage Abnormal
- CR446607; Received TLA-21 Safeguards Bus Voltage Abnormal
- CR446749; Bus 61 Voltage High
- CR453706; Expected Indication Not Received During ESF Testing
- CR453706; Expected Indication Not Received During ESF Testing
- Drawing E-2702; Schematic Diagram, Engineered Safeguards System, Logic Trip Relays; Revision D
- Drawing E-2710; Schematic Diagram, Engineered Safeguards System, Safety Injection Scheme; Revision AC
- KW100632543; Work Order "Inspect/Lube Throttle Linkage-Turb Driven Aux Feedwater Pump-Turbine"
- MA-KW-ESP-EHV-002B; Bus 1-6 Loss Of Voltage Relay Test, System No. 39; Revision 9
- MA-KW-GIP-016B; Reactor Protection Or Engineered Safeguards BF And BFD Type Relay Replacement; Revision 0
- MA-KW-MPM-AFW-002; Preventative Maintenance Of The Turbine-Driven Auxiliary Feedwater Pump
- MRE014039; RHR 1A Overcurrent Relay Out Of Tolerance Band
- MRE014040; RHR 1A Ground Overcurrent Relay Was Out Of Tolerance Band
- OP-KW-OSP-RCS-001; Reactor Coolant System Leak Rate Check, System No. 36; Completed November 27, November 28, November 29, And November 30, 2011
- PI-AA-5000; Human Performance; Revision 6
- RE-01; Flux Mapping At Power; Revision 27
- SP-55-155B; Engineered Safeguards Train B Logic Channel Test; Performed November 22, 2011
- SP-55-167-5A; Miscellaneous Systems Valve Timing Tests (IST) – Train A; Completed December 15, 2011
- Tracking And Processing Record For GIP-016A; Reactor Protection And Engineered Safeguards Relay Bench Testing And Receipt Inspection; November 22, 2011
- WO KW100796732; PM-39-165: Perform Bus 1-6 UV Relay Test
- WO KW100848812; Replace Relay, Expected Indication Not Received During ESF Testing

#### 1EP4 Emergency Action Level and Emergency Plan Changes

- Emergency Action Level Technical Bases Document; Revision 7
- Emergency Action Level Technical Bases Document; Revision 8
- Emergency Action Level Technical Bases Document; Revision 9
- Kewaunee Power Station Emergency Plan; Revision 35
- Kewaunee Power Station Emergency Plan; Revision 36

#### 1EP5 Correction of Emergency Preparedness Weaknesses

- C11805; EAL Calculation For Abnormal Radiological Releases; Revision 0
- CA162143; Action To Perform Alert And NOUE EAL Calculations Based On New Flow Rates
- CA162144; Action To Perform SAE And GE EAL Calculations Based On New Flow Rates
- CR356229; Discrepancies In Containment Purge Fan Flow Rates
- CR371137; Reactor Building Vent Flow Rate Change Will Impact EALs
- Kewaunee Power Station Emergency Plan; Revision 0

#### 1EP6 Drill Evaluation

- CR454690; EPIP-AD-19 Not Replaced Following TSC Tabletop
- CR454801; Need To Develop Protective Action Recommendations Not Identified (TSC Tabletop)
- EP-AA-103; Emergency Preparedness Performance Indicators; Revision 0
- KPS Emergency Preparedness Attendance Report; December 1, 2011
- NEI 99-02; Emergency Preparedness Cornerstone; Revision 6
- Nuclear Accident Reporting System Form (NARS); December 1, 2011

#### 2RS2 Occupational ALARA Planning and Controls

- Kewaunee Power Station; Dose And Source Term Reduction Strategic Plan; Revision 6
- Kewaunee Power Station; 2011 Business Plan; Collective Radiation Exposure; Revision 0

#### 2RS3 In-Plant Airborne Radioactivity Control and Mitigation

- CR369023; 2009 Refuel Outage Missing Air Sample Data; March 22, 2010
- CR454330; Information For Voluntary Use Respirators; November 29, 2011
- HP-02.007; Operation Of Cascade System; Revision 2
- HP-06.080; Instrument Operating Procedure – Pionox Air Purifier; Revision C
- Monthly Inventory of SCBA Respirators; December 2009 Through October 2011
- NAD-01.14; Respiratory Protection Program; Revision 16
- NU-NET-RPT, RPT; Respirator Protection Training; November 29, 2011
- ProCheck 3 Test Results; Complete SCBA Test; Kewaunee ID 18; AOAA323873; June 6, 2011
- ProCheck 3 Test Results; Complete SCBA Test; Kewaunee ID 18; AOAA323873; September 27, 2011
- ProCheck 3 Test Results; Complete SCBA Test; Kewaunee ID 19; AOAA323872; June 6, 2011
- ProCheck 3 Test Results; Complete SCBA Test; Kewaunee ID 19; AOAA323872; September 27, 2011
- ProCheck 3 Test Results; Complete SCBA Test; Kewaunee ID 28; AOAA352667; June 7, 2011

- ProCheck 3 Test Results; Complete SCBA Test; Kewaunee ID 28; AOAA352667; September 27, 2011
- ProCheck 3 Test Results; Complete SCBA Test; Kewaunee ID 3; AOAA323874; June 27, 2011
- ProCheck 3 Test Results; Complete SCBA Test; Kewaunee ID 3; AOAA323874; September 27, 2011
- ProCheck 3 Test Results; Complete SCBA Test; Kewaunee ID 39; AOAA334722; June 6, 2011
- ProCheck 3 Test Results; Complete SCBA Test; Kewaunee ID 39; AOAA334722; September 27, 2011
- Respiratory Protection Training – Virginia And Wisconsin Only; RPT-01; Reasons For Use; November 29, 2011
- Respiratory Protection Training – Virginia And Wisconsin Only; RPT-02; Types Of Respirators; November 29, 2011
- Respiratory Protection Training – Virginia And Wisconsin Only; RPT-03; Issue And Use Of Respirators; November 29, 2011
- Respiratory Protection Training – Virginia And Wisconsin Only; RPT-04; General Safety Concerns; November 29, 2011
- Respiratory Protection Training – Virginia And Wisconsin Only; RPT-05; RPT Requal; November 29, 2011
- RP-AA-226; Alpha Monitoring; Revision 1
- RP-KW-002-001; Use And Limitation For Personnel Respiratory Protection; Revision 0
- RP-KW-002-003; Issuance Of Respiratory Equipment; Revision 2
- RP-KW-002-006; Quality Tests Of Vendor – Supplied Breathing Air; Revision 0

#### 2RS4 Occupational Dose Assessment

- CR324705; 2008 TLD/DRD Discrepancies; March 4, 2009
- CR344418; Annual Confirmatory Measurement TLD Results For Category IIB Failed; December 21, 2009
- CR345366; Unexpected Response Of Neutron Bubble Dosimeters; February 25, 2011
- CR375632; 2009 TLD/DRD Discrepancies; April 19, 2010
- DMC-2000 Bias; March 2, 2006
- Effective Dose Equivalent External (EDEX) Report; Kewaunee Power Station KR31 Outage;
- HP-03.005; Dosimetry Record Keeping; Revision 26
- RP-AA-104; Internal Radiation Exposure Control Program; Revision 0
- RP-AA-105; External Radiation Exposure Control Program; Revision 0
- RP-AA-123; Effective Dose Equivalent; Revision 1
- RP-AA-124; Dosimetry Discrepancy and ED Alarm; Revision 2
- RP-AA-230; Personnel Contamination Monitoring And Decontamination; Revision 4
- RP-KW-003-006; In-Vitro Bioassay Measurement; Revision 0
- RP-KW-003-008; Evaluation Of Inhalations Or Ingestions; Revision 2
- RP-KW-003-009; Calculating Internal Dose From Whole Body Counter Results; Revision 4
- RP-KW-003-011; Use Of Special Dosimetry; Revision 6
- RP-KW-003-013; Testing And Issuing BD-PNC Neutron Bubble Dosimeters/DMC 200 GN; Revision 2
- Technical Report; GT-KPS-01; Determination Of A Site-Specific TLD Neutron Factor In The Vicinity Of The Holtec MPS During Drying In The Dominion Kewaunee Power Station; Revision 1.1

- Technical Report; GT-KPS-02; Determination Of A Site-Specific TLD Neutron Factor In The Containment At Dominion Kewaunee Power Station; Revision 1.0
- Testing of PM-7 Portal Monitors at Kewaunee Power Station; April 7, 2009

#### 2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08)

- 2010 – 10 CFR 61 Compliance Data Technical Basis for SFP Filter Waste Stream; August 13, 2010
- 2011 – 10 CFR 61 Compliance Data Technical Basis for DAW Waste Stream; June 5, 2011
- 2011 – 10 CFR 61 Compliance Data Technical Basis for Resin Waste Stream; March 17, 2011
- CR357405; NOD ID's A Procedural Compliance Issue During A Rad-Waste Shipment; November 4, 2009
- CR399022; Radioactive Material Package (Dot Exempt) Arrived At KPS Leaking Water; October 13, 2010
- CR416274; Shielded Transfer Cask Damaged During Movement; March 6, 2011
- HP-09.004; Filling and Dewatering Radwaste Containers; Revision 10
- HP-09.005; Radioactive Waste Storage And Inventory; Revision 6
- Memorandum; Audit 09-08: Radiation Protection/Process Control Program/Chemistry; July 29, 2009
- Memorandum; Audit 10-07: Radiological Protection and Process Control Program; September 23, 2010
- Memorandum; White Paper For Combining Filter Waste Streams At KPS; April 26, 2011
- NAD-01.16; Solid Radioactive Waste Process Control Program; Revision 10
- RP-AA-232; Radioactive Material Control; Revision 2
- RP-KW-001-026; Radiological Environmental Reviews; Revision 0
- RP-KW-001-027; Guidance For Performing Radiological Environmental Reviews; Revision 0
- RP-KW-005-026; Control Of Radioactive Material Outside the Restricted Area; Revision 0
- RP-KW-009-024; Inspection Of Low Level Radioactive Waste Packages In Storage; Revision 0
- Shipment 051310-1; Incore Detectors; May 13, 2010
- Shipment 092309-1; Spent Fuel Pool Trash; September 23, 2009
- Shipment 101909-1; Areva Equipment, October 19, 2009
- Shipment 1059-C-0002; Resin Liner; April 5, 2011

#### 4OA1 Performance Indicator (PI) Verification

- CHEM-50.003; Iodine, Radioactive; Revision 4
- Chemistry Effectiveness Indicator; January 2011 Through September 2011
- CR433489; Changes To MSPI Baseline Data Without Notation To Quarterly Data Submittal
- Kewaunee Reactor Coolant System Leakrate Data, July 2010 – September 2011
- LER 2009-006-01; Protection Instruments Not Calibrated To Individual Technical Specification Point Limits; February 3, 2011
- LER 2010-001-00; Safety Injection Pump Recirculation Line Isolation Results in Violation of Technical Specifications; November 17, 2010
- LER 2011-001-00; Auxiliary Building Special Ventilation Inoperability Results In Prohibited Technical Specification Condition; February 11, 2011
- LER 2011-002-00; Loss Of Station Backfeed Results In Loss Of One Train Of Offsite Power During Refueling Outage; May 3, 2011
- LER 2011-003-00; Valve SI-11A, Safety Injection To Loop A Cold Leg, Breaker Found ON With Plant In MODE 3; May 23, 2011

- LER 2011-004-00; Required Action for One Offsite AC Electrical Circuit Inoperable Not Performed Until After Discovery; May 31, 2011
- LER 2011-004-01; Required Action for One Offsite AC Electrical Circuit Inoperable Not Performed Until After Discovery; September 5, 2011
- LER 2011-005-00; Shield Building Ventilation Train Inoperable For Longer Period Than Allowed By Technical Specifications; August 4, 2011
- Log Entries Report; February 2 - 21, 2011
- Log Entries Report; July 16 – 24, 2011
- Log Entries Report; June 10 – July 18, 2011
- Log Entries Report; October 2 – November 5, 2010
- MRE013202; Lock Out Of 1-127 Shield Bldg. Vent Fan A
- MRE013340; Stopped DG A And Placed To Pullout Per Step 5.9.17 Of OSP-DGE-004A
- MRE013779; For Screen House Exhaust Fan B Abnormal Indications
- MRE014085; MRE For Design Deficiency Identified For Primary Sampling CIVs RC-422 And RC-423
- Prompt Operability Determination For CR421752; April 23, 2011
- RP-AA-112; Attachment 1; Example Radiological Protection Regulatory Assessment Performance Indicator Tracking Form And Supporting Documentation October 2010 Through October 2011
- RP-AA-112; Radiation Safety Performance Indicator Reporting; Revision 4
- WO KW100735166; PM16-527: Perform Starter Maintenance

#### 4OA2 Identification and Resolution of Problems

- ACE018602; Down-Grade Template; RC-422 Position Indication Slow When Closing
- ACE018603; Down-Grade Template; RC-423 Stayed In Mid-Position (Red And Green Lights On) When Closing
- ACE018711; CR430865 And CR432199; RC-423 Red/Green Indication Indicates Mid-Position
- ACE018807; Design Deficiency Identified For Primary Sampling CIVs RC-422 And RC-423
- ACE018807; Design Deficiency Identified For Primary Sampling CIVs RC-422/423
- ACE18746; Evaluate AFI ER.1-2 Equipment Performance From 2011 WANO Peer Review
- CA200990; Review Attached Data To Determine IF An Adverse Trend Exists
- CA204624; Outage Lessons Learned - UT Procedures; October 22, 2011
- CA208759; Review Potential Trend For System-21-SFP
- CA210063; Perform Past Operability Review For Design Deficiency For Primary Sampling CIVs
- CA211723; Design Deficiency Identified For Primary Sampling CIVs RC-422 And RC-423
- CA218590; Develop An Action Plan For Resolution Of Procedure Use And Adherence In Ops
- CR109856; Air Void Found In ICS-7A; November 16, 2008
- CR110040; Void Found In ICS Train A Discharge Header; November 18, 2011
- CR110349; UT Of RHR Pump A Mini-Flow Recirc Line Found Gas In Unventable High Point; November 19, 2008
- CR110526; UT Of RHR Cross-Connect To SFP Found Gas Void; November 21, 2008
- CR110666; UT Of ICS Caustic Additive Piping Found Gas Void; November 22, 2008
- CR111659; GL-2008-01: Summary For ICS; November 29, 2008
- CR111749; GL-2008-01: Summary For SI; November 30, 2008
- CR111822; Operations Response For Residual Heat Removal "RHR" System To GL-2008-01; November 30, 2008
- CR319463; Proposed Revision To RHR IST Procedure Will Precondition RHR Pumps; January 9, 2009
- CR320055; Gas Void Found Near SI-4A and SI-4B; January 14, 2009

- CR320143; Gas Voids Found In RHR To SFP X-Connect Line, At A Point Not Designated To Be Checked; January 15, 2009
- CR330341; Voids Found In SI Suction Piping From RWST; April 8, 2011
- CR330411; Remove UT Examinations From SP-34-099A And SP-34-099B; April 9, 2009
- CR335210; Control Room Deficiency. RC-422/SV-33092 Went Closed During Primary Sampling
- CR347934; Mild Water Hammer During RHR Pump A Start; November 10, 2009
- CR350582; GL-2008-01 Commitments For Procedure Revisions Not Met – Compliance Maintained; October 2, 2009
- CR362131; Accumulator B Level High/Low; December 16, 2011
- CR373419; Failure To Verify Systems Are Full After Draining For Maintenance; March 24, 2010
- CR417294; Gas Voids Found In RHR System During UT Following Dynamic Venting; Marcy 14, 2011
- CR419644; RC-422 Position Indication Slow When Closing
- CR419746; RC-423 Stayed In Mid-Position (Red And Green Lights On) When Closing Valve
- CR425963; Gas Voids Found In RHR Train During Quarterly Monitoring Per NSP-RHR-003A; May 5, 2011
- CR435943; Gas Void In RHR A Train To SFP Cross-Connect Piping; July 28, 2011
- CR436685; 2Q2011-Documentation of Potential Trend for System 39-EHV
- CR437345; RC-422/RC-423 Are Potentially Misclassified
- CR438343; Design Deficiency Identified For Primary Sampling CIVs RC-422 And RC-423
- CR445767; Continuous Communication Interrupted During Primary Sampling
- CR448886; Gas Void In RHR Train A To SFP Cross-Connect Piping; October 20, 2011
- CR449494; Out Of Tolerance During ISP-SI-040; October 24, 2011
- CR449500; Out Of Tolerance During ISP-SI-040; October 24, 2010
- CR450955; Plant Helper Cold Weather Ops Walkdown
- CR451359; Approach To Control Inoperable RC-422/423 Warrants Additional Review And 50.59
- Dominion Nuclear CAP Trend Report; Kewaunee 2nd Quarter
- Dominion Nuclear CAP Trend Report; Kewaunee 3rd Quarter
- E-1; Loss Of Reactor Or Secondary Coolant; Revision 27
- KPS Inservice Testing Basis Valve Data Sheet; Primary Sample System 37-PS; Valve RC-422; RCS Hot Leg Sample Line Containment Isolation Valve; Revision 6
- KPS Inservice Testing Basis Valve Data Sheet; Primary Sample System 37-PS; Valve RC-423; RCS Hot Leg Sample Line Containment Isolation Valve; Revision 6
- KPS Stores/Material Requisition – Nuclear; October 13, 2006
- LTR000483; Determine Reportability For Primary Sampling CIVs RC-422 And RC-423
- MEMO-RAD-20110003; From W.J. Eakin, Radiological Engineering, TO B.D. OConnell; LOCA Dose Evaluation To Support Operability Determinations For RC-422 And RC-423; August 31, 2011
- MRE014085; MRE For Design Deficiency Identified For Primary Sampling CIVs RC-422 And RC-423
- OP-AA-1700; Operations Aggregate Impact; Guidance And Reference Document; Revision 5
- OP-KW-ORT-MISC-005; Operations Routine Test; Completed November 7, 2011
- ORT-MISC-005 Cold Weather Operation 2011 Walkdown Deficiencies
- PI-AA-100-1003, Self Evaluation, Revision 9
- WO KW05-010991; RC-423 Coil Has Exceeded EQ Qualified Life And Requires Replacement (CAP29912)
- WO KW06-011453; RC-422, Remove/Install solenoid Valve Limit Switch Assembly. For EQ Valve RC-422

#### 40A3 Follow-Up of Events and Notices of Enforcement Discretion

- CR454950; Grid Voltage High
- CR456261; TLA-21 Was Received For Bus 6 Low Voltage/Possible PPCS Voltage Inaccuracies
- OP-KW-AOP-EG-001; Abnormal Grid Conditions, System No. EG-43; Revisions 9 And 10
- Standing Order # 11-27; RST And TST Load Tap Changer Operation; April 1, 2011
- NERC Standard NUC-001; Nuclear Plant Interface Coordination Agreement Between Dominion Energy Kewaunee, Inc. (Kewaunee Power Station) And American Transmission Company LLC; Effective April 1, 2010
- Station Narrative Logs; November 23 To November 25, 2011
- Bases; AC Source – Operating, B 3.8.1; Amendment No. 207, February 2, 2011
- OP-KW-OSP-MISC-002; Electrical Power System Weekly Surveillance Test; Revision 7
- ETE-NAF-2011-0025; Evaluation Of Kewaunee Power Station (KPS) Emergency Core Cooling System (ECCS) Operability Requirements For Improved Technical Specification (ITS) Mode 4 Operating Conditions; February 9, 2011
- Nuclear Plant Operating Agreement Between The Midwest Independent Transmission System Operator, Inc. And Dominion Energy Kewaunee, Inc. For Kewaunee Power Station; Executed March 26, 2010
- Standing Order # 11-83; Bus Voltage And Load Tap Changers; November 26, 2011
- Tracking And Processing Record For ARP-47034-11; TLA-21 Safeguards Bus Voltage Abnormal; November 26, 2011
- CR453926; TLA-21 Safeguards Bus Voltage Abnormal Did Not Provide Early Warning
- ETE-KW-2010-0005; Voltage Specifications For The Safeguard AC And DC Buses At Kewaunee Power Station; October 21, 2010
- ETE-KW-2011-0065; Evaluation Of Bus 1-5 And 1-6 Voltages Resulting In NRC Event 47476; December 13, 2011
- OP-KW-ARP-47034-11; TLA-21 Safeguards Bus Voltage Abnormal; Revision 8
- OP-KW-AOP-EG-001; Abnormal Grid Conditions; Revision 10
- LCO 3.8.1; LCO 3.8.9 AND TRM 8.8.2; Rev. Original December 8, 2011
- CR454022; Offsite Voltage Requirements For Operability Of RST/RAT And TST/TAT Per TS 3.8.1
- CA220573; TS 3.8.1 Be Reviewed By The Technical Specifications Review Committee
- CR454859; AOP-EG-001 Not Implemented On 11/24/11
- OD407; CR414092; Reserve Auxiliary Transformer (RAT) And RAT Supply Transformer (RST); October 12, 2011
- Serial No. 09-491; Dominion Energy Kewaunee, Inc., Kewaunee Power Station, License Amendment Request 249: Kewaunee Power Station Conversion To Improved Technical Specifications (TAC No. ME02467); August 24, 2009
- Serial No. 10-649; Dominion Energy Kewaunee, Inc., Kewaunee Power Station, License Amendment Request 249: Kewaunee Power Station Conversion To Improved Technical Specifications (TAC No. ME3460) – Submittal Of Revised Technical Report; November 10, 2010
- Serial No. 10-693; Dominion Energy Kewaunee, Inc., Kewaunee Power Station, License Amendment Request 249: Kewaunee Power Station Conversion To Improved Technical Specifications (TAC No. ME2139) – Reiteration Of Position And Revised Submittal Pages; December 2, 2010
- Letter From NRC To D. Heacock, Dominion Energy Kewaunee, Inc.; Subject: Kewaunee Power Station – Issuance Of Amendment Re: License Amendment Request To Change The Current Licensing Basis For Automatic Operation Of Transformer Load Tap Changers (TAC No. ME4011); July 29, 2011

- ETE-KW-2011-0065; Evaluation Of Bus 1-5 And 1-6 Voltages Resulting In NRC Event 47476; December 20, 2011
- Serial No. 10-063A; Dominion Energy Kewaunee, Inc., Kewaunee Power Station, Supplement And Response To Request For Additional Information: License Amendment Request 236, Automatic Operation Of Transformer Load Tap Changers (TAC No. ME4011); January 18, 2011
- Licensee Event Report No. 50-305/2011-006-00; October 31, 2011

#### 4OA5 Other Activities

- 0064-0014-Ebs-1; Minimum Required Submergence Of ECCS Pump Suction Nozzles; June 6, 2005
- 2006-01660; Post LOCA Containment Flood Level (DCR 3605); January 10, 2011
- ACE018668; PEN 11; LD-4A/4B/4C LLRT In Excess Of Local Leak Rate Action Limits
- Appendix J To Part 50; Primary Reactor Containment Leakage Testing For Water-Cooled Power Reactors
- Bases B 3.6.3; Containment Isolation Valves; Amendment No. 207; February 2, 2011
- C10984; EOP Setpoint Calculation Wide Range Containment Sump Level Versus Available RWST Volume; September 26, 2006
- C10996; NpsHa To The SI, RHR, And ICS Pumps When Drawing Suction From The RWST; June 16, 1998
- C10996A; Addendum A - Incorporate RWST Level Ties And Elevated Water Temperature Into The ECCS Pump NPSHA Calculation; October 26, 2006
- C11023; NPSH (Available) To The RHR Pumps When Taking A Suction From The Containment Sump; September 30, 2008
- C11749; Shutdown Safety Assessment Background Information For RWST Water Level; September 27, 2006
- CA072222; Evaluate The LD-4A, B And C Leakage To Determine And Initiate Required Actions
- CA087234; Evaluate OE27167 – Non-Conservative Results Associated With Scale Model Testing; October 16, 2008
- CA204624; Outage Lessons Learned - UT Procedures; October 22, 2011
- CA215307; Reconcile The Various Activities That Occurred With Appendix J Leak Rate Testing
- CR096777; ILLRT Performed In LD-4A,B,C Exceeded Administrative Limits
- CR096839; Higher Than Expected Flow Noise Heard On LD-4B Valve While Testing For Leakage
- CR109856; Air Void Found In ICS-7A
- CR110040; Void Found In ICS Train A Discharge Header
- CR110349; UT Of RHR Pump A Mini-Flow Recirc Line Found Gas In Unventable High Point
- CR110526; UT Of RHR Cross-Connect To SFP Found Gas Void
- CR110666; UT Of ICS Caustic Additive Piping Found Gas Void
- CR111659; GL-2008-01: Summary For ICS
- CR111749; GL-2008-01: Summary For SI
- CR111822; Operations Response For Residual Heat Removal “RHR” System To GL-2008-01
- CR319463; Proposed Revision To RHR IST Procedure Will Precondition RHR Pumps
- CR320055; Gas Void Found Near SI-4A And SI-4B
- CR320143; Gas Voids Found In RHR To SFP X-Connect Line, At A Point Not Designated To Be Checked
- CR330341; Voids Found In SI Suction Piping From RWST
- CR330411; Remove UT Examinations From SP-34-099A And SP-34-099B

- CR347934; Mild Water Hammer During RHR Pump A Start
- CR349850; Penetration 11 LLRT Failure For LD-4A/B/C
- CR350582; GL-2008-01 Commitments For Procedure Revisions Not Met – Compliance Maintained
- CR351143; Penetration 11 LLRT Failure For LD-4A/B/C
- CR362131; Accumulator B Level High/Low
- CR373419; Failure To Verify Systems Are Full After Draining For Maintenance
- CR409685; Review Recent Industry OR Of RHR Operation In MODE 4 Prior To Day 0 ITS
- CR417294; Gas Voids Found In RHR System During UT Following Dynamic Venting
- CR417998; MA-KW-MCM-RBV-003 Containment Vacuum Repair For VB-11A Requires Condition Report
- CR425963; Gas Voids Found In RHR Train During Quarterly Monitoring Per NSP-RHR-003A
- CR435943; Gas Void In RHR A Train To SFP Cross-Connect Piping
- CR446407; NRC Resident Inspector Question Related To MR Evaluations For Letdown
- CR448886; Gas Void In RHR Train A To SFP Cross-Connect Piping
- CR449494; Out Of Tolerance During ISP-SI-040
- CR449500; Out Of Tolerance During ISP-SI-040
- CR450307; KPS GL 2008-01 Self Assessment: Periodic Monitoring Bases
- CR450309; KPS GL 2008-01 Self Assessment: Suggest Developing A Program Document
- CR450313; KPS GL 2008-01 Self Assessment: Develop Trending For Periodic Monitoring
- DCR 3724; Install RHR Pumps Suction Line Vent Valves Downstream Of Valves RHR-4A/B; March 25, 2008
- DNES-AA-GN-1003; Design Effects And Considerations; Revision 9
- ES-1.3; Transfer To Containment Sump Recirculation; Revision 35
- ESC-09-LP007; Engineering Support Continuing Training; Revision A
- ETE-NAF-2011-0025; Evaluation Of ECCS Operability Requirements For ITS MODE 4 Operating Conditions; February 9, 2011
- GNP-08.02.02.12; Post Maintenance Testing/Operations Retest; Revision 13
- KPS-UCR-2010-012; USAR Update To Reflect Locations To Be Verified Full Of Water; February 24, 2010
- KPS-UCR-2010-043; USAR Update To Reflect Changes To RHR; May 31, 2011
- KW-10-01062-006; Remove RHR-44, RHR-45, Add Relief Valve, Add Vent Valves, And Close SI-31; March 12, 2011
- KW-PROC-000-SP-O99A; Train A RHR Pump And Valve Test IST; Revision 33
- KW-PROC-ER-AA-NDE-UT-724; Nondestructive Examination Procedure; Revision 0
- KW-PROC-TEC-ER-KW-NSP-ICS-001; Monitoring ICS System For Voids After System Refill; Revision 0
- KW-PROC-TEC-ER-KW-NSP-RHR-001; Monitoring RHR Cooldown Piping For Gas Accumulation; Revision 3
- KW-PROC-TEC-ER-KW-NSP-RHR-002; Monitoring RHR For Voids After System Refill; Revision 3
- KW-PROC-TEC-ER-KW-NSP-RHR-003A; Monitoring RHR System For Voids – Train A; Revision 2
- KW-PROC-TEC-ER-KW-NSP-RHR-003B; Monitoring RHR System For Voids – Train B; Revision 3
- KW-PROC-TEC-ER-KW-NSP-SI-001A; Monitoring SI Gas Collection Chamber And SI Pump A Discharge Piping For Gas Accumulation; Revision 4
- KW-PROC-TEC-ER-KW-NSP-SI-001B; Monitoring SI Pump B Discharge Piping For Gas Accumulation; Revision 3
- KW-PROC-TEC-ER-KW-NSP-SI-002; Monitoring Of SI Train Piping For Gas Accumulation; Revision 3

- KW-PROC-TEC-ER-KW-NSP-SI-004; Monitoring SI System For Voids After System Refill; Revision 1
- KW-PROC-TEC-OP-KW-AOP-SI-001; Voids In SI Piping; Revision 1
- KW-PROC-TEC-OP-KW-MOP-ICS-001; Fill And Vent Of ICS; Revision 1
- KW-PROC-TEC-OP-KW-MOP-ICS-002B; Fill And Vent Of ICS Train B; Revision 1
- KW-PROC-TEC-OP-KW-MOP-ICS-004; ICS Suction OOS; Revision 5
- KW-PROC-TEC-OP-KW-MOP-RHR-001A; RHR Maintenance A Maintenance At Power; Revision 8
- KW-PROC-TEC-OP-KW-MOP-RHR-002A; RHR Pump A Maintenance Shutdown; Revision 4
- KW-PROC-TEC-OP-KW-MOP-SI-002; Safety Injection System Fill And Vent Following Maintenance; Revision 3
- KW-PROC-TEC-OP-KW-MOP-SI-002A; Depressurizing And Draining SI Accumulator A; Revision 1
- KW-PROC-TEC-OP-KW-MOP-SI-004; Venting Of Safety Injection Cold Leg And Reactor Vessel Injection Piping; Revision 4
- KW-PROC-TEC-OP-KW-NOP-RHR-001; Residual Heat Removal System Operation; Revision 14
- KW-PROC-TEC-OP-KW-NOP-RHR-003; Dynamic Venting Of RHR To Interconnected ESF System; Revision 2
- KW-PROC-TEC-OP-KW-NOP-SI-002; Dynamic Venting Of SI Cold Leg And Vessel Injection Lines; Revision 3
- KW-PROC-TEC-OP-KW-NSP-SI-003; Operability Assessment Of Gas Accumulation In SI Piping; Revision 2
- LRC-10-LP105; Licensed Operator Continuing Training; Revision A
- LTR000430; LTR For Licensing On LD-4A/4B/4C LLRT Leak Rate
- M-1360; CVC-From REGEN.HX.1A And Point Near VLV LD-60 To CNTMT.PEN.11; Revision A
- M-1456; CC-From Line 10-AC-601R-3 To VLV.RHR-33 To AUX. Relief VLV. Line 4-RC-151R-32; Revision C
- M-1478; SI-From Test CONNS At Line To Cold Leg Loop 1A To Test Line To PENE 35; Revision B
- M-1537; CC-From RHR Pumps DISCH.Lines 8-AC-601R-8 2" Discharge Drains; Revision 0
- M-1728; RHR Expansion Tank Piping To RHR Valves RHR-30B And RHR-32A; Revision B
- M-933; Safety Injection Pumps Suction Piping; Revision E
- M-934-1; Safety Injection Pumps Discharge To Pen 28N, 28E And RWST; Revision B
- M-934-2; Safety Injection Pumps Discharge To Pen 28N, 28E And RWST; Revision B
- M-935; SI-From Accumulator 1A To Loop A Cold Leg; Revision B
- M-937-2; SI-From CNTMT PEN 28E To 2" Branch CONN On 6" HDR To Reactor; Revision C
- M-938-2; SI-From CNTMT PENJO To Reactor And From ACMTR 1B To Loop B Cold Leg; Revision D
- M-939; SI-From CNTMT PEN 48 To Reactor; Revision E
- M-944; CVC From Vol. Cont Tank To CVC Charging Pumps 1A, 1B And 1C; Revision B
- M-957-1; RHR-From RC Loops A And B Hot Legs To CNTMT PEN 9 And To CNTMT Sump B; Revision B
- M-957-2; RHR-From RC Loops A And B Hot Legs To CNTMT PEN 9 And To CNTMT Sump B; Revision B
- M-958-1; RHR-From CNTMT Sump B And Anchors Thru RHR Pump 1A To Anchor; Revision C
- M-958-2; RHR-From CNTMT Sump B And Anchors Thru RHR Pump 1A To Anchor; Revision B

- M-959-1; RHR-From CNTMT Sump B And Anchors Thru RHR Pump 1B To Anchor; Revision C
- M-960-1; RHR-From Anchors Thru RSDL HX 1A/1B To PENS 10, 48 And RHR-SFP Interconn; Revision D
- M-962-1; RHR-From Anchors Thru RSDL HX 1A/1B To PENS 10, 48 And RHR-SFP Inerconn; Revision A
- M-992-1; Safety Injection Pumps Suction Piping; Revision E/3750-1
- M-992-2; Safety Injection Pumps Suction Piping; Revision E
- M-993; Safety Injection Pumps Disch. Piping To Pen 28N, 28E And RWST; Revision A
- Maintenance Rule Scoping Questions; 56A Containment Isolation; Attachment A; Revision 0; September 22, 2011
- Maintenance Rule System Basis; Containment Isolation; Revision 5
- MA-KW-ICP-SI-001A; Safety Injection Train A Pressure Indicators Calibration; Revision 1
- MA-KW-ICP-SI-007; Pump 1A Discharge Pressure Loop 922 Calibration; Revision 0
- MRE011154; Penetration 11 LLRT Failure For LD-4A/B/C
- MRE013272; Penetration 11 LLRT Failure For LD-4A/B/C
- NSP-RHR-001; Completed Surveillance: Monitoring RHR Cooldown Piping For Gas Accumulation; May 10, 2011
- NSP-RHR-001; Completed Surveillance: Monitoring RHR Cooldown Piping For Gas Accumulation; August 2, 2011
- NSP-RHR-003A; Completed Surveillance: Monitoring RHR System For Voids – Train A; May 5, 2011
- NSP-RHR-003A; Completed Surveillance: Monitoring RHR System For Voids – Train A; July 28, 2011
- NSP-RHR-003B; Completed Surveillance: Monitoring RHR System For Voids – Train B; May 10, 2011
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- NSP-SI-001A; Completed Surveillance: Monitoring SI Gas Collection Chamber And SI Pump A Discharge Piping For Gas Accumulation; August 23, 2011
- NSP-SI-001A; Completed Surveillance: Monitoring SI Gas Collection Chamber And SI Pump A Discharge Piping For Gas Accumulation; September 19, 2011
- NSP-SI-001B; Completed Surveillance: Monitoring SI Pump B Discharge Piping For Gas Accumulation; August 18, 2011
- NSP-SI-001B; Completed Surveillance: Monitoring SI Pump B Discharge Piping For Gas Accumulation; September 15, 2011
- NSP-SI-002; Completed Surveillance: Monitoring SI Common Train Piping For Gas Accumulation; May 10, 2011
- NSP-SI-002; Completed Surveillance: Monitoring SI Common Train Piping For Gas Accumulation; August 2, 2011
- OD000417; Gas Voiding In RHR Train A; May 17, 2011
- OD000433; Void Found In RCS To RHR Suction Piping; August 12, 2011
- OPERXK-100-28; Flow Diagram – Safety Injection System; Revision BA
- OPERXK-100-29; Flow Diagram – Safety Injection System; Revision AN
- OP-KW-AOP-RHR-001; Abnormal Residual Heat Removal System Operation; Revision 5
- OP-KW-AOP-RHR-002; Shutdown Loss Of Coolant Accident; Revision 5
- OP-KW-AOP-RHR-003; Loss Of RHR While Operating At Reduced Inventory Conditions; Revision 2
- OP-KW-GOP-203; Shutdown From Mode 3 To RHR; Revision 1
- OP-KW-MOP-RHR-007; Operation Of Sample Cooler For Cooling RHR Components (TMOD 2009-11); Revision 1

- OP-KW-NOP-RHR-001; Residual Heat Removal System Operation; Revision 14
- OP-KW-NOP-RHR-003; Completed Surveillance: Dynamic Venting Of RHR To Interconnected ESF Systems; October 12, 2009
- SAR001611; Self Assessment – GL 2008-01, Gas Accumulation Management; October 31, 2011
- SP-34-099A; Completed Surveillance: Train A RHR Pump And Valve Test IST; May 5, 2011
- SP-34-099A; Completed Surveillance: Train A RHR Pump And Valve Test IST; July 28, 2011
- SP-34-099A; Train A RHR Pump And Valve Test - IST; March 10, 2010
- SP-34-099B; Completed Surveillance: Train B RHR Pump And Valve Test IST; May 10, 2011
- SP-34-099B; Completed Surveillance: Train B RHR Pump And Valve Test IST; August 2, 2011
- SSC Performance Criteria Sheet; 56A Containment Isolation; Attachment B; Revision 2; July 28, 2011
- T.108; Containment WR Sump Level; November 13, 2008
- TDI-6008-07; Vortex, Air Ingestion And Void Fraction (ECCS Recirculation Strainer); June 22, 2010
- TMOD 2009-11; RHR Vent Cooler; October 13, 2009
- TR ME-01 81; Evaluation Of Gas Accumulation In ECCS, Containment Spray And RHR Systems For GL 2008-01 Response; October 14, 2009
- U.107; RWST Level Check For Starting RHR Pump In Recirculation Mode; September 14, 2010
- WO KW07-008215; Perform Field Walkdown To Determine Locations Required For Additional Vent Valve; September 27, 2008
- WO KW100276578; SP-30-153 – Containment Sump B Level Alarm Test; October 8, 2009
- WO KW100276578; SP-30-153 – Containment Sump B Level Alarm Test; March 5, 2011
- WO KW100341088; DCR KW-10-01062 Permanently Remove RHR-44/RHR-45 And Associated ¾” Piping; March 23, 2011
- WO KW100341098; DCR KW-10-01062 Install Relief Valve Upstream Of RHR-11; March 23, 2011
- WO KW100347786; DCR 3724 Install ¾” Vent Valve On Suction Pipe To The 1A RHR Pump; March 4, 2008
- WO KW100347791; DCR 3724 Install ¾” Vent Valve On Suction Pipe To The 1B RHR Pump; May 5, 2008
- WO KW100378537; ILLRT Performed In LD-4A,B,C Exceeded Administrative Limits
- WO KW100592747; Gas Void Examination Report; October 20, 2009
- WO KW100602348; SP-55-167-6B – Cold Shutdown Evolution Valve Timing Tests – Train B - IST; March 25, 2011
- WO KW100602509; SP-55-167-6A – Cold Shutdown Evolution Valve Timing Tests – Train A – IST; March 24, 2011
- WO KW100616420; ISP-SI-040 – RWST Level Instrument Calibration; November 15, 2010
- WO KW100691357; Monitor ICS System For Voids After System Maintenance And Refill Per NSP-ICS-001; March 20, 2011
- WO KW100692995; Monitor SI System For Voids After System Maintenance And Refill Per NSP-SI-004; March 19, 2011
- WO KW100755477; ISP-SI-040 – RWST Level Instrument Calibration; October 20, 2011

#### 40A7 Licensee-Identified Violations

- ACE018602; Down-Grade Template; RC-422 Position Indication Slow When Closing
- ACE018603; Down-Grade Template; RC-423 Stayed In Mid-Position (Red And Green Lights On) When Closing
- ACE018711; CR430865 And CR432199; RC-423 Red/Green Indication Indicates Mid-Position

- ACE018807; Design Deficiency Identified For Primary Sampling CIVs RC-422 And RC-423
- ACE018807; Design Deficiency Identified For Primary Sampling CIVs RC-422/423
- ACE14080; The Screen House Exhaust Fan B Failed To Operate
- CA211723; Design Deficiency Identified For Primary Sampling CIVs RC-422 And RC-423
- CR119979; Loss Of B Screenhouse Exhaust Fan
- CR335210; Control Room Deficiency. RC-422/SV-33092 Went Closed During Primary Sampling
- CR419644; RC-422 Position Indication Slow When Closing
- CR419746; RC-423 Stayed In Mid-Position (Red And Green Lights On) When Closing Valve
- CR437345; RC-422/RC-423 Are Potentially Misclassified
- CR438343; Design Deficiency Identified For Primary Sampling CIVs RC-422 And RC-423
- CR451359; Approach To Control Inoperable RC-422/423 Warrants Additional Review And 50.59
- KPS Inservice Testing Basis Valve Data Sheet; Primary Sample System 37-PS; Valve RC-422; RCS Hot Leg Sample Line Containment Isolation Valve; Revision 6
- KPS Inservice Testing Basis Valve Data Sheet; Primary Sample System 37-PS; Valve RC-423; RCS Hot Leg Sample Line Containment Isolation Valve; Revision 6
- MEMO-RAD-20110003; From W.J. Eakin, Radiological Engineering, TO B.D. OConnell; LOCA Dose Evaluation To Support Operability Determinations For RC-422 And RC-423; August 31, 2011
- MRE007342; MRE For Screen House Exhaust Fan B Inoperable
- MRE014085; MRE For Design Deficiency Identified For Primary Sampling CIVs RC-422 And RC-423

#### NRC-Identified Condition Reports

- CR445958; NRC Proposes NCV For Inadequate Molded Case Circuit Breaker Actions
- CR446161; Appendix R FPPA EDG CO2 System Concentration Documentation Error
- CR446234; NRC NCV Identified During 10/3/11 NRC Exit Meeting-Fire Door Ajar
- CR446407; NRC Resident Inspector question Related To MR Evaluations For Letdown Valves
- CR446453; NRC Identifies Potential Issue For Flammable Gas Bottles Located In Aux Bldg
- CR446802; Question By NRC Resident Related To Line Voltage
- CR447493; Incorrect CAP No. In Procedure ICP-04-24
- CR447505; Door 441 Found Ajar
- CR447529; NRC Resident Reports Unusual Odor In Boric Acid Tank Room
- CR447766; NRC Questioned Use Of Teflon Tape On SI Piping
- CR447815; NRC Identified Concern With Traveling Water Screen 1A2 Maintenance Activity
- CR448303; NRC Questions TS Applicability For RC-422
- CR448347; NRC Finding Identified During 10/3/11 NRC Exit Meeting-Weak OD
- CR448371; NRC Requests Additional Information For LAR 244 (X/Q)
- CR448628; Proposed Enhancement To MPM-FP-030B
- CR448927; Door 151 Found Open
- CR450262; 31 Day Review Process Requires Closer Review
- CR450643; LD-13 Boric Acid Leak Identified
- CR451001; Clarify USAR Chapter 9 Section 9.6.8 – Station & Instrument Air
- CR451036; Anchors For Fire Extinguisher Are Pulling From Wall
- CR451039; SW-801A Has Corrosion Due To Not Being Lagged
- CR451042; SW-801B Has Corrosion Due To Not Being Lagged
- CR451256; NRC SRI Questions Adequacy Of OD-456
- CR451261; NRC-Identified Opportunity To Increase Clarity Of PMT Annotation In Work Orders
- CR451356; NRC Observation Items Following OSP-AFW-007 Pre-Job Brief

- CR451901; Door #1 Not Checked
- CR453046; NRC TI 177 – Ambiguity In Venting Procedure
- CR453154; NRC TI 177 – Restriction On Vent Tubing Not Clearly Identified In MOPs
- CR453180; TI 2515/177 NRC Inspection – Old Acceptance Criteria In Draft Calc
- CR453323; TI 2515/177 NRC Inspection – Lack Of Basis For 0.01 Cubic Feet Void Criteria
- CR453612; TI 2515/177 NRC Inspection – Procedure Attachment/Graph Incorrect
- CR453720; TI 2515/177 NRC Inspection – Revise Calculation C10984, Rev. 1
- CR454022; Offsite Voltage Requirements For Operability Of RST/RAT And TST/TAT Per TS 3.8.1
- CR454308; TI 2515/177 NRC Inspection – Could Not Locate Complete Procedure
- CR454310; Spare RAT Xfmr In Substation Nitrogen Gas Bottle Not Properly Secured
- CR454320; TI 2515/177 NRC Inspection – Instrument Inaccuracies Not Taken Into Account
- CR454386; October 2010 Data Missing For RP-KW-002-002 Attachment C
- CR454432; NRC Non-Cited Violations Identified During 11/29/11 NRC Exit Meeting
- CR454694; NRC TI-177 – RHR Operation In Mode 4 (NCV), W/Cross-Cutting Asp H.1.b
- CR454698; OP-KW-ORT-EG-001 Step 5.2 Caution Allows A Voltage Of 22kv While C11450 Allows A
- CR454722; TI 2515/177 NRC Inspection – Concern With Preconditioning In Gas Void Monitoring
- CR454743; TLD Not Accredited For Beta And Gamma And Neutron Fields
- CR454744; Evaluation Of RAM Storage Outside The Main RCA Requested
- CR454754; Question Relating To Protected Area Status Of Security Building In AOP-FP-001
- CR454832; Evaluate Station Quarterly Fire Brigade Drills
- CR454859; AOP-EG-001 Not Implemented On 11/24/11
- CR455067; TI 2515/177 NRC Inspection – Potential NCV Debriefed
- CR455077; OD 456 Rev 1 Approved
- CR455364; TI 2515/177 – Interim Pump Gas Ingestion Criteria Table Confusion
- CR456486; NRC Identified Enhancement For Protected Train
- CR456804; Unrestrained Cart
- CR456811; Transient Combustible Permit
- CR456820; Unsecured unattended Material Left In Safety Related Area Discovered By NRC
- CR456822; Safety Bump Hazard Sign Was Found On Floor
- CR456860; Proposed NCV For Violation Of 10 CFR 50 Appendix B Criterion V
- CR456862; Performance Deficiency Identified For Missed Operability Evaluations
- CR456865; Unresolved Item (URI) To Evaluate Fire Drill Requirements
- CR456946; Procedure SA-KW-FPP-010, Fire Drills, Potential Discrepancies

## LIST OF ACRONYMS USED

AC	Alternating Current
ACC	Air Conditioning Component
ADAMS	Agencywide Document Access Management System
AFW	Auxiliary Feedwater
ALARA	As-Low-As-Is-Reasonably-Achievable
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CIV	Containment Isolation Valve
CR	Condition Report
CS	Containment Spray
CST	Condensate Storage Tank
DG	Diesel Generator
DHR	Decay Heat Removal
DSEM	Department Self Assessment Meeting
EAL	Emergency Action Level
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EP	Emergency Plan
FP	Fire Protection
GL	Generic Letter
GPM	Gallons Per Minute
HVAC	Heating, Ventilation, And Air Conditioning
ICS	Internal Containment Spray
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IP	Inspection Procedure
IPEE	Individual Plant Examination of External Events
IR	Inspection Report
IST	Inservice Testing
ITS	Improved Technical Specifications
KPS	Kewaunee Power Station
LER	Licensee Event Report
LORT	Licensed Operator Requalification Training
MS	Mitigating Systems
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NPSH	Net Positive Suction Head
NRC	U.S. Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
NSR	Nonsafety-Related
NVLAP	National Voluntary Laboratory Accreditation Program
OD	Operability Determination
ODCM	Offsite Dose Calculation Manual
OP	Operating Procedure
OWA	Operator Workaround
PARS	Publicly Available Records System
P&ID	Piping And Instrumentation Diagram
PI	Performance Indicator

PMT	Post-Maintenance Testing
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RM	Radiation Monitor
RP	Radiation Protection
RS	Reactor Safety
SBO	Station Blackout
SDP	Significance Determination Process
SER	Safety Evaluation Report
SFP	Spent Fuel Pool
SI	Safety Injection
SL	Severity Level
SR	Safety-Related
SRA	Senior Reactor Analyst
SSC	Structure, System, And Component
SW	Service Water
TDAFW	Turbine-Driven Auxiliary Feedwater
TI	Temporary Instruction
TLD	Thermoluminescence Dosimeter
TRM	Technical Requirements Manual
TS	Technical Specification
TSC	Technical Support Center
TSTF	Technical Specifications Task Force
URI	Unresolved Item
USAR	Updated Safety Analysis Report
UT	Ultrasonic Testing
VOM	Volt-Ohm Meter
WO	Work Order

D. Heacock

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Sincerely,

*/RA/*

Kenneth Riemer, Branch Chief  
Branch 2  
Division of Reactor Projects

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SUBJECT: KEWAUNEE POWER STATION - NRC INTEGRATED INSPECTION  
REPORT 05000305/2011005

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