



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352

February 8, 2010

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

**SUBJECT: KEWAUNEE POWER STATION INTEGRATED INSPECTION REPORT  
05000305/2009005**

Dear Mr. Heacock:

On December 31, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Kewaunee Power Station. The enclosed report documents the inspection findings, which were discussed on January 6, 2010, with Mr. Steve Scace and other members of your staff.

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

Based on the results of this inspection, two NRC-identified and two self-revealed findings of very low safety significance were identified. The four findings involved violations of NRC requirements. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating the issues as Non-Cited Violations (NCVs) in accordance with Section VI.A.1 of the NRC Enforcement Policy.

If you contest the subject or severity of any NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Kewaunee Power Station. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspectors at the Kewaunee Power Station. The information that you provide will be considered in accordance with Inspection Manual Chapter 0305.

D. Heacock

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

Sincerely,

*/RA/*

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

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

Enclosure: Inspection Report 05000305/2009005  
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: 05000305/2009005

Licensee: Dominion Energy Kewaunee, Inc.

Facility: Kewaunee Power Station

Location: Kewaunee, WI

Dates: October 1, 2009, through December 31, 2009

Inspectors: S. Burton, Senior Resident Inspector  
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Approved by: Michael A. Kunowski, Chief  
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Enclosure

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## SUMMARY OF FINDINGS

IR 05000305/2009005; 10/01/2009 – 12/31/2009; Kewaunee Power Station; Inservice Inspection Activities; Operability Evaluations; Outage Activities; and Surveillance Testing.

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

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

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

- Green. A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed for the failure to have adequate work instructions in place during the isolation of component cooling water (CCW) flow in the reactor coolant pump vaults. Specifically, the inadequate valve isolation sequence and the speed at which the outlet valves were closed caused CCW system relief valves to lift and rapidly drain the component cooling water surge tank while the CCW system was supporting the residual heat removal system for decay heat removal. In response to the issue, the licensee implemented compensatory corrective actions to modify the tagout and hang tags on the appropriate CCW isolation valves.

The inspectors determined that the finding was more than minor because it was associated with the Initiating Events Cornerstone attribute of configuration control and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors determined that the finding could be evaluated in accordance with IMC 0609, Appendix G, "Shutdown Operations SDP." The inspectors used Checklist 3 contained in Attachment 1 and determined that the finding required a Phase 2 analysis since the finding increased the likelihood that a loss of decay heat removal would occur. The Region III senior reactor analyst performed the assessment using Appendix G, Attachment 2, "Phase 2 Significance Determination Process Template for PWR [Pressurized Water Reactor] During Shutdown," and determined that this issue is best characterized as a finding of very low safety significance (Green). This finding has a cross-cutting aspect in the area of human performance, resources component, because the licensee did not maintain long-term plant safety by maintenance of design margins. Specifically, the work instruction did not adequately account for the low design margin that existed between the system operating pressure and the relief valve setpoints when both CCW pumps were running (H.2(a)).

- 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 licensee's failure to have adequate procedures to ensure that steps were sequenced

such that unplanned transients were not initiated. Specifically, the procedure for performing emergency diesel generator train "A" automatic testing allowed steps to be sequenced in a manner such that a jumper used to simulate a station blackout signal was left installed during the restoration of offsite power. Because of the installed jumpers, a transient was initiated on the associated bus and attached equipment during the restoration from testing. In response to the issue, the licensee implemented compensatory corrective actions and corrected the procedure deficiency prior to conducting the same test on the opposite train.

The inspectors determined that the finding was more than minor because it was associated with the Initiating Events Cornerstone attribute of procedure quality and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The inspectors evaluated the significance of the issue using IMC 0609, Appendix G, Checklist 3, and determined that the power availability guidelines were met. Because the finding did not increase the likelihood of a loss of offsite power or degrade the licensee's ability to cope with a loss of offsite power, the finding screened as having very low safety significance (Green). The finding has a cross-cutting aspect in the area of human performance, work practices component, because the procedure was not adequately verified when steps were changed from being sequence-dependent to allow for completion in any order. Specifically, personnel proceeded to change procedure without implementing peer-checking during the validation process to ensure that the change was applicable to all plant conditions (H.4(a)). (Section 1R22.1)

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

- Green. The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR 50.55a(g)(4) for the failure to perform dye penetrant examinations of the full required exam surface on safety injection (SI) gas collection chamber welds (SI-W603, SI-W604, and SI-H109) in accordance with the American Society of Mechanical Engineers Section XI Code. Specifically, the examiner proceeded with the examination without anticipating the effects of the increased dwell and drying times of the developer due to cooler ambient temperature than those he had been working under previously. The developer, which would normally dry to a white residue shortly after application to a warm surface and aid in determining the extent of application, remained somewhat translucent when applied to the cooler surface, masking the extent of coverage. This resulted in the examiner's failure to coat the full required Code areas of the welds he was examining and his failure to recognize the lack of coverage. The licensee subsequently re-performed the dye penetrant examinations and entered this issue into their corrective action program.

The inspectors determined that the finding was more than minor because it was associated with the Mitigating System Cornerstone attribute of equipment performance and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Absent NRC intervention, the licensee would not have performed the full Code required examination of welds SI-W603, SI-W604, and SI-H109 for an indefinite period of service, which would have placed the reactor coolant pressure boundary at increased risk for unanalyzed cracking, leakage, or component failure. This finding was of very low safety significance because a qualified examination was subsequently performed with no relevant indications detected. In particular, it did not result in the loss of function of the

mitigating system. The inspectors determined that the finding had a cross-cutting aspect in the area of human performance, work practices component, because the licensee proceeded in the face of uncertainty or unexpected circumstances (H.4(a)). (Section 1R08.1)

- Green. The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to promptly identify and correct deficiencies that had caused 4160-Volt alternating current breaker failures, which, if corrected, may have prevented subsequent similar failures. Specifically, the licensee did not evaluate other safety-related breakers after hardened grease was identified in the safety-related bus 5 to bus 6 crosstie breakers. In response to this finding, the licensee entered the issue into its corrective action program as Condition Report (CR) 360677.

The inspectors determined that the finding was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of procedure quality and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1, Initial Screening and Characterization of Findings," Table 4a, for the Mitigating Systems Cornerstone, dated January 10, 2008. The significance of the finding was determined to be of very low safety significance because the inspectors answered "no" to all of the questions in the Mitigating Systems Cornerstone column. The inspectors determined that the issue had a cross-cutting aspect in human performance, work practices component, because licensee staff did not comply with the timeliness aspects of completing an apparent cause evaluation in accordance with procedure guidance (H.4(b)). (Section 1R15.1)

**B. Licensee-Identified Violations**

None.

## REPORT DETAILS

### Summary of Plant Status

Kewaunee Power Station began the inspection period in a refueling outage (RFO) and remained shutdown until reactor startup on October 22, 2009. Kewaunee reached full power on October 25 and remained at full power with the exception of brief downpowers to conduct planned maintenance and surveillance activities throughout the remainder of the quarter.

### 1. REACTOR SAFETY

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

#### 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 corrective action program (CAP) items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entered them in the 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:

- service water;
- 125-Volt direct current safeguards batteries;
- station blackout diesel; and
- technical support center.

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

##### b. Findings

No findings of significance were identified.



## 1R04 Equipment Alignment (71111.04)

### .1 Quarterly Partial System Walkdowns

#### a. Inspection Scope

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

- emergency diesel generator "B" upon return to service after maintenance;
- spent fuel pool ventilation; and
- auxiliary feedwater system train "A" after testing.

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

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

#### b. Findings

No findings of significance were identified.

### .2 Semi-Annual Complete System Walkdown

#### a. Inspection Scope

On December 1, 2009, 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, and 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 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.

These activities constituted one complete system walkdown sample as defined in IP 71111.04-05.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- fire zone TU-22, turbine building operating floor/elevation 626';
- fire zone AX-23A, AX-31X, AX-32/elevation 606';
- fire zone TU-22, TU-96/elevation 586';
- fire zone AX-23B, AX-23D, AX-25/elevation 606';
- fire zone TU-97, battery room 1A; and
- fire zone TU-98, battery room 1B.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on the overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, or the potential to impact equipment that could initiate or mitigate a plant transient. 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 six quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings of significance were identified.

1R06 Flooding (71111.06)

.1 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 CAP for previous submerged cable issues. The inspectors performed a walkdown of the following underground bunkers/manholes subject to flooding:

- tertiary auxiliary transformer (TAT) supply cable splice pit;
- TAT cable pull pit; and
- switchyard control cable vault.

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

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07T)

.1 Triennial Review of Heat Sink Performance

a. Inspection Scope

The inspectors reviewed completed surveillances, vendor manual information, calculations, and heat exchanger inspection results associated with the emergency diesel generator (EDG) "B" jacket water heat exchanger. This heat exchanger was chosen based on risk significance in the licensee's probabilistic safety analysis, their important safety-related mitigating system support functions, and their relatively low margin.

For the EDG "B" jacket water heat exchanger, the inspectors verified that testing, inspection, maintenance, and monitoring of biotic fouling and macrofouling programs were adequate to ensure proper heat transfer. This was accomplished by verifying the testing method used was consistent with accepted industry practices, or equivalent, the test conditions were consistent with the selected methodology, the test acceptance

criteria were consistent with the design basis values, and past results of heat exchanger performance testing. The inspectors also verified that the test results appropriately considered differences between testing conditions and design conditions; the frequency of testing based on trending of test results was sufficient to detect degradation prior to loss of heat removal capabilities below design basis values; and test results considered test instrument inaccuracies and differences.

For the EDG "B" jacket water heat exchanger, the inspectors reviewed the methods and results of heat exchanger inspections. The inspectors verified the methods used to inspect and clean heat exchangers were consistent with identified as-found conditions and expected degradation trends and industry standards, the licensee's inspection and cleaning activities had established acceptance criteria consistent with industry standards, and the as-found results were recorded, evaluated, and appropriately dispositioned such that the as-left condition was acceptable.

In addition, the inspectors verified the condition and operation of the EDG "B" jacket water heat exchanger was consistent with design assumptions in heat transfer calculations and as described in the USAR. This included verification that the number of plugged tubes was within pre-established limits based on capacity and heat transfer assumptions. The inspectors verified the licensee evaluated the potential for water hammer and established adequate controls and operational limits to prevent heat exchanger degradation due to excessive flow-induced vibration during operation. In addition, eddy current test reports and visual inspection records were reviewed to determine the structural integrity of the heat exchanger.

The inspectors verified the performance of the ultimate heat sink (UHS) and its subcomponents, such as piping, intake screens, pumps, valves, etc., by tests or other equivalent methods to ensure availability and accessibility to the inplant cooling water systems.

The inspectors reviewed the licensee's operation of the service water system and UHS. This included the review of licensee's procedures for a loss of the service water system or UHS and the verification that instrumentation, which was relied upon for decision making, was available and functional. In addition, the inspectors verified that macrofouling was adequately monitored, trended, and controlled by the licensee to prevent clogging. The inspectors verified that the licensee's biocide treatments for biotic control were adequately conducted and the results monitored, trended, and evaluated.

The inspectors performed a system walkdown of the service water intake structure to verify the licensee's assessment on structural integrity and component functionality. This included the verification that the licensee ensured proper functioning of traveling screens and strainers, and structural integrity of component mounts. In addition, the inspectors verified that service water pump bay silt accumulation was monitored, trended, and maintained at an acceptable level by the licensee, and that water level instruments were functional and routinely monitored. The inspectors also verified the licensee's ability to ensure functionality during adverse weather conditions.

In addition, the inspectors reviewed CRs related to the heat exchangers and heat sink to verify that the licensee had an appropriate threshold for identifying issues and to evaluate the effectiveness of the corrective actions. Documents reviewed are listed in the Attachment to this report.

These inspection activities constituted two heat sink inspection samples as defined in IP 71111.07-05.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI) Activities (71111.08P)

From September 25, 2009, through October 7, 2009, the inspectors conducted a review of the implementation of the licensee's ISI program for monitoring degradation of the reactor coolant system (RCS), steam generator tubes, emergency feedwater systems, risk-significant piping and components, and containment systems.

The inspections described in Sections 1R08.1, 1R08.2, 1R08.3, 1R08.4, and 1R08.5 below constituted one inservice inspection sample as defined in IP 71111.08-05.

.1 Piping Systems ISI

a. Inspection Scope

The inspectors observed and reviewed records of the following nondestructive examinations mandated by the American Society of Mechanical Engineers (ASME) Section XI Code to evaluate compliance with the ASME Code Section XI and Section V requirements and if any indications and defects detected were detected, to determine if these were dispositioned in accordance with the ASME Code or an NRC approved alternative requirement:

- ultrasonic examination of class 2, 6-inch circumferential weld on SI gas collection chamber, weld M-1952/SI-W603;
- ultrasonic examination of class 2, 6-inch circumferential weld on SI gas collection chamber, weld M-1952/SI-W604;
- dye penetrant testing (PT) of class 2, 6-inch circumferential weld on SI gas collection chamber, weld SI-W603;
- PT of class 2, 6-inch circumferential weld on SI gas collection chamber, weld SI-W604;
- PT of class 2, integrally welded attachment weld on SI gas collection chamber, weld SI-H109;
- PT of a class 1, 2-inch chemical and volume control (CVC) elbow-to-pipe weld CVC-W166S (summary number K1.B9.40.141);
- visual examination (VT-3) of class 1, valve-motor-reactor coolant pump (RCP) loop "A" supply to residual heat removal (RHR) pumps, "ISIM-957-1SH1/RHR-1A"; and
- visual examination (VT-3) of class 1, valve-motor-RCP loop "B" supply to RHR pumps, "ISIM-957-1SH1/RHR-1B."

The inspectors reviewed the following examination completed during the previous outage with relevant/recordable conditions/indications accepted for continued service to determine if acceptance was in accordance with the ASME Code Section XI or an NRC approved alternative:

- indication assessment of integrally welded attachment RCP-CS2 for RCP-1A.

The inspectors reviewed the following pressure boundary welds completed for risk-significant systems since the beginning of the last RFO to determine if the licensee applied the preservice non-destructive examinations and acceptance criteria required by the Construction Code and ASME Code, Section XI. Additionally, the inspectors reviewed the welding procedure specification and supporting weld procedure qualification records to determine if the weld procedures were qualified in accordance with the requirements of Construction Code and the ASME Code Section IX:

- CVC welds 06-140451-1 through 06-14045-5, code class 2, fabricated during replacement of valve CVC-201A; and
- auxiliary feedwater 2A welds design change request (DCR) 3609-6R&7, code class 2, fabricated during replacement of 3-inch valve-control-auxiliary feedwater pump 1A flow control valve.

b. Findings

(1) Failure to Perform PT Examinations on the Full Code Required Exam Surfaces

Introduction: The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR 50.55a(g)(4) for the failure to perform PT examinations of the full exam surface on several SI discharge piping gas collection chamber welds in accordance with ASME Section XI Code.

Description: On October 1, 2009, the inspectors identified, through direct observation, that a licensee contract non-destructive examination examiner was not performing PT examinations of the full required surface area of welds SI-W603, SI-W604, and SI-H109. Specifically, the required PT exam surfaces of the SI gas collection chamber welds (SI-W603, SI-W604, and SI-H109, code class 2) should have included the welds plus the area from the toe of the welds to the surface area 1/2-inch adjacent to either side of the weld toe. The developer, which would normally dry to a white residue shortly after application to a warm surface, and aid in determining the extent of application, remained somewhat translucent when applied to the cooler surface—masking the extent of coverage. This resulted in the examiner's failure to coat the full required Code areas of the welds under examination, and the failure to recognize the lack of coverage. The Code required examination surfaces were subsequently examined as a part of the licensee's corrective actions. The licensee documented this concern in Condition Report (CR) 350543.

Analysis: The inspectors determined that the failure to perform PT examinations of the full exam surfaces was a performance deficiency warranting a significance determination. The inspectors reviewed this finding against the guidance contained in IMC 0612 "Power Reactor Inspection Reports," Appendix B, "Issue Dispositioning Screening," dated December 4, 2008. In particular, the inspectors compared this finding to those identified in IMC 0612, Appendix E, "Examples of Minor Issues," dated

August 11, 2009, to determine whether the finding was minor and concluded that none of the examples listed in Appendix E accurately represented this example.

The inspectors concluded that the finding was more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of equipment performance, and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Absent NRC intervention, the licensee would not have performed the Code required examination of welds SI-W603, SI-W604, and SI-H109 for an indefinite period of service, which would have placed the reactor coolant pressure boundary at increased risk for undetected cracking, leakage, or component failure and it would become a more significant-safety concern. The inspectors were concerned that the failure to perform an examination of the complete examination surface could have allowed system piping with undetected cracks to be placed in service.

Because the inspectors answered "No" to each of the Phase 1 screening questions for "Determining the Significance of Reactor Inspection Findings for At-Power-Situations," and qualified re-examinations were subsequently performed with no relevant indications detected, this finding was of very low safety-significance (Green). In addition, the finding did not result in the loss of safety function of the mitigating system.

The inspectors determined that the finding had a cross-cutting aspect in the area of human performance, work practices component, because the licensee proceeded in the face of uncertainty or unexpected circumstances. Specifically, the examiner proceeded with the examination without anticipating the effects of the increased dwell and drying times of the developer due to cooler ambient temperatures than those he had been working under previously (H.4(a)).

Enforcement: On October 1, 2009, the inspectors identified an NCV of 10 CFR 50.55a(g)(4), "Inservice Inspection Requirements." Title 10 CFR 50.55a(g)(4) requires, in part, that throughout the service life of a pressurized water-cooled nuclear power facility, components must meet the requirements set forth in the ASME Code Section XI. The 1998 edition of ASME Code Section XI, Table IWC-2500-1, "Examination Categories," requires that surface examinations for Item No. C5.21 ("Welds in Piping") and C5.40 ("Branch Connection Welds") be examined in accordance with figures IWC-2500-7(a) and IWC-2500-9, respectively. Both figures indicate an exam surface "A - B," which extends around the circumference/weld and from a point "A," 1/2-inch from the toe on one side of the weld to a point "B," 1/2-inch from the toe on the other side of the weld.

Contrary to the above, on October 1, 2009, while performing PT examinations using procedure ER-AA-NDE-PT-300, on SI gas collection chamber welds SI-W603, SI-W604, and SI-H109, the licensee examiner failed to perform the PT examinations of the full Code required surfaces. Because of the very low safety-significance of this finding and because the issue was entered into the licensee's CAP as CR 350543, it is being treated as a Non-Cited Violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000305/2009005-01).

## .2 Reactor Pressure Vessel Upper Head (RPVUH) Penetration Inspection Activities

### a. Inspection Scope

No RPVUH exams were required this outage. The licensee opted to perform information-only visual examinations on the accessible areas of the reactor vessel closure head during the 2009 RFO to satisfy the Kewaunee Power Station augmented program. The licensee planned to perform the RPVUH examination per ASME Boiler and Pressure Vessel Code, Section XI, Code Case N-729-1, during the Spring 2011 RFO as required per 10 CFR 50.55a; therefore, no NRC review was completed for this inspection procedure attribute.

### b. Findings

No findings of significance were identified.

## .3 Boric Acid Corrosion Control (BACC)

### a. Inspection Scope

On September 26, 2009, the inspectors observed the licensee staff performing visual examinations of the RCS within containment to determine if these visual examinations focused on locations where boric acid leaks can cause degradation of safety-significant components.

The inspectors reviewed the following licensee evaluations of RCS components with boric acid deposits to determine if degraded components were documented in the corrective action system. The inspectors also evaluated corrective actions for any degraded RCS components to determine if they met the component Construction Code, ASME Section XI Code, and/or NRC approved alternative:

- containment spray pump 1A discharge piping to penetration 29N; and
- CVC system letdown heat exchanger.

The inspectors reviewed the following corrective actions related to evidence of boric acid leakage to determine if the corrective actions completed were consistent with the requirements of the ASME Code Section XI and 10 CFR Part 50, Appendix B, Criterion XVI:

- CR 021830, boric acid residue noted on RC-300B; and
- CR 349769, heavy boric acid leak on valve CVC-34.

### b. Findings

No findings of significance were identified.



.4 Steam Generator (SG) Tube Inspection Activities

a. Inspection Scope

No examination was required pursuant to the TSs and none was conducted during the current RFO. Therefore, no NRC review was completed for this inspection procedure attribute.

b. Findings

No findings of significance were identified.

.5 Identification and Resolution of Problems

a. Inspection Scope

The inspectors performed a review of ISI-related problems entered into the licensee's CAP and conducted interviews with licensee staff to determine if:

- the licensee had established an appropriate threshold for identifying ISI-related problems;
- the licensee had performed a root cause (if applicable) and taken appropriate corrective actions; and
- the licensee had evaluated operating experience and industry generic issues related to ISI and pressure boundary integrity.

The inspectors performed these reviews to evaluate compliance with 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements. The corrective action documents reviewed by the inspectors are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On December 2, 2009, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;

- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and emergency plan actions and notifications.

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

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

b. Findings

No findings of significance were identified.

.2 Examination Security

a. Inspection Scope

The inspectors reviewed the licensee's simulator security checklist related to examination physical security (e.g., access restrictions and simulator configuration controls) to verify compliance with 10 CFR 55.49, "Integrity of Examinations and Tests." The inspectors also reviewed several CRs and corrective action reports related to examination security problems at the facility during the recent license operator requalification examinations (operating tests), and the implementation of security and integrity measures throughout the examination process. Documents reviewed are listed in the Attachment to this report.

b. Findings

Licensed Operator Requalification Examination Security Issues

No findings of significance were identified. However, the inspectors determined that a possible compromise of examination security occurred during the administration of licensed operator requalification examinations as a result of installation of new software and a jump drive containing requalification examinations details being left in an uncontrolled manner in the simulator. The NRC is reviewing the circumstances surrounding these examination security issues and the facility's response upon discovering the possibility of the examination compromise. More information is required to determine if there is a performance deficiency and if the performance deficiency is more than minor. This issue is an Unresolved Item (URI) pending further review and assessment by the NRC of CR 357397 (URI 05000305/2009005-02).

.3 Annual Operating Test Results (71111.11B)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the individual Job Performance Measure operating tests, and the simulator operating tests (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee from October 2009 through

December 2009, as part of the licensee's operator licensing requalification cycle. These results were compared to the thresholds established in IMC 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)," dated August 22, 2005. The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG 1021, "Operator Licensing Examination Standards for Power Reactors," and IP 71111.11, "Licensed Operator Requalification Program." Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

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

- feedwater system;
- shield building ventilation system; and
- reactor protection system.

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

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;
- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for 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, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues that 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

No findings of significance were identified.

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

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

- SI accumulator "B" valve maintenance schedule change results in modified risk assessment;
- risk management with 24-hour diesel testing moved coincident with bus 4 maintenance and the technical support diesel supplying motor control center 46;
- startup and shutdown risk management during transition between the shutdown safety assessment methodology and the on-line risk safety monitor; and
- emergent risk upon loss of the TAT.

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

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

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- failure of two 4160-Volt breaker closing springs to recharge for safety-related bus 5 to bus 6 interface breakers in each bus;
- potential gas voiding in the RHR suction line from the containment sump; and
- seismic adequacy of pipe support R-RHR-H2.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and USAR to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors 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 inspections constituted three samples as defined in IP 71111.15-05.

b. Findings

(1) Latching Pawl on Safety-Related Bus Tie Breakers Fails to Engage Due To Grease Hardening

Introduction: The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to promptly identify and correct deficiencies resulting in 4160-Volt alternating current breaker failures that, if corrected, may have prevented subsequent similar failures.

Description: On October 11, 2009, while racking-in the bus 5 crosstie breaker to bus 6, the charging motor did not stop automatically. The licensee documented this occurrence in CR 352048. Earlier on the same day, the bus 6 crosstie breaker to bus 5 also failed in the same manner and the licensee documented this failure in CR 351996. Because the bus tie breakers are safety-related and the same design as the breakers supplying the safety-related loads, the inspectors were concerned that the failure mechanism could impact the operation of the safety-related loads.

Both CR 352048 and CR 351996 indicated that the breakers were not required for operability and that no automatic functions were associated with the breakers; therefore, an operability assessment was not required. However, no documentation of the impact of the condition on the same type safety-related breakers was included. The inspectors also reviewed procedure OP-AA-102, "Operability Determination," and found that Step 3.2.1.c required that a degraded or nonconforming condition's impact on technical specification SSCs be evaluated using the guidance in Attachment 1. Attachment 1, "Immediate Operability Determination Guidelines," Step 3, required that the extent of condition on other trains of systems that may be affected be evaluated.

On October 28, 2009, the inspectors interviewed licensee staff responsible for the operability determination associated with the CR. The licensee indicated that the cause of the failure was grease hardening on the ratchet pawl and that it occurred because these breakers were not used and, therefore, infrequently cycled. The inspectors noted that grease hardening was attributed as a failure mechanism for the in-service safety-related service water pump failure that occurred on November 21, 2008, and that the related CR 119799 was referenced in CR 352048. Notably, the grease hardening on the service water pump breaker was a different failure point and not related to the ratchet pawl. The inspectors reviewed other breaker failures and found that CR 097231, dated April 29, 2008, "4160-Volt Breaker Would Not Charge Springs," was written for the same failure and found that the vendor manual did not require lubrication of the holding pawl; CR 022325, "MAT [main auxiliary transformer] Supply To Bus 5 Charging Circuit Did Not Complete Its Operations," written on October 12, 2007, was written for the same failure without an evaluation; and CR 096527, "Charging Mechanism On Breaker 1-511 [MAT supply to bus 5] Was Sluggish To Engage During Charging," written April 23, 2008, as written for the same failure and indicated that "possible grease hardening issues with breaker not being exercised or cycled."

In addition to the above, several observations were made relative to the apparent cause evaluation (ACE) performed for CR 119799, the service water pump breaker failure. Condition report CR 119799 initiated ACE 014079, "ACE for 1-507BKR failing to close," to determine the cause of the event. The casual evaluation was assigned and in progress; however, the final disposition of the ACE did not occur until November 12, 2009, almost one year after the initial event. The identified apparent cause was that the associated breaker service manual was less than adequate in identifying all points requiring lubricating during corrective maintenance and the associated procedure did not require lubricating the failure point. Notably, this cause was the same cause identified in CR 097231, dated April 29, 2008. Additionally, the ACE had a limited extent of condition/cause evaluation because the only failure mechanism reviewed was a failure to close; however, the apparent cause was lubrication issues with grease hardening due to inadequate lubrication practices attributed to an inadequate vendor technical manual. These causes, grease hardening related and inadequate vendor manual issues, were not reviewed.

The inspectors were also concerned that grease hardening was not fully evaluated. The inspectors noted that three primary contributors to grease hardening issues are environment, time, and incompatible lubricants. The inspectors reviewed the licensee's related CRs, lubrication procedure, technical manuals, and vendor letters and found several inconsistencies that had not been accounted for in the review of the above issues. Some of the inconsistencies included: lubricants in the maintenance procedure did not match the lubricants in the vendor manual; the vendor letter recommended rejuvenation of greases with non-synthetic oils, however, the technical manual recommended using a synthetic oil; the vendor manual required a thorough washing in light machine oil after application of any solvent to remove the grease, however, the procedure did not reflect this requirement; and breaker maintenance histories indicated that the vendor-recommended 18-month maintenance interval and the "one a year" lubrication interval had been exceeded for some breakers. The inspectors found that the licensee had not evaluated the extended intervals with respect to the impact of time relative to grease hardening.

Condition report CR 358513, "Information concerning issue with Westinghouse vacuum breakers," dated November 17, 2009, identified that the inadequate lubrication practices have been addressed in the related preventative maintenance procedure; however, the procedure had not been performed on many of the related circuit breakers. The breakers were scheduled for future maintenance and the evaluation determined that the breakers were "operable but degraded" because related technical reports indicated that the periodic cycling of breakers was one of the most effective ways to ensure operability, and the subject breakers were routinely cycled. The inspectors were concerned that the unaddressed observations outlined above were not resolved in the operability determination or as a result of the ACE, and that the technical report assumed that related maintenance practices were being appropriately applied. The inspectors communicated their observation to the licensee and this issue was entered into the licensee's CAP as CR 360677, "Potential NRC Violation for Inadequate Corrective Actions."

Analysis: The inspectors concluded that the failure of the licensee to evaluate the extent of condition on the operability of other safety-related breakers when it performed the immediate operability determination for the bus 5 and bus 6 crosstie breakers was a performance deficiency warranting further review. The inspectors determined that the performance deficiency was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," dated December 4, 2008, because it was associated with the Mitigating Systems Cornerstone attribute of procedure quality and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors concluded that the issue, if left uncorrected, could become a more significant event. Specifically, the identified issues with the maintenance procedure, the possible incompatibilities of lubricants, the lack of guidance to properly wash away solvents using light oil, and because breaker maintenance periods had exceeded vendor recommendations without evaluation, if left uncorrected, could become more significant with time.

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

The inspectors determined that the issue had a cross-cutting aspect in human performance, work practices component, because licensee staff did not comply with the timeliness aspects of completing its apparent cause in accordance with procedure guidance (CR 340002) (H.4(b)).

Enforcement: Title 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures be established to assure that conditions adverse to quality are promptly identified and corrected.

Contrary this, the licensee did not promptly identify or correct deficiencies for 4160-Volt breaker failures that occurred between October 12, 2007, and November 21, 2008. Specifically, the related evaluations for CR 119799, ACE014079, which commenced on November 24, 2008, was not completed and did not determine the apparent cause until

November 2009, did not initiate adequate corrective actions until after November 2009, and failures of similar breakers occurred between November 2008 and November 2009, which could be attributed to the same cause. Because the finding was of very low safety significance and has been entered into the licensee's corrective action program (CR 119799), this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000305/2009005-03).

(2) Residual Heat Removal Pipe Support RRHR-H2: Seismic Category I Requirements

Introduction: The inspectors determined that a URI existed concerning the design basis structural analysis for the RHR pipe support RRHR-H2 being in conformance with seismic category I requirements. Specifically, the pipe support component hardware calculation failed to consider the self-weight of the standard components together with the pipe support load for the total pipe support force structurally supported by the standard components (3/4-inch ITT Grinnell Figure 66, 3/4-inch ITT Grinnell Figure 290L, 3/4-inch ITT Grinnell Figure 140, 3/4-inch ITT Grinnell Figure 136, 3/4-inch ITT Grinnell Figure 253, and 3/4-inch ITT Grinnell Figure 290). As a result, the inspectors were not able to determine if the design basis calculation of the pipe support standard component hardware was sufficient to ensure conformance with seismic category I design basis requirements.

Description: The inspectors reviewed procedure NEP-04.17, "Pipe Support Design Verification to Comply with IE Bulletin 79-14", Revision B, and calculation No. S-061-RHR-34-001, "Pipe Support Calc for RRHR-H2," Revision 2. As described in USAR Appendix B, Table B.2-1, the RHR system was defined as class I. The inspectors identified that the calculation of the pipe support force did not include the self-weight of the pipe support component hardware. The inspectors had requested additional information relevant to the design basis of the pipe support which will require additional review. This information has not yet been provided to the inspectors. Therefore, this issue is considered a URI pending completion of the inspectors review to determine if there is a performance deficiency and violation (URI 05000305/2009005-04).

1R18 Plant Modifications (71111.18)

.1 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the following temporary modifications:

- temporary modification 2008-06: core exit thermocouple nozzle assembly leakage contingency; and
- temporary modification 2008-10: integrated leak rate test temporary equipment and piping modification.

The inspectors compared the temporary configuration changes and associated Title 10 CFR 50.59 screening and evaluation information against the design basis, the USAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of the affected systems. The inspectors performed field verifications to ensure that the modifications were removed properly and that post-modification testing adequately demonstrated continued system operability,



availability, and reliability. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two temporary modification samples as defined in IP 71111.18-05.

b. Findings

No findings of significance were identified.

.2 Permanent Plant Modifications

a. Inspection Scope

The following engineering design package was reviewed and selected aspects were discussed with engineering personnel:

- remove cart retainer angles from the fuel handling carriage (DCR 3784).

This document and related documentation were reviewed for adequacy of the associated 10 CFR 50.59 safety evaluation screening, consideration of design parameters, implementation of the modification, and post-modification testing, and to verify that relevant procedures, design, and licensing documents were properly updated. The inspectors observed ongoing and completed work activities to verify that installation was consistent with the design control documents. The modification removed the seismic retainers from the fuel handling transfer carriage. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

(1) Evaluation to Support Seismic Classification Downgrade of the Fuel Transfer Carriage (URI 05000305/2009005-05)

Introduction: The inspectors identified a URI for the downgrade of the seismic qualification of the fuel transfer cart and the subsequent calculation to support removal of the seismic restraints.

Description: On September 19 and October 4, 2009, the fuel transfer cart stopped moving during testing and the transfer of irradiated fuel. The licensee modified the fuel transfer cart by removing seismic stability brackets to support core de-fueling activities. The inspectors reviewed this permanent plant modification to assess if the removal of the restraints was acceptable.

The inspectors found that the licensee had performed an evaluation of seismic stability for the fuel transfer cart under engineering change notice ECN 3784-003. The inspectors noted that the contractor's condition report, No. 2009-6596, indicated that the contractor recommended that a minimum of three restraint angles be maintained in place on the conveyor car. Contrary to the contractor's recommendation, in

ECN 3784-03, Attachment 2, "Evaluation for Seismic Stability of the Fuel Transfer Cart Considering the Removal of the rail clips under ECN 3784-003," the licensee indicated that all of the restraints could be removed. The licensee's related evaluation indicated that the periods of vibration for the cart during a seismic event would not result in accelerations of more than 1.0 times the force of gravity ( $\leq 1.0g$ ) and concluded that the operation of the transfer cart was not affected by the removal of the seismic restraints. The inspectors noted that this evaluation was not a formal calculation and did not contain any frequency analysis or dampening values. The licensee indicated that the fuel transfer cart was non-seismic and did not require a formal calculation.

The inspectors reviewed historical documents related to the seismic qualification of the cart and found a quality assurance typing change performed in September 2008, where the licensee had changed the classification from seismic category 1 to seismic category 3. The inspectors observed that the seismic qualification of the transfer cart may have been inappropriately changed and the calculation to support removal of the seismic restraints may be inadequate. The inspectors' evaluations were ongoing at the conclusion of the inspection period and this issue is considered a URI pending completion of the inspectors review and evaluation to determine if there is a performance deficiency and violation (URI 05000305/2009005-05).

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

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

- feedwater containment isolation valve 12A;
- main steam safety valves after adjustment;
- service water pump 2A after replacement;
- strainer 1A2 after repair to stuffing box;
- service water header pressure switch; and
- turbine-driven auxiliary feedwater pump low discharge pressure trip time delay relay after calibration.

These activities were selected based upon the structure, system, or component's 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, the USAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to

determine whether the licensee was identifying problems and entering them in the CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings of significance were identified.

1R20 Outage Activities (71111.20)

.1 Refueling Outage Activities

a. Inspection Scope

The inspectors reviewed the Outage Safety Plan (OSP) and contingency plans for the RFO, conducted September 26 through October 25, 2009, to confirm that the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. Documents reviewed are listed in the Attachment to this report. During the RFO, the inspectors observed portions of the shutdown and cooldown processes and monitored licensee controls over the outage activities listed below:

- licensee configuration management, including maintenance of defense-in-depth commensurate with the OSP for key safety functions and compliance with the applicable TS when taking equipment out-of-service;
- implementation of clearance activities and confirmation that tags were properly hung and equipment appropriately configured to safely support the work or testing;
- installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication, accounting for instrument error;
- controls over the status and configuration of electrical systems to ensure that TS and OSP requirements were met, and controls over switchyard activities;
- monitoring of decay heat removal processes, systems, and components;
- controls to ensure that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system;
- reactor water inventory controls including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss;
- controls over activities that could affect reactivity;
- maintenance of secondary containment as required by TS;
- refueling activities including fuel handling for core offload and reload;
- startup and ascension to full power operation, tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left, which could block emergency core cooling system suction strainers, and reactor physics testing; and
- licensee identification and resolution of problems related to RFO activities.

This inspection constituted one refueling outage sample as defined in IP 71111.20-05.

b. Findings

(1) Inadequate Work Instructions Lead to Component Cooling Water (CCW) Relief Valve Lift and Surge Tank Level Drop

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 have adequate work instructions in place during the isolation of CCW flow in the RCP vaults.

Description: On September 29, 2009, the licensee was hanging tagout No. 31-CC-OPS-00006 on the CCW system to isolate flow in the RCP vaults. When the operators closed CC-613A and CC-613B, the outlet valves to the "A" and "B" RCP CCW bearing and seal cooling loops, the resulting pressure surges caused pressure relief valve CC-611A and/or CC-611B to open. The licensee stated that when the relief valves opened, the CCW surge tank level decreased from 50 percent to 16 percent in about three minutes. The licensee sent operators to open the CCW surge tank makeup valve and also instructed the operator hanging the tagout to abort the tagout and reopen CC-613A and CC-613B. Surge tank level stabilized and the licensee returned the surge tank level to 50 percent. The licensee's short-term corrective actions were to shut and hang tags on CC-601A and B, the cooling loop inlet valves, instead of the CC-613A and B outlet valves. This configuration prevented the CCW relief valve from being exposed to the pressure surge from closing the outlet valve.

The inspectors reviewed the licensee's CAP database and found five similar examples where different system configurations caused CCW relief valves to lift. The licensee attributed the occurrences to the installation of the new CCW pumps in 2001. The new CCW pumps had a better than expected operating head, and in certain system lineups the pressure margin between system operating pressure and relief valve setpoints was very small. After repeat occurrences, the licensee corrected its surveillance and sampling procedures to change the valve isolation boundaries or sequences to prevent the relief valve lifts from reoccurring. However, the licensee did not put any warnings or special instructions in the site tagout system to prevent the CCW system from being configured in such a way as to cause the relief valves to lift. On September 29, 2009, when the licensee was isolating the CCW flow in the RCP vaults; no procedures or work permits were being utilized and the operators used the tagout hanging sheet, which directed the operators to position the valves. The tagout was not adequate in that it did not isolate the appropriate valves to prevent a previously identified condition from occurring.

Analysis: The inspectors determined that the failure to have adequate work instructions in place during the isolation of CCW flow was a performance deficiency. The finding was determined to be more than minor because the finding was associated with the Initiating Events Cornerstone attribute of configuration control and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the incorrect isolation sequence and the speed at which valves were closed caused CCW system relief valves to lift and rapidly drain the CCW water surge tank while the CCW system was supporting the RHR system for decay heat removal. The inspectors determined that the finding could be evaluated in accordance with IMC 0609, Appendix G, "Shutdown Operations SDP," dated February 28, 2005. The inspectors

used Checklist 3 contained in Attachment 1 and determined that the finding required a Phase 2 analysis since the finding increased the likelihood that a loss of decay heat removal would occur.

The Region III senior reactor analyst (SRA) performed the assessment using Appendix G, Attachment 2, "Phase 2 Significance Determination Process Template for PWR [Pressurized Water Reactor] during Shutdown." The SRA determined this to be a precursor to an initiating event (a loss of RHR precursor - LORHR). The plant operating state (POS) was determined to be "POS 2." The initiating event likelihood for LORHR using Table 4, "Initiating Event Likelihood (IELs) for LORHR Precursors" was chosen to be "1." The RHR system remained operating during this event. The time to RCS boil given loss of decay heat removal was on the order of 60 minutes. Plant operators recovered from this event within about 15 minutes. Both SI pumps and all three charging pumps were available, and the refueling water storage tank was available with a level of 99 percent.

Using Appendix G, Attachment 2, Worksheet 9, the SRA evaluated the remaining mitigating capability and operator recovery credit. The significant core damage sequences involved failure to recover RHR should it have been lost. The sequences had a risk significance of about  $2E-7$ . Therefore, the SRA determined that this issue is best characterized as a finding of very low safety significance (Green).

This finding has a cross-cutting aspect in the area of human performance, resources component, because the licensee did not maintain long-term plant safety by maintenance of design margins. Specifically, since the installation of the new CCW pumps in 2001 and the subsequent reduction in pressure margin between CCW system operating pressure and the CCW system relief valves, the licensee has lifted CCW relief valves on five different occasions with the latest occurrence being the most significant. The work instructions did not adequately account for the low design margin that existed between the system operating pressure and the relief valve setpoints when both CCW pumps were running.

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

Contrary to this, on September 29, 2009, tagout 31-CC-OPS-00006 was not appropriate for the circumstances because it did not direct the operators to position the appropriate CCW valves. Specifically, the tagout should have directed the operators to isolate the "A" and "B" RCP CCW bearing and seal cooling loop inlet valves to prevent lifting the applicable loop relief valves. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program as CR 349920, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000305/2009005-06).

The licensee's apparent cause evaluation was not complete at the conclusion of the inspection period, some of the proposed long-term corrective actions included conducting training with licensed and non-licensed operators to address operator weaknesses that caused the condition, revision of the licensee's RCP operation procedure to address isolating CCW flow to RCPs in situations where maintenance was

not required, and revision of the tagout database to include cautions on closing CC-613 A/B with CCW flow.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

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

- main steam safety valve testing (routine);
- containment integrated leak rate test (routine);
- service water pump 2A vibration testing (routine);
- diesel generator automatic test (routine);
- service water pump and valve testing inservice test (IST); and
- feedwater containment isolation valve (containment isolation valve).

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

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

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

Documents reviewed are listed in the Attachment to this report.

This inspection constituted four routine surveillance testing samples, one IST sample, and one containment isolation valve sample as defined in IP 71111.22, Sections -02 and -05.

b. Findings

(1) Procedure Inadequacy Results In the Tertiary Auxiliary Transformer Breaker Reopening After Alignment to the Bus

Introduction: A finding of very low safety significance and associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions Procedures, and Drawings," was self-revealed for the licensee's failure to have adequate procedures to ensure that steps were sequenced such that unplanned transients were not initiated. Specifically, the procedure for performing diesel generator train "A" automatic testing allowed steps to be sequenced in a manner such that a jumper installed to simulate a station blackout signal was left installed during the restoration of offsite power; and due to the installed jumper, a transient was initiated on the associated bus and attached equipment during restoration from testing.

Description: On September 27, 2009, during testing per procedure OP-KW-OSP-SI-001, "Diesel Generator Automatic Test, Train 'A'," the tertiary auxiliary transformer (TAT) supply breaker to safety-related 4160-Volt bus 5, reopened after being closed. The cause was attributed to a station blackout test jumper being installed and consequently a load shed signal being generated.

As a result of the transient, the TAT supply breaker to bus 5 opened; RHR pump "A," containment fan coil units "A" and "B," shield building ventilation fan "A," and service water "A1," tripped; auxiliary feedwater pump "A," CCW pump "A," and service water pump "A2," tripped and restarted on the station blackout sequence; and service water valve SW-3A closed on low service water header pressure.

Subsequent review by the licensee found that a note in Section 5.7 of the procedure allowed removing the jumper and realigning the bus to be performed in any sequence. As a result of the inadequate guidance in the procedure, the licensee initiated corrective actions to prevent recurrence of the event. Corrective actions included briefings to preclude repetition of the event during the performance of the test on the "B" diesel generator, and actions to initiate a procedure change to correct the procedural deficiency.

Analysis: The inspectors determined that the procedural guidance allowing the performance of certain steps of procedure OP-KW-OSP-SI-001 in any sequence was a performance deficiency warranting further review. The inspectors determined that the performance deficiency was more than minor in accordance with IMC 0612, Appendix B, "Issue Disposition Screening," dated December 4, 2008, because it was associated with the Initiating Events Cornerstone attribute of procedure quality and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, control room operators and supervision not directly involved in the test were required to respond as a result of the transient to stabilize conditions and restart equipment when the associated RHR pump and both service water pumps tripped off the line and the RHR pump and one service water pump were required to be manually restored.

The inspectors evaluated the significance issue using IMC 0609, Appendix G, Checklist 3, and determined that the power availability guidelines were met. Because the finding did not increase the likelihood of a loss of offsite power or findings that degrade the licensee's ability to cope with a loss of offsite power; a Phase 2 analysis was not required and the finding screened as having very low safety significance.

This finding has a cross-cutting aspect in the area of human performance, work practices component, because procedure OP-KW-OSP-SI-001 was not adequately verified when steps were changed from being sequence-dependent to allow for completion in any order. Specifically, personnel proceeded to change procedure OP-KW-OSP-SI-001 without implementing peer checking during the validation process to ensure that the change was applicable to all plant conditions (H.4(a)).

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and be accomplished in accordance with these instructions, procedures, or drawings.

Contrary to this, the licensee failed to maintain procedures appropriate to the circumstances for the restoration of offsite power subsequent to the performance of periodic diesel testing. Specifically, OP-KW-OSP-SI-001, "Diesel Generator Automatic Test, Train 'A'," allowed the restoration of offsite power with the station blackout test jumper installed. The licensee entered this issue into the corrective action program as CR 349866, "Breaker 1-503 TAT to bus 5 reopened after being closed during OSP-SI-001." Corrective actions included actions to remove the jumper and restore power appropriately, placing the procedure on administrative hold, and the initiation of a procedure change to ensure that steps were properly controlled to preclude repetition of the event. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000305/2009005-07).



## Cornerstone: Emergency Preparedness

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

#### .1 EAL and Emergency Plan Changes

##### a. Inspection Scope

Since the last NRC inspection of this program area, "Kewaunee Power Station Emergency Plan," Revision 33, and the Kewaunee Power Station EAL Technical Basis, Revision 5, were implemented. These documents were implemented based on the licensee's determination, in accordance with 10 CFR 50.54(q), that the changes resulted in no decrease in effectiveness of the Plan, and that the revised Plan as changed continues to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The inspectors conducted a sampling review of the Emergency Plan changes and a review of the EAL changes to evaluate for potential decreases in effectiveness of the Plan. However, this review does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety.

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

##### b. Findings

#### (1) Changes to EAL CU1 and SU5 in the EAL Technical Bases Document Potentially Decrease the Effectiveness of the Plan without Prior NRC Approval

Introduction: The inspectors reviewed changes implemented to the Kewaunee Power Station EALs and EAL technical basis document. In Revision 5 to the EAL Technical Basis, licensee staff made changes by adding text regarding RCS leakage in order to clarify if leakage from the letdown or charging systems would lead to an emergency declaration. The change implies that leakage from the letdown or charging systems will no longer lead to an emergency declaration and this may potentially decrease the effectiveness of the emergency plan.

Description: "Kewaunee Power Station EAL Technical Basis," Revision 4, for EALs SU5 and CU1 provides the basis for declaring an Unusual Event due to RCS leakage. Kewaunee Power Station staff added the following text to Revision 5 of this document: "Per Technical Specification 3.1.d.1 Bases, components that contain or transport the coolant to and from the reactor core make up the RCS. Component joints are made by welding, bolting, rolling, or pressure loading, and valves isolate connecting systems from the RCS. Therefore, a leak identified from Letdown or Charging would NOT constitute a declaration per this EAL." The inspectors reviewed EAL Technical Basis, Revision 4, and noted that leakage from the charging or letdown system appeared to have been considered RCS leakage. Therefore, if the leakage coming from these systems meets the thresholds given in the EALs, it appears that it would lead to an emergency declaration. However, the change that was added to the EAL technical basis document in Revision 5, as written, would exclude leakage coming from the charging or letdown system from being considered as RCS leakage. Therefore, it would appear that leakage

from the charging or letdown systems would no longer lead to an emergency declaration.

Pending further review and verification by NRC staff to determine if the change to the EAL Technical Basis Document was a performance deficiency because it decreased the effectiveness of the Emergency Plan, this issue was considered an Unresolved Item (URI 05000305/2009005-08).

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 November 19, 2009, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the licensee's emergency operating facility 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 corrective action program. 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 of significance were identified.

2. **RADIATION SAFETY**

**Cornerstone: Occupational Radiation Safety**

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Plant Walkdowns and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors reviewed licensee controls and surveys in the following radiologically significant work areas within radiation areas, high radiation areas, and airborne radioactivity areas in the plant to determine if radiological controls including surveys, postings, and barricades were acceptable:

- locked high radiation area controls for containment;
- radiological controls for the seal table boron cleaning; and
- radiological controls for the RCS filters.

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

The inspectors reviewed the radiation work permits (RWPs) and work packages used to access these areas and other high radiation work areas. The inspectors assessed the work control instructions and control barriers specified by the licensee. Electronic dosimeter alarm setpoints for both integrated dose and dose rate were evaluated for conformity with survey indications and plant policy. The inspectors interviewed workers to verify that they were aware of the actions required if their electronic dosimeters noticeably malfunctioned or alarmed.

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

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

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

The inspectors reviewed RWPs for airborne radioactivity areas to verify barrier integrity and engineering controls performance (e.g., high-efficiency particulate air ventilation system operation) and to determine if there was a potential for individual worker internal exposures in excess of 50 millirem committed effective dose equivalent. There were no airborne radioactivity work areas during the inspection period.

Work areas having a history of, or the potential for, airborne transuranics were evaluated to verify that the licensee had considered the potential for transuranic isotopes and had provided appropriate worker protection.

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

b. Findings

No findings of significance were identified.

.2 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed licensee documentation packages for all performance indicator (PI) events occurring since the last inspection to determine if any of these PI events involved dose rates in excess of 25 R/hr at 30 centimeters or in excess of 500 R/hr at 1 meter. Barriers were evaluated for failure and to determine if there were any barriers left to prevent personnel access. Unintended exposures exceeding 100 millirem total effective dose equivalent (or 5 rem shallow dose equivalent or 1.5 rem lens dose equivalent) were evaluated to determine if there were any regulatory overexposures or if there was a substantial potential for an overexposure.

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

b. Findings

No findings of significance were identified.

.3 Job-In-Progress Reviews

a. Inspection Scope

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

- engineering and operations walkdowns of containment; and
- boron cleaning and decontamination of the seal table.

The inspectors reviewed radiological job requirements for these activities, including RWP requirements and work procedure requirements, and attended pre-job briefings for locked high radiation area entry.

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

Job performance was observed with respect to the radiological control requirements to assess whether radiological conditions in the work area were adequately communicated to workers through pre-job briefings and postings. The inspectors evaluated the adequacy of radiological controls, including required radiation, contamination, and airborne surveys for system breaches; radiation protection job coverage, including any applicable audio and visual surveillance for remote job coverage; and contamination controls.

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

b. Findings

No findings of significance were identified.

.4 Radiation Worker Performance

a. Inspection Scope

During job performance observations, the inspectors evaluated radiation worker performance with respect to stated radiation safety work requirements. The inspectors evaluated whether workers were aware of any significant radiological conditions in their workplace, of the RWP controls and limits in place, and of the level of radiological hazards present. The inspectors also observed worker performance to determine if workers accounted for these radiological hazards.

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

b. Findings

No findings of significance were identified.

.5 Radiation Protection Technician Proficiency

a. Inspection Scope

During job performance observations, the inspectors evaluated radiation protection technician performance with respect to radiation safety work requirements. The inspectors evaluated whether technicians were aware of the radiological conditions in their workplace, the RWP controls and limits in place, and if their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities.

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

b. Findings

No findings of significance were identified.

2OS2 As-Low-As-Is-Reasonably-Achievable (ALARA) Planning and Controls (71121.02)

.1 Radiological Work Planning

a. Inspection Scope

The inspectors compared the results achieved (including dose rate reductions and person-rem used) with the intended dose established in the licensee's ALARA planning for various work activities. Reasons for inconsistencies between intended and actual work activity doses were reviewed.

This inspection constituted one required sample as defined in IP 71121.02-5.

b. Findings

No findings of significance were identified.

.2 Verification of Dose Estimates and Exposure Tracking Systems

a. Inspection Scope

The inspectors reviewed the assumptions and bases for the current annual collective exposure estimate, including the applicable procedures, in order to evaluate the licensee's method for estimating work activity-specific exposures and the intended dose outcome. Dose rate and man-hour estimates were evaluated for reasonable accuracy.

This inspection constituted one required sample as defined in IP 71121.02-5.

The licensee's process for adjusting exposure estimates or re-planning work (when unexpected changes in scope, emergent work, or higher than anticipated radiation levels were encountered) was evaluated. This included determining whether adjustments to estimated exposure (intended dose) were based on sound radiation protection and ALARA principles or whether they resulted from failures to adequately plan or to control the work. The frequency of these adjustments was reviewed to evaluate the adequacy of the original ALARA planning process.

This inspection constituted one required sample as defined in IP 71121.02-5.

b. Findings

No findings of significance were identified.

.3 Source-Term Reduction and Control

a. Inspection Scope

The inspectors reviewed licensee records to evaluate the historical trends and the current status of tracked plant source terms. The inspectors determined if the licensee was making allowances and had developed contingency plans for expected changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry.

This inspection constituted one required sample as defined in IP 71121.02-5.

b. Findings

No findings of significance were identified.

.4 Declared Pregnant Workers

a. Inspection Scope

The inspectors reviewed dose records of declared pregnant workers for the current assessment period to verify that the exposure results and monitoring controls employed by the licensee complied with the requirements of 10 CFR Part 20.

This inspection constituted one required sample as defined in IP 71121.02-5.

b. Findings

No findings of significance were identified.

.5 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, and Special Reports related to the ALARA program since the last inspection to determine if the licensee's overall audit program's scope and frequency for all applicable areas under the Occupational Radiation Safety Cornerstone met the requirements of 10 CFR 20.1101(c).

This inspection constituted one required sample as defined in IP 71121.02-5.

The inspectors reviewed the licensee's CAP to determine if repetitive deficiencies and/or significant individual deficiencies in problem identification and resolution had been addressed.

This inspection constituted one required sample as defined in IP 71121.02-5.

b. Findings

No findings of significance were identified.

**Cornerstone: Public Radiation Safety**

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems (71122.01)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the configuration of the licensee's gaseous and liquid effluent processing systems to confirm that radiological discharges were properly mitigated, monitored, and evaluated with respect to public exposure. The inspectors reviewed the performance requirements contained in General Design Criteria 60 and 64 of Appendix A to 10 CFR Part 50 and in the licensee's Radiological Effluent Technical Specifications (RETS) and Offsite Dose Calculation Manual (ODCM). The inspectors also reviewed any abnormal radioactive gaseous or liquid discharges and any conditions since the last inspection when effluent radiation monitors were out-of-service to verify that the required compensatory measures were implemented. Additionally, the inspectors reviewed the licensee's quality control program to verify that the radioactive effluent sampling and analysis requirements were satisfied and that discharges of radioactive materials were adequately quantified and evaluated.

The inspectors reviewed each of the radiological effluent controls program requirements to verify that the requirements were implemented as described in the licensee's RETS. For selected system modification (since the last inspection), the inspectors reviewed changes to the liquid or gaseous radioactive waste system design, procedures, or operation, as described in the USAR and plant procedures.

The inspectors reviewed changes to the ODCM made by the licensee since the last inspection to ensure consistency was maintained with respect to guidance in NUREG-1301 and 0133, and Regulatory Guides 1.109, 1.21, and 4.1. If differences were identified, the inspectors reviewed the licensee's technical basis or evaluations to verify that the changes were technically justified and documented.

The inspectors reviewed the radiological effluent release reports for 2007 and 2008 in order to determine if anomalous or unexpected results were identified by the licensee, entered in the CAP, and adequately resolved. There were no anomalous or unexpected results identified.

The inspectors reviewed any significant changes in reported dose values from the previous radiological effluent release report, and the inspectors evaluated the factors which may have resulted in the change. If the change was not explained as being influenced by an operational issue (e.g., fuel integrity, extended outage, or major decontamination efforts), the inspectors independently assessed the licensee's offsite dose calculations to verify that the licensee's calculations were adequately performed and were consistent with regulatory requirements.

The inspectors reviewed the licensee's correlation between the effluent release reports and the environmental monitoring results, as provided in Section IV.B.2 of Appendix I to 10 CFR Part 50.

This inspection constitutes one sample as defined in IP 71122.01-5.

b. Findings

No findings of significance were identified.

.2 Onsite Inspection

a. Inspection Scope

The inspectors performed a walkdown of selected components of the gaseous and liquid discharge systems (e.g., gas compressors, demineralizers and filters (in use or in standby, tanks, and vessels)) and reviewed current system configuration with respect to the description in the USAR. The inspectors evaluated temporary waste processing activities, system modifications, and the equipment material condition. For equipment or areas that were not readily accessible, the inspectors reviewed the licensee's material condition surveillance records, as applicable. The inspectors reviewed any changes that were made to the liquid or gaseous waste systems to verify that the licensee adequately evaluated the changes and maintained effluent releases ALARA.

During system walkdowns, the inspectors assessed the operability of selected point of discharge effluent radiation monitoring instruments and flow measurement devices. The effluent radiation monitor alarm setpoint values were reviewed to verify that the setpoints were consistent with RETS/ODCM requirements.

For effluent monitoring instrumentation, the inspectors reviewed documentation to verify the adequacy of methods and monitoring of effluents, including any changes to effluent radiation monitor setpoints. The inspectors evaluated the calculation methodology and the basis for the changes to verify the adequacy of the licensee's justification.

The inspectors observed the licensee's sampling of liquid and gaseous radioactive waste (e.g., sampling of waste steams) and observed selected portions of the routine processing and discharge of radioactive effluents if those activities occurred during the onsite inspection. Additionally, the inspectors reviewed several radioactive effluent discharge permits, assessed whether the appropriate treatment equipment was used and whether the radioactive effluent was processed and discharged in accordance with RETS/ODCM requirements, including the projected doses to members of the public.

The inspectors interviewed staff concerning effluent discharges made with inoperable (declared out-of-service) effluent radiation monitors to determine if appropriate compensatory sampling and radiological analyses were conducted at the frequency specified in the RETS/ODCM. For compensatory sampling methods, the inspectors reviewed the licensee's practices to determine if representative samples were obtained and if the licensee routinely relied on the use of compensatory sampling in lieu of adequate system maintenance or calibration of effluent monitors.



The inspectors reviewed surveillance test results for nonsafety-related ventilation and gaseous discharge systems (high efficiency particulate air (HEPA) and charcoal filtration) to verify that the systems were operating within the specified acceptance criteria. In addition, the inspectors assessed the methodology the licensee used to determine the stack/vent flow rates to verify that the flow rates were consistent with the RETS/ODCM.

The inspectors reviewed the licensee's program for identifying any normally non-radioactive systems that may have become radioactively contaminated to determine if evaluations (e.g., 10 CFR 50.59 evaluations) were performed per NRC Bulletin 80-10. The inspectors did not identify unidentified contaminated systems that may have been unmonitored discharge pathways to the environment.

The inspectors reviewed instrument maintenance and calibration records (i.e., both installed and counting room equipment) associated with effluent monitoring and reviewed quality control records for the radiation measurement instruments. The inspectors performed this review to identify any degraded equipment performance and to assess corrective actions, as applicable.

The inspectors reviewed the radionuclides that were included by the licensee in its effluent source term to determine if all applicable radionuclides were included (within detectability standards) in the licensee's evaluation of effluents. The inspectors reviewed waste stream analyses (10 CFR Part 61 analyses) to determine if hard-to-detect radionuclides were also included in the source term analysis.

The inspectors reviewed a selection of monthly, quarterly, and annual dose calculations to ensure that the licensee had properly demonstrated compliance with 10 CFR Part 50, Appendix I, and RETS dose criteria.

The inspectors reviewed licensee records to identify any abnormal gaseous or liquid tank discharges (e.g., discharges resulting from misaligned valves, valve leak-by, etc.) to determine if the licensee had implemented the required actions. The inspectors determined if abnormal discharges were assessed and reported as part of the Annual Radioactive Effluent Release Report consistent with Regulatory Guide 1.21. There were no abnormal discharges during the inspection period.

The inspectors reviewed the licensee's effluent sampling records (sampling locations, sample analyses results, flow rates, and source term) for radioactive liquid and gaseous effluents to verify that the licensee's information satisfied the requirements of 10 CFR 20.1501.

This inspection constitutes one sample as defined in IP 71122.01-5.

b. Findings

No findings of significance were identified.

.3 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, licensee event reports, and special reports related to the radioactive effluent treatment and monitoring program since the last inspection to determine if identified problems were entered into the CAP for resolution. The inspectors also assessed whether the licensee's self-assessment program was capable of identifying repetitive deficiencies or significant individual deficiencies in problem identification and resolution.

The inspectors reviewed corrective action reports from the radioactive effluent treatment and monitoring program since the previous inspection, interviewed staff, and reviewed documents to determine if the following activities were conducted in an effective and timely manner commensurate with their importance to safety and risk:

- initial problem identification, characterization, and tracking;
- disposition of operability/reportability issues;
- evaluation of safety significance/risk and priority for resolution;
- identification of repetitive problems;
- identification of contributing causes;
- identification and implementation of effective corrective actions;
- resolution of NCVs tracked in the corrective action system;
- implementation/consideration of risk significant operational experience feedback; and
- ensuring problems were identified, characterized, prioritized, entered into a corrective action, and resolved.

This inspection constitutes one sample as defined in IP 71122.01-5.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

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

4OA1 Performance Indicator (PI) Verification (71151)

.1 Unplanned Scrams per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams per 7000 Critical Hours PI for the fourth quarter 2008 through the third quarter 2009. To determine the accuracy of the PI data reported during this period, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports to validate

the accuracy of the submittals. The inspectors also reviewed the licensee's CR database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one unplanned scrams per 7000 critical hours sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.2 Unplanned Scrams with Complications

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams with Complications PI for the fourth quarter 2008 through the third quarter 2009. To determine the accuracy of the PI data reported during this period, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, and NRC Integrated Inspection Reports to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CR database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one unplanned scrams with complications sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

.3 Unplanned Transients per 7000 Critical Hours

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Transients per 7000 Critical Hours PI for the fourth quarter 2008 through the third quarter 2009. To determine the accuracy of the PI data reported during this period, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, maintenance rule records, event reports, and NRC Integrated Inspection Reports to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CR database to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one unplanned transients per 7000 critical hours sample as defined in IP 71151-05.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.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 of significance were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings of significance were identified.

.3 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 4OA2.2 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the six month period of April 2009 through September 2009, although some examples extended 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.

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

b. Findings

No findings of significance were identified.

.4 Annual Sample: Review of Operator Workarounds (OWAs)

a. Inspection Scope

The inspectors evaluated the licensee's implementation of the 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 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 its 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, was contrary to training, required a change from long-standing operational practices, or created the potential for inappropriate compensatory actions. 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 of significance were identified.

.5 Selected Issue Follow-Up Inspection: Potential Common Mode Failure of Service Water Pump Bearing Water Cooling

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item documenting the failure of the service water "A1" bearing water filter housing assembly while swapping between filters. The inspectors reviewed the historical CRs and found multiple housing assembly failures that had caused the SW pumps to be declared inoperable. The inspectors reviewed licensee's corrective actions for the issue and evaluated the appropriateness of the implemented compensatory measures considering the potential for common mode failures.

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

b. Findings

No findings of significance were identified.

40A3 Follow-Up of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report (LER) 05000305-2009-009-00, "Automatic Start of Emergency Diesel Generator due to Safeguards Bus Power Supply Transformer Trip"

a. Inspection Scope

On October 15, 2009, with the reactor in cold shutdown mode, power was lost to safeguards bus 5. Loss of power to the bus resulted in automatic actuation of emergency diesel generator "A" to re-energize the bus. The power loss was caused by a trip and lockout of the tertiary auxiliary transformer, which supplies the bus, due to an incorrectly set transformer relay input parameter.

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

b. Findings

This LER is the subject of NCV 2009005-07, discussed in detail in Section 1R22 of this report, and is closed.

.2 Invalid Specified System Actuation during the Restoration of Safeguards Bus 5 After Testing

a. Inspection Scope

The inspectors reviewed the plant's response to multiple components inadvertently actuating during the restoration of safeguards bus 5 from testing. This event was reported to the NRC as Event Number 45511 on November 19, 2009, and is discussed in detail in Section 1R22 of this report.

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

b. Findings

No findings of significance were identified.

40A5 Other Activities

.1 (Open) NRC Temporary Instruction (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

On October 6, 2009, the inspectors conducted a walkdown of the RHR system in sufficient detail to reasonably assure the acceptability of the licensee's walkdowns (TI 2515/177, Section 04.02.d). The inspectors also verified that the information obtained during the licensee's walkdown was consistent with the items identified during the inspector's independent walkdown (TI 2515/177, Section 04.02.c.3).

In addition, the inspectors verified that the licensee had isometric drawings that described the RHR system configurations and had acceptably confirmed the accuracy of the drawings (TI 2515/177, Section 04.02.a). The inspectors verified the following related to the isometric drawings:

- high point vents were identified;
- high points that do not have vents were acceptably recognizable;
- other areas where gas can accumulate and potentially impact subject system operability, such as at orifices in horizontal pipes, isolated branch lines, heat exchangers, improperly sloped piping, and under closed valves, were acceptably described in the drawings or in referenced documentation;
- horizontal pipe centerline elevation deviations and pipe slopes in nominally horizontal lines that exceed specified criteria were identified;
- all pipes and fittings were clearly shown; and
- the drawings were up-to-date with respect to recent hardware changes and that any discrepancies between as-built configurations and the drawings were documented and entered into the CAP for resolution.

The inspectors verified that Piping and Instrumentation Diagrams (P&IDs) accurately described the subject systems, that they were up-to-date with respect to recent hardware changes, and any discrepancies between as-built configurations, the isometric

drawings, and the P&IDs were documented and entered into the CAP for resolution (TI 2515/177, Section 04.02.b).

Documents reviewed are listed in the Attachment to this report.

This inspection effort counts towards the completion of TI 2515/177, which will be closed in a later inspection report. Temporary Instruction 2515/177 is intended to be confirmatory in nature.

b. Findings

No findings of significance were identified.

.2 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspectors observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On January 6, 2010, the inspectors presented the inspection results to Mr. Steve Scace, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Interim exits were conducted for:

- The inservice inspection with Mr. M. Crist, Plant Manager, on October 8, 2009;
- The access control to radiologically significant areas and ALARA planning and controls inspections with Mr. S. Scace, Site Vice-President, on October 23, 2009;
- The triennial review of heat sink performance inspection with Mr. S. Scace on November 20, 2009;
- The radioactive gaseous and liquid effluent treatment and monitoring systems with Mr. S. Scace on December 4, 2009;



- The annual review of Emergency Action Level and Emergency Plan changes with the licensee's Emergency Preparedness Supervisor, Mr. J. Egdorf, and Licensing Manager, Mr. T. Breene, via telephone on December 21, 2009; and
- The licensed operator requalification training program annual inspection results with Mr. A. Fahrenkrug, Senior Operations Instructor, on December 28, 2009, via telephone.

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.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

S. Scace, Site Vice-President  
M. Crist, Plant Manager  
M. Wilson, Licensing Director  
T. Breene, Licensing Manager  
S. Yuen, Engineering Director  
D. Laing, Maintenance Manager  
J. Stafford, Organizational Effectiveness Manager  
D. Lawrence, Operations Manager  
C. Gum, Protection Services Manager  
M. Sortwell, Engineering Supervisor  
T. Evans, Training Manager  
M. Aulik, Engineering Design Manager  
D. Asbel, Engineering Programs Manager  
C. Chovan, Outage and Planning Manager  
W. Henry, Oversight Manager  
S. Heironimus, Employee Concerns Program Specialist  
R. Adams, Radiation Protection General Supervisor  
P. Bukes, Inservice Inspection Program Owner  
J. Egdorf, Emergency Preparedness Supervisor  
A. Fahrenkrug, Senior Operations Instructor  
J. Gadzala, Licensing  
M. Hale, Radiation Protection Manager  
A. Maly, Health Physicist  
T. Hanna, Programs Engineer  
J. Janssen, Programs Engineer  
D. Vorphol, Engineering Systems Supervisor

#### Nuclear Regulatory Commission

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

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

Opened

05000305/2009005-01	NCV	Failure to Perform Dye Penetrant Examinations of the Full Code Required Exam Surfaces (Section 1R08.1)
05000305/2009005-02	URI	Licensed Operator Requalification Examination Security Issues (Section 1R11.2)
05000305/2009005-03	NCV	Latching Pawl on Safety-Related Bus Tie Breakers Fails to Engage Due To Grease Hardening (Section 1R15.1)
05000305/2009005-04	URI	Residual Heat Removal Pipe Support RRHR-H2: Seismic Category I Requirements (Section 1R15.1)
05000305/2009005-05	URI	Evaluation to Support Seismic Classification Downgrade to the Fuel Transfer Carriage (Section 1R18.2)
05000305/2009005-06	NCV	Inadequate Work Instructions Lead to Component Cooling Water Relief Valve Lift and Surge Tank Level Drop (Section 1R20.1)
05000305/2009005-07	NCV	Procedure Inadequacy Results In the Tertiary Auxiliary Transformer Breaker Reopening After Alignment to the Bus (Section 1R22.1)
05000305/2009005-08	URI	Changes to EAL CU1 and SU5 in the EAL Technical Bases Document Potentially Decrease the Effectiveness of the Plan without Prior NRC Approval (Section 1EP4.1)

Closed

05000305/2009005-01	NCV	Failure to Perform Dye Penetrant Examinations of the Full Code Required Exam Surfaces (Section 1R08.1)
05000305/2009005-03	NCV	Latching Pawl on Safety-Related Bus Tie Breakers Fails to Engage Due To Grease Hardening (Section 1R15.1)
05000305/2009005-06	NCV	Inadequate Work Instructions Lead to Component Cooling Water Relief Valve Lift and Surge Tank Level Drop (Section 1R20.1)
05000305/2009005-07	NCV	Procedure Inadequacy Results In the Tertiary Auxiliary Transformer Breaker Reopening After Alignment to the Bus (Section 1R22.1)
05000305-2009-009-00	LER	Automatic Start of Emergency Diesel Generator Due to Safeguards Bus Power Supply Transformer (Section 4OA3)

## LIST OF DOCUMENTS REVIEWED

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

### 1R01 Adverse Weather Protection

- CR 090517; Safeguards Battery Room "B" Temperature Low Out of Spec for SP-38-101B
- CR 119674; TSC Diesel Generator Water Outlet Temperature Less Than 80 Degrees
- CR 316068; Administration Building Vent Equipment Room Damper ADA-20 Needs To Be Added to Procedures
- CR 320374; Fire Protection Header Sprinkler Head Leaking in North Stairwell of Second Floor Technical Service Center
- CR 325480; Battery Room "B" Floor and North Wall Expansion Joint Has Cracks in RTV Sealant
- CR 349177; Three Out of Four AVBS Heat Tracing Circuits Degraded
- KW 100451478; TSC Diesel Generator Immersion Heater Contactor Chatters On Drop
- N-ADA-19-CL; Administration Building Ventilation System CL; Revision 13
- OP-KW-NOP-ADA-001; Administration Building Ventilation System; Revision 1
- OP-KW-ORT-MISC-005; Cold Weather Operations; Revisions 0 And 1
- Kewaunee Central Reporting System; Condition Reports Pending Review – High Level Data; November 6, 2009

### 1R04 Equipment Alignment

- OP-KW-NCL-DGM-001; Diesel Generator B Prestartup Checklist; Revision 0
- N-ACA-17-CL; Auxiliary Building Vent Prestartup Checklist; Revision Y
- Drawing OPERM-213-9; Flow Diagram Diesel Generator Startup Air Compressor A & B and Fish Screen Air; Revision E
- Drawing OPERM-220; Flow Diagram Fuel Oil System; Revision AP
- Drawing OPERM-601; Flow Diagram Turbine and Auxiliary Building Ventilation; Revision CW
- N-FW-05B-CL; Auxiliary Feedwater System Pre-startup Checklist; Revision 44
- Drawing OPERM-205; Flow Diagram Feedwater System
- CR 325533; FO-1118 Discovered in Mid Position
- CR 342161; D/G A Starting Air Dryer ON/OFF Switch Was Found OFF
- CR 343282; SW Pump A1 and A2 Discharge PI Manifold Isolations Found Closed
- CR 349156; Manipulated Incorrect Breaker
- CR 349729; SW-2001B Was Found Slightly Off Its Closed Seat
- CR 349805; Manifold Valve in Incorrect State During ICP-36.61
- CR 350633; Incorrect MCC42B Breaker Positioned Off during Tagout
- CR 350788; Circuit Breaker BRA-02 Circuit-1 Mistakenly Closed During Tagging Evolutions
- CR 351135; Air Regulator Petcocks Found Open
- CR 351296; DC Distribution Panel BRB102 Ckt#4 Alarm Switch Found in the Wrong Position
- CR 351617; Operator Operated Tagged Valve While Performing RHR-MOP-002B
- CR 351931; NG-802 Was Not in Its Expected Position Following System Restoration
- CR 355612; RHR-4B RHR Suction Isolation Valve Was Found Closed During Troubleshooting
- ACE 17822; Supplemental Employee Manipulated Incorrect Breaker
- ACE 017847; Operator Operated Tagged Valve While Performing RHR-MOP-002B

- Drawing APXK-100-28; Analytical Part Flow Safety Injection System; Revision M
- Drawing APXK-100-29; Analytical Part Flow Safety Injection System; Revision Q
- Drawing M-1139; Isometric Safety Injection Piping; Revision A
- Drawing M-993; ISI Isometric Safety Injection Pumps Discharge Piping to Pen. 28N, 28E & RWST; Revision B
- Drawing PTM-934-2; PT Isometric Safety Injection Pumps Discharge Piping to Pen 28N & RWST
- Drawing ISIM-933; ISI Isometric Safety Injection Pumps Suction Piping; Revision D
- Drawing ISIM-992-2; ISI Isometric Safety Injection Pumps Suction Piping; Revision B
- Drawing ISIM-992-1; ISI Isometric Safety Injection Pumps Suction Piping; Revision C
- N-SI-33-CL; Safety Injection System Prestartup Checklist; Revision 40
- OP-AA-100; Conduct of Operations, Revision 6
- OP-KW-MOP-RHR-002B; RHR Pump B Maintenance Shutdown; Revision 2 and 3
- OP-KW-NOP-MISC-003; Instrument Valve Operation; Revision 0-
- ICP-36-61; RC-Filling and Venting Reactor Coolant System Instrumentation; Revision 10
- Kewaunee Power Station USAR; Chapter 6; 6.2 Safety Injection System

#### 1R05 Fire Protection

- FP-008; Evaluation of Door 68 Configuration
- MA-KW-MPM-FP-005; Inspection and Flush of Plant Hose Stations and Inspection Of Plant Floor Drains; Revision 2
- MA-KW-MPM-FP-033B; Penetration Fire Barrier Inspection – Appendix R; Revision 0
- Drawing A-542; Turbine Building Basement; Revision G
- Drawing A-544; Battery Rooms; Revision D
- Drawing A-545; Turbine Building Operating Floor; Revision D
- Drawing A-551; Materials Storage and Radiation Protection Office Area; Revision E
- Drawing A-553; RHR Heat Exchanger, CCW Pump, Letdown and Seal Water Filter Areas and -RWST and Valve Gallery; Revision D

#### 1R06 Flooding

- CAP 041535; Respond to NRC GL 2007-01: Inaccessible or Underground Power Cables
- CR 101774; C11720 Missed in Scope Cables for Evaluation

#### 1R07 Heat Sink Performance

- CY-KW-043-006; Service Water Chemical Injection Data Sheet Attachment A; July 30, 2009
- CY-KW-043-006; Service Water Chemical Injection Data Sheet Attachment A; August 24, 2009
- CY-KW-043-006; Service Water Chemical Injection Data Sheet Attachment A; September 23, 2009
- CY-KY-043-006; Service Water Chemical Injection; Revision 1
- ER-AA-HTX-1002; Heat Exchanger Program Visual and Leak Testing; Revision 1
- ER-AA-HTX-1003; Heat Exchanger Monitoring and Assessment; Revision 3
- ER-AA-HTX-1004; Heat Exchanger Eddy Current Testing; Revision 0
- GMP-137; Brush/Tube Scrubber Cleaning Heat Exchanger; October 23, 2009
- PMP-10-09; DGM0 Diesel Generator Service Water Isolation Valve Inspection & Maintenance SW 301A & 301B(QA-1)
- PMP-10-11; DGM-Diesel Generator Cooling Water Heat Exchanger Performance Monitoring (QA-1); July 28, 2005

- SP-04-135; Forebay Area Water Level Instruments Calibration; February 13, 2008
- CR 012893; GL 89-13 Program Assumptions Not Met; June 1, 2007
- CR 017520; Results of EDG Tiger Team Assessment; August 8, 2008
- CR 094259; Jacket Water Leak Identified on 1A EDG; March 31, 2008
- CR 096346; End Bell on Jacket Water not Aligned Correctly; April 21, 2008
- CR 343771; 2009 Summer Zebra Mussel Treatment Results for Service Water System; August 5, 2009
- CR 350323; 2009 End of Season Zebra Mussel Treatment Results for Service Water System; October 6, 2009
- CR 351146; 2009 End of Season Zebra Mussel Treatment Results for Service Water System; October 6, 2009
- CR 358706; Service Water Strainer Stuffing Box Base Deterioration; November 18 2009
- KW100274844; M04-011: SP-04-134 Forebay Level Test; October 9, 2009
- 92-060; Potential Failures of Thermostatic Control Valves for Diesel Generator Jacket Cooling Water; June 16, 1992
- SOER 2007-2; Intake Cooling Water Blockage; April 14, 2008
- OE – 27610; EDG Jacket Water Pump Seal Failure Results in EDG Inoperable; October 16, 2008
- DEK-KPS-05; Final Eddy Current Inspection Report; April 18, 2008
- DEK-KPS-08; Final Eddy Current Inspection Report; October 12, 2009
- M-1736; 13040 CPK Exchanger 2 pass
- SAR 338; Safety-Related Heat Exchanger Program Self-Assessment; January 1, 2008
- 01-042; Service Water System Model Development; December 9, 2008
- 2434001; Calculation of Jacket Water Heat Capacity Required During the Initial Start of the Diesel Generators; March 24, 1990
- C10826; Performance Evaluation of the Emergency Diesel Generator Cooling System Heat Exchangers, Part 1 and 2; July 9, 2002
- C11165; Proto-Hx Analysis in Support of the 2000 Service Water Flow Test; Revision 3
- C11340; Fan Coil Unit and Diesel Generator Operability Curves Based on SW Inlet Temperature and Flow; Revision 1 Addendum B
- C11415; Diesel Generator SW HX Model Validation; July 9, 2002
- C11600; Tube Plugging Limit of Emergency Diesel Generator Jacket Water Heat Exchangers; March 20, 2008
- C11600; Tube Plugging Limit of Emergency Diesel Generator Jacket Water Heat Exchangers; Addendum A
- C11776; Diesel Generator Jacket Water Heat Exchanger Design Heat Load; Revision 0
- E-1621; Integrated Logic Diagram Diesel Generator Mech. System; March 9, 1972
- M-202-1; Flow Diagram Service Water System; Revision CN
- CR 316701; End Bell on Diesel Generator B Heat Exchanger Leakage
- CR 358660; Procedure Didn't Document Plugged Tubes; November 18, 2009
- CR 358663; Discoloration Noted on SW Piping; November 18, 2009
- CR 358667; Valve SW- 28A1 Has Sodium Hypochlorite Crystals at the Quill Connection; November 18, 2009
- CR 358881; Disposition of Vendor Heat Exchanger Recommendation; November 19, 2009

## 1R08 Inservice Inspection Activities

- CR021830; Boric Acid Residue Noted On RC-300B; October 6, 2007
- CR116439; Light Dry Slightly Discolored Boric Acid on the Letdown Heat Exchanger; October 28, 2008
- CR350226; Procedure Problem In ER-AP-BAC-101 for BACCP Inspections; September 30, 2009
- CR350188; Low Shielding Gas Flow for Installation of Tack Welds for WO KW100417958; September 30, 2009
- CR350543; Inservice Inspection Program NRC Concern; October 2, 2009
- CR329749; Boric Acid On Mechanical Seal of RHR Pump B; April 3, 2009
- CR323715; VT-2 Examinations Not Performed for Rupture Discs RC-440-3 and RC-441-3 From KR28; February 16, 2009
- CR106303; SW-301A, SW From D/G 1A Heat Exchanger, Open Stroke Time Increase; August 18, 2008
- CR121211; 10CFR50.55a Inservice Inspection Requirements; December 4, 2008
- CR095821; Regenerative Heat Exchanger Loose Nut; April 16, 2008
- GNP-08.06.02; Containment Hot Shutdown Walkdown; Revision 4
- ER-AP-BAC-101; Boric Acid Corrosion Control Program (BACCP) Instructions; Revision 4
- ER-KW-BAC-101-1001; KPS Site Specific Boric Acid Corrosion Control Program (BACCP) Inspection And Evaluation Requirements; Revision 1
- SP-36-267; ASME Boiler And Pressure Vessel Code Class 1 System Pressure Test; Revision 19
- ER-AA-NDE-PT-300-NPQR; ASME Section XI Liquid Penetrant Examination Procedure; Revision 3
- ER-AA-NDE-VT-602-NPQR; VT-2 Visual Examination Procedure; Revision 0
- ER-AA-NDE-VT-603-NPQR; VT-3 Visual Examination Procedure; Revision 3
- ER-AA-NDE-UT-802; Ultrasonic Examination Of Austenitic Piping Welds in Accordance With ASME Section XI, Appendix VIII; Revision 0
- SP-36-267; ASME Boiler and Pressure Vessel Code Class 1 System Pressure Test; Revision 19
- WO KW100274984; Liquid Penetrant Examination – ISIM-874-3/CVC-W166S/B9.40; September 29, 2009
- WO KW100274984; Visual Examination of Pressure Retaining Bolting (VT-3); ISIM-957-1SH1/RHR-1A; September 29, 2009
- WO KW100274984; Visual Examination of Pressure Retaining Bolting (VT-3); ISIM-957-1SH1/RHR-1B; September 29, 2009
- WO KW07-007980; DCR-3609-1, Auxiliary Feedwater Flow Control Replacement; September 2008
- WO 06-014045-000; 2" Valve CVC-201A And Replacement Socket Welds; November 17, 2006
- Welding Technique Number 801; GTAW Manual Welding; Revision 8
- PQR 801; Manual GTAW; Revision 2
- PQR 830; Manual GTAW/SMAW; July 20, 2001
- PQR 831; Manual GTAW/SMAW; July 20, 2001
- M-1952 0/3750; 6-SI2502R-15, Safety Injection Discharge Piping Gas Collection Chamber; Revision 1
- OPERXK-100-10; Flow Diagram Reactor Coolant System; Revision BT
- OPERXK-100-18; Flow Diagram Residual Heat Removal System; Revision AX
- M-957-1; RHR-From RC Loops A and B Hot Legs to Cntmt Pen. 9 and to Cntmt Sump B; Revision B/3750-1

- M-957-2; RHR-From RC Loops A and B Hot Legs to Cntmt Pen. 9 and to Cntmt Sump B; Revision B
- M-963; RHR-From RC Loops A and B Hot Legs To Cntmt Pen. 9 and to Cntmt Sump B; Revision A
- M-1360; CVC-From Regen.HX.1A and Point Near Valve LD-60 to Cntmt. Pen.11; Revision A
- M-1456; CC-From Line 10-AC-601R-3 to Valve RHR-33 to Auxiliary Relief Valve Line 4-RC-151R-32; Revision C
- M-1728; RHR Expansion Tank Piping to RHR Valves RHR-30B & RHR-32A; Revision B

1R11 Licensed Operator Regualification Program

- LRC-09-SEE07B; Simulator Exercise Guide; Revision A
- 2009 Regualification Examination Results; December 18, 2009
- Condition Report (CR) 362739, Screen Capture Program Found Running on Simulator PPC; December 21, 2009
- CR 357397, NRC Exam Security Issue Due to New Simulator Log Files; November 10, 2009
- Apparent Cause Evaluation (ACE) 017917, ACE for NRC Exam Security Issue Due to New Simulator Log Files; November 10, 2009
- Corrective Action 155526; Apparent Cause Corrective Action for New Simulator Log Files; November 10, 2009
- CR 357354, LOR Annual Simulator Exam Was Compromised; November 10, 2009
- Department Clock Reset Briefing Sheet for CR# 357354; November 10, 2009
- CA 152820, Determination/Resolve Issue of Jump Drive Being Left in The Simulator Computer; November 10, 2009
- Job Aid: 04-009; KPS Simulator Security Checklist; Revision B
- Report On Replacement JPMs And Scenarios After Potential Exam Compromise; No date

1R12 Maintenance Effectiveness

- CR 101450; FW-12A And FW-12B Degraded Voltage Limits and FW-12A Trend Data
- CR 353894; Unable To Remove FW-12A Stem Nut Due To Stem Rejection Force
- eSOMS Station Narrative Logs; October 18, 19, 20, and 21, 2009
- GMP-217; Adjustment, Setup and Reconditioning of Limitorque Motorized Valve Actuators; Revision 20
- GMP-236-03; Motor-Operated Valve Diagnostic Testing; Revision 8
- GMP-244; Molded Case Circuit Breaker Testing Electrical Maintenance; Revision 20
- KW 100273766; PM05A005: FW-12A/MV-32015 – Inspect, Clean, Test Actuator
- KW 100276050; PM05A089: FW-12A/MV32015-MCCB Testing
- KW 100278420; PM05A675: FW-12A/MV-32015 – Inspect, Clean Motor Starter
- KW 100398832; FW-12A/MV-32015 – Inspect/Replace Stem Nut
- KW 100429795; FW-12A/MV-32015 – Perform Diagnostic Testing
- KW 100523351; Implement DCR 3760 (Outage) MCC52E-G3
- MA-KW-EPM-MOV-002; Electrical Preventive Maintenance; Revision 0
- MA-KW-EPM-MOV-003; MOV Diagnostic Test Analysis and Acceptability Determination; Revision 0
- SP-055-167B; Hot/Intermediate Shutdown Valve Tests; Revision 14
- Dominion Central Reporting System; Condition Reports Request Data For NRC Inspection; October 27, 2009
- Kewaunee PMT Test Data; September 25 And 26, 2009



- Maintenance Rule Scoping Questions; KPS System 05A Main Feedwater; Attachment A; Revision 0
- Maintenance Rule System Basis; 2.0 System Boundaries With In-Scope SSCs; Revision 13
- Maintenance Rule System Basis; 05A Main Feedwater; Revision 13
- SSC Performance Criteria Sheet; 05A Main Feedwater; Attachment B; Revision 3
- Torque Wrench Calculation Sheet; October 19, 2009
- OPERM-602; Flow Diagram Reactor and Shield Building Ventilation; Revision BC
- Maintenance Rule System Basis; KPS System 24 Shield Building Ventilation; Rev 4
- Maintenance Rule Scoping Questions; KPS System 24 Shield Building Ventilation; September 1, 2009
- SSC Performance Criteria Sheet; KPS System 24 Shield Building Ventilation; September 1, 2009
- Evaluation to return SBV Controllers to (a)(2); August 25, 2009
- CR 353203; SP-24-107C, SBV Train A Monthly Test Beyond Grace
- CR 358253; "A" SBV Pressure Is Cycling More Often Than Train "B"
- CR 104768; SBV-10A and SBV-20A Failed to Modulate During SP-24-107A
- CR 104624; SBV Train "A" S/CV 35109 LED Found ON, When It Normally Is OFF When Fan In Off
- MRE 6905; Controller Failing to Modulate SBV-10A & SBV-20A
- ACE 13979; Repeat Occurrences of a "lit" LED on the SBV Train "A" Exhaust Damper Servo-Amplifier Card
- Work Order Overview Report; KPS System 24 Shield Building Ventilation; 2007-2009
- Condition Report Overview Report; KPS System 24 Shield Building Ventilation; 2007-2009
- Maintenance Rule Evaluation List; KPS System 24 Shield Building Ventilation; 2007-2009
- Shield Building Ventilation System Health Report; 3<sup>rd</sup> Quarter 2009
- Maintenance Rule System Basis; KPS System 47 Reactor Protection System; Rev 11
- Maintenance Rule Scoping Questions; KPS System 47 Reactor Protection System; December 21, 2009
- SSC Performance Criteria Sheet; KPS System 47 Reactor Protection System; June 25, 2008
- Reactor Protection System Failure Tracking Graph; June 2008 – November 2009
- Reactor Protection System Unavailability Tracking Graph; June 2008 – November 2009
- Reactor Control and Protection System Health Report; 3<sup>rd</sup> Quarter 2009
- Evaluation to return Reactor Protection System to (a)(2); December 14, 2009
- Licensee Maintenance Rule Data Tracking Sheets; Reactor Protection System; February 2008
- Licensee Maintenance Rule Data Tracking Sheets; Reactor Protection System; May 2008
- Licensee Maintenance Rule Data Tracking Sheets; Reactor Protection System; June 2009
- Licensee Maintenance Rule Data Tracking Sheets; Reactor Protection System; October 2009
- MRE 2995; Low Range High Flux Reactor Trip
- MRE 3054; CAP for Work Request 07-000981
- A1E 23; (a)(1) Evaluation to System Engineering
- A1G 35; Track (a)(1) Goals for Reactor Protection System
- CR 95336; Loose Contact on Removed Relay LC471B/XA
- CR 95347; Loose Contact on Removed Relay LC461B/XA
- CR 95337; Loose Contact on Removed Relay LC472A/XB
- CR 95350; Loose Contact on Removed Relay LC472A/XA

### 1R13 Maintenance Risk

- Control Room Night Shift Log; October 6, 15, 16, 17, 18, 19, 20, 21, and 22, 2009
- Dominion 2009 Refueling Outage Outage Control Center Turnover Sheet; October 17, 18, 19, 20, 21, and 22, 2009
- Dominion KPS Online Production Project Data; October 20, 21, 2009
- KPS Root Cause Problem Statement; RCE 000989/CR 352878 (CR 352812); October 19, 2009
- Kewaunee Central Reporting System; Condition Reports Pending Review – High Level Data; October 17, 18, 19, 20, And 21, 2009
- Kewaunee Central Reporting System; CRT DCAC Actions Recommended Listing; October 21, 2009
- Kewaunee KR-30 Radiological Performance Indicators Report; October 16, 17, 18,19, 20, and 21, 2009
- Kewaunee Outage Control Center Meetings Action Item List; September 23, 28, 29, And 30, 2009; October 1, 2, 5, 6, 7, 9, 13, 14, and 16, 2009
- Kewaunee Refueling Outage Status Report; October 17, 18, 19, 20, and 21, 2009
- SSA Emergent Work Evaluation Report; October 2, 2009

### 1R15 Operability

- ANSI C37.06a-1989; AC High-Voltage Circuit Breakers Rated on A Symmetrical Current Basis; Preferred Ratings And Related Required Capabilities
- CA 154578; Potential NRC Violation for Inadequate Corrective Action Related to Grease
- CR 022325; MAT Supply to Bus 5 Breaker Charging Circuit Did Not Complete its Operations
- CR 090689; OE26166; Fast Bus Transfer Breaker's Closing Springs Failure to Charge
- CR 096527; Charging Mechanism On Breaker 1-511 Was Sluggish to Engage During Charging
- CR 097231; 4160v Breaker Would Not Charge Springs
- CR 119799; Service Water Pump A2 Breaker, 1-507BKR, Did Not Close
- CR 351996; 1-602 Breaker Charging Motor Circuit Problem During Breaker Racking Procedure
- CR 352048; 1-510 Breaker Charging Motor Failed to Stop
- CR 356294; Last Cycle, Air Volume in Containment Sump Suction Larger Than Previously Assumed
- CR 358513; Circuit Breakers Are Considered Operable But Degraded Due to Preventive Maintenance Procedures Not Addressing All Recommended Lubrication Points on the Breakers
- MRE 007341; Service Water Pump A2 Breaker Did Not Close
- NEP-04.16, "Piping Configuration Reconciliation to Comply with IEB 79-14", Revision D
- Hanger Drawing No. MS-34-13, Sheet 1 thru 3, Revision D
- Condition Report CR 095823, "Loose Tension Rod and Pipe Clamp Bolt on RRHR-H2", dated April 15, 2008
- USAR, Appendix B, Revision 21
- DCR 3741; Modify SI-350A(B), Add a Relief Valve between SI-350A(B) and SI-351A(B), and Change Gear Ratio to Increase MOV Valve Disk DP Limit
- I.B. 32-255-1F; Cutler-Hammer; Instructions For Installation, Operation and Maintenance of Type VCP-W Vacuum Circuit Breakers
- I.B. 49-429.IE; Westinghouse Electric Corporation; Instruction Manual for Westinghouse PSD-5VR Vacuum Unit Replacement Of McGraw-Edison Co. Type PSD-5, 1200A Magnetic-Air Circuit Breakers (5kV) With Westinghouse VCP-20WR Element

- Kewaunee Power Station USAR; Table 14.2.5-1; Steam Line Break Analysis Assumptions and Sequence of Events; Revision 21
- KW 100599703; Investigate Cause of Closing Spring Not Charging Electrically on 1-601 BKR
- MA-KW-EPM-EHV-017; 4.16 kV Vacuum Breaker Maintenance; Revision 0
- MPR Calculation 0064-0067-02; Potential for RHR Pump Performance Degradation; December 16, 2009
- MPR Letter 0064-0905-02, Kewaunee Power Station (KPS) RHR System Air Transport Analysis; Revision 1
- OP-AA-102; Operability Determination; Revision 5
- OP-AA-102-1001; Development of Technical Basis to Support Operability; Revision 2
- PI-AA-200; Corrective Action; Revision 10
- PI-AA-300; Cause Evaluation; Revision 4
- PI-KW-200; Corrective Action; Revision 7
- PMP-39-15; EHV – 4.16kV Vacuum Breaker Maintenance (QA-1); Revision 14
- CBS Nuclear Services, Inc.; Certificate of Conformance; CBS Job Number N80470; October 7, 2009
- Waukesha Electric Systems; Certificate of Conformance; WES Job Number 10900; April 20, 2007
- Westinghouse Correspondence; WPSC Order 156743; Westinghouse G.O. MK77272; January 30, 1997
- Westinghouse I.B. 8295A61H01; Operation and Maintenance of the Red Line Type VCP-WR Vacuum Circuit Breaker Elements Instructions
- Figure 5.2; Charging Spring Schematic (Left Side Views)
- Figure 5.3; Closing Cam and Trip Linkage (Left Side Views)
- Figure 5.7; Type VCP-WR Vacuum Circuit Breaker; Charging Schematic;
- Figure 6.3; Relubrication Guide (Grease)

#### 1R18 Plant Modifications

- CA 012071; Change QA Typing of the Fuel transfer Carriage
- CM-AA-CLC-301-1001; Engineering Calculations; Revision 2
- CM-AA-DDC-201; Design Changes; Revision 4
- CA 148350; CA to Perform 50.59 Prior to Core Reload
- CA 151755; Compile A Complete List of Containment Isolation Valves
- CA 154578; Potential NRC Violation for Inadequate Corrective Action Related To Grease
- CR 024753; Review Generic Letter 88-17 Response
- CR 101226; Stearns Roger Services KR029 Job Closeout Report
- CR 119799; Service Water Pump A2Breaker, 1-507BKR, Did Not Close
- CR 350084; Fuel Transfer Cart Stopped Moving During Testing
- CR 350093; Initiate Work Order for DCR 3784
- CR 350760; Fuel Transfer Cart Stopped During Transfer of Irradiated Fuel Assembly
- CR 350778; DCR 3784; Remove Fuel Transfer Cart Anti-Tip Brackets
- CR 351015; Fuel Transfer System Upender Will Cut Out on Underload on the Reactor Side
- CR 351027; Overload on the Fuel Transfer System Upender Needs to Be raised on the SFP Side
- CR 351500; NRC Resident Questions Regarding Adequacy of 50.59 for QA Typing Change
- DCR 3784; Remove Car Retainer Angles From the Fuel Handling Carriage
- 50.59 Applicability Review of DCR 3784; Remove Car Retainer Angles From the Fuel Handling Carriage
- FP-E-MOD-08(T); Engineering Change Notices; Revision 3
- GNP-08.04.01; Shutdown Safety Assessment; Revisions 35, 36, And 37

- N-CCI-56A-CLA; Reduced Inventory Containment Integrity Checklist – SG Secondary Side Intact; Revision L
- N-CCI-56A-CLB; Reduced Inventory Containment Integrity Checklist – SG Secondary Side Open; Revision K
- NF-KW-RSP-FH-002; Fuel Transfer System Checks (Wet); Revision 4
- NUMARC 91-06; Guidelines for Industry Actions to Assess Shutdown Management; December 1991
- OP-KW-ORF-FH-001; Kewaunee Power Station Refueling; Revision 9
- TMOD 2008-06; CETNA Leakage Contingency
- TMOD 2008-10; Integrated Leak Rate Test (ILRT) Temporary Equipment and Piping Modifications
- Control Room Log Entries Reports; September 26 Through October 1, 2009
- Kewaunee Power Station Asset Report For 156-011; 0 In Valve-Manual-Fuel Transfer Tube Gate Valve
- NRC Generic Letter 88-17; Loss of Decay Heat Removal; October 17, 1988
- Wisconsin Public Service Correspondence to NRC; Response to Generic Letter 88-17; January 3, 1989 And February 2, 1989
- Wisconsin Public Service Correspondence to NRC; Updated Safety Analysis Report; July 20, 1988

#### 1R19 Post-Maintenance Testing

- CMP-02-06; SW – Service Water Strainer Overhaul; Revision C
- 50.59 Applicability Review of CMP-02-06; SW – Service Water Strainer Overhaul; Revision C; November 19, 2009
- CR 101450; FW-12A and FW-12B Degraded Voltage Limits and FW-12A Trend Data
- CR 349491; Initial Lift of Safety Valve Exceeded 3 percent of Its Setpoint Value
- CR 349527; Initial Lift of Safety Valve Exceeded 3 percent of Its Setpoint Value
- CR 349533; Initial Lift of Safety Valve Exceeded 3 percent of Its Setpoint Value
- CR 353894; Unable to Remove FW-12A Stem Nut Due to Stem Rejection Force
- DCR 3699; Service Water Pump Upgrade; Revision 0
- 50.59 Applicability Review Of DCR 3699; Service Water Pump Upgrade; Revision 0
- eSOMS Station Narrative Logs; October 18, 19, 20, And 21, 2009
- FP-E-MOD-03(t); Temporary Modification; Revision 2
- FPP-08-07-1; Hot Work Permit; Revision 11; Permit 09-196
- FPP-08-08-1; Transient Combustible Materials Permit; Revision 9; Permit 09-082
- FPP-08-08-1; Transient Combustible Materials Permit; Revision 10; Permit 09-084
- GMP-155; Dual Plate Check Valve Inspection; Revision 12
- GMP-210; Operational Use Of Infrared Scanners; Revision F
- GMP-217; Adjustment, Setup and Reconditioning of Limitorque Motorized Valve Actuators; Revision 20
- GMP-236-03; Motor-Operated Valve Diagnostic Testing; Revision 8
- GMP-244; Molded Case Circuit Breaker Testing Electrical Maintenance; Revision 20
- ICP-82B-168; ICE- Heise PTE-1 and HQS Pressure Module Calibration; Revision 4
- KW 100273544; PM06-128; SD-1A3: Test Valve Setpoint
- KW 100273766; PM05A005: FW-12A/MV-32015 – Inspect, Clean, Test Actuator
- KW 100276050; PM05A089: FW-12A/MV32015-MCCB Testing
- KW 100277666; PM06-076: SD-1A1: Test Valve Setpoint
- KW 100278420; PM05A675: FW-12A/MV-32015 – Inspect, Clean Motor Starter
- KW 100398832; FW-12A/MV-32015 – Inspect/Replace Stem Nut
- KW 100422529; PM05B700: Perform Time Delay Relay Calibration

- KW 100422549; PM05B699; Perform Time Delay Relay Calibration
- KW 100422551; PM05B698; Perform Time Delay Relay Calibration
- KW 100429795; FW-12A/MV-32015 – Perform Diagnostic Testing
- KW 100452503; DCR 3699 – Replace Service Water Pump 1A2
- KW 100523351; Implement DCR 3760 (Outage) MCC52E-G3
- KW 100616487; Remove and Install the Cover On The 1A2 SW Strainer
- KW 100616488; Install TMod 2009-17 to the Stuffing Box on the 1A2 SW Strainer
- MA-KW-EPM-MOV-002; Electrical Preventive Maintenance; Revision 0
- MA-KW-EPM-MOV-003; MOV Diagnostic Test Analysis and Acceptability Determination; Revision 0
- MA-KW-MPM-SW-016; Inspection of Service Water Strainer; Revision 0
- OP-KW-AOP-GEN-005; Barrier Control; Revision 2
- OP-KW-ARP-47093-D; Diesel Generator "B" Control Volt Low; Revision 0
- PMP-02-03; SW – Service Water Pump Replacement; Revision 26
- SP-05B-311; AFW – Turbine Driven Auxiliary Feedwater Pump Discharge And Suction Pressure Trip Time Delay Relay Calibration Electrical Maintenance (QA-1); Revision D
- SP-05B-346; Turbine Driven AFW Pump Low Suction and Low Discharge Pressure Trip Test
- SP-06-077; Main Steam Safety Valve Test; Revision 32
- SP-055-167B; Hot/Intermediate Shutdown Valve Tests; Revision 14
- SP-55-177; Inservice Testing of Pumps Vibration Measurements; Revision 12
- SP-55-324-1; System Leakage Test Record for Repair/Replacement Activities; Revision 7
- TMod 2009-17; 1A2 SW Strainer Packing Configuration Change; Revision 0
- Dresser Consolidated; Certification Of Compliance/Conformance; Hydroset S/N HS-1116; November 12, 2008
- Kewaunee PMT Test Data; September 25 and 26, 2009
- Kewaunee Safety Valve Test Data; September 25, 2009
- Torque Wrench Calculation Sheet; October 19, 2009 And November 18, 2009
- Turbine Driven Auxiliary Feedwater Pump Time Delay Relay Test Data; December 30, 2009
- MA-KW-ICP-SW-019C; Service Water Header and Turbine Building Service Water Header Pressure Switches Calibration; Rev 1
- KW 100277156; PM02-162: SW Control and TB Building SW Header Pressure Switch Calibration Check
- KW 03-009999; While Performing ICP-2-19 Found That Wiring on the Mercoid Micro-Switch Is Connected Backwards

#### 1R20 Outage Activities

- ACE 002485; CC-312 CC Supply to RHR and RCS High Rad Sample Heat Exchanger RV Lift
- ACE 002677; CC-312 Lifted During Cycling Of CC-316
- ACE 017830; Component Cooling Surge Tank Level Decrease During CC Isolation to RXCP
- CAP 023279; Annunciator 47024H Alarmed During Opening of CC-601A
- CAP 017778; CC Surge Tank Level Decrease During SP-31-168B
- CAP 018954; CC-312 CC Supply To RHR and RCS High Rad Sample Heat Exchanger RV Lift
- CAP 023284; CC System Relief Valves Lifting
- CAP 030850; Component Cooling System Leak
- CE 002227; Investigate Source Of Leakage and Initiate Repairs to CC Surge Tank Level
- CE 014779; CC System Relief Valves Lifting
- CEO 013644; CC Surge Tank Level Decrease During SP-31-168B
- CR 102926; CC-803 Has Lifted and Won't Reseat
- CR 349920; Component Cooling Surge Tank Level Decrease During CC Isolation To RXCP
- CR 354329; Roll of Duct Tape Found in Containment During Class 1 ISI Walkdown

- CROSB-003 (C710-1); Crosby Valve And Gage Company; Crosby Relief Valves; Revision 1
- GNP-08.04.01; Figure 3; Substation; Revision 36
- GNP-08.04.01; Figure 5; Spent Fuel Pool Cooling Flow Path in Use; Revision 36
- GNP-08.04.01; Figure 6; Spent Fuel Pool Cooling Makeup Flow Paths Available; Revision 36
- KPS Inservice Testing Basis Valve Date Sheet; Valve CC-611A; RCP 1B Cooling Water Return Header Relief Valve
- KPS Inservice Testing Basis Valve Date Sheet; Valve CC-611B; RCP 1B Cooling Water Return Header Relief Valve
- KPS USAR 4.1-1; Chapter 4; Reactor Coolant System; Revision 21.4
- KR-30 Outage Data; Mode Restraint Items – Open; October 16 And 17, 2009
- KW 100275692; PM31-821: CC-611A, Test Valve Setpoint
- MRE 002118; CC Surge Tank Level Decrease During SP-31-168B
- NF-KW-RRF-014; Fuel Movement During A Refueling Outage; Revision 3
- 50.59 Applicability Review Of NF-KW-RRF-014; Fuel Movement During A Refueling Outage; Revision 3
- OP-KW-GOP-105; Startup From Hot Standby to 35 Percent Power; Revision 5
- OP-KW-NCL-FH-004; Refueling Daily Checklist; Revision 0
- OP-KW-NOP-FH-002; Reactor Cavity Flooding; Revision 0
- OTH 014050; CC Surge Tank Level Decrease During SP-31-168B
- PCR 015513; CC Surge Tank Level Decrease During Sp-31-168B
- PCR 015514; CC Surge Tank Level Decrease During Sp-31-168B
- PCR 016442; CC-312 Lifted During Cycling of CC-316
- PCR 017357; CC System Relief Valves Lifting
- RF-02.05; Reactor Cavity Seal Ring Installation and Removal; Revision 6
- 50.59 Applicability Review Of OP-KW-NCL-FH-004; Refueling Daily Checklist; Revision 0
- Calculation C10616; Seismic Analysis of Unrestrained Portable Equipment Subject to Sliding Forces Only
- Calculation C11409; Revision 0; CC System Flow Model Development
- Calculation C11432; Emergency Make-up to CCS
- Control Room Log Entry Report; October 4 Through October 14, 2009
- Control Room Log Entry Data; Night Shift; October 18, 2009
- Critical Path/Near Critical 36-Hour Predecessor – Successor Report; October 19, 2009
- Drawing E-251; Circuit Diagram; 480 V MCC I-32E; Revision AB
- Drawing WPS-CC01; Simplified Component Cooling System
- Drawing WPS-CC02; Component Cooling 1
- Drawing WPS-CC03; Component Cooling 2
- Drawing WPS-CC04; Component Cooling 3
- Drawing WPS-CC05; Reactor Coolant Pump Component Cooling Water
- Ingersoll-Dresser Pumps Certified Performance Data and Graphs
- Planned Activities Data for August 10 – August 14, 2009
- Safety Monitor Risk Look Ahead – Kewaunee Plant Configuration Changes and Relative Core Damage Frequency Report; August 10 – August 17, 2009
- Shutdown Safety Assessment Checklists; September 26 - October 18, 2009
- Work Week Major Activities Report; August 9 – August 15, 2009
- Work Week Major Activities Report; September 6 – September 12, 2009
- Kewaunee Test Report for ECCS Strainer Performance Testing; Areva Document No. 66-9089247-000

## 1R22 Surveillance Testing

- CA 147562; Initiate TPR For Revision To OP-KW-OSP-SI-001
- CA 147563; Perform 4.0 Crew For Breaker 1-503 TAT To Bus 5 Reopened After Being Closed
- CR 101450; FW-12A and FW-12B Degraded Voltage Limits and FW-12A Trend Data
- CR 339573; SW Pump 1B2 Exceeds Upper Acceptance Criteria
- CR 349491; Initial Lift Of Safety Valve Exceeded 3 Percent of Its Setpoint Value
- CR 349527; Initial Lift Of Safety Valve Exceeded 3 Percent of Its Setpoint Value
- CR 349533; Initial Lift Of Safety Valve Exceeded 3 Percent of Its Setpoint Value
- CR 349866; Breaker 1-503 TAT To Bus 5 Reopened After Being Closed During OSP-SI-001
- CR 353894; Unable to Remove FW-12A Stem Nut Due to Stem Rejection Force
- CR 356085; Service Water Pump A1 Vibration Readings at ALERT Level
- CR 356086; Service Water Pump A2 Vibration Readings at ALERT Level
- eSOMS Station Narrative Logs; October 18, 19, 20, and 21, 2009
- GMP-210; Operational Use of Infrared Scanners; Revision F
- GMP-217; Adjustment, Setup and Reconditioning Of Limitorque Motorized Valve Actuators; Revision 20
- GMP-236-03; Motor-Operated Valve Diagnostic Testing; Revision 8
- GMP-244; Molded Case Circuit Breaker Testing Electrical Maintenance; Revision 20
- ICP-82B-168; ICE- Heise PTE-1 and HQS Pressure Module Calibration; Revision 4
- KW 100273544; PM06-128; SD-1A3: Test Valve Setpoint
- KW 100273766; PM05A005: FW-12A/MV-32015 – Inspect, Clean, Test Actuator
- KW 100276050; PM05A089: FW-12A/MV32015-MCCB Testing
- KW 100277666; PM06-076: SD-1A1: Test Valve Setpoint
- KW 100278420; PM05A675: FW-12A/MV-32015 – Inspect, Clean Motor Starter
- KW 100398832; FW-12A/MV-32015 – Inspect/Replace Stem Nut
- KW 100429795; FW-12A/MV-32015 – Perform Diagnostic Testing
- KW 100523351; Implement DCR 3760 (Outage) MCC52E-G3
- MA-KW-EPM-MOV-002; Electrical Preventive Maintenance; Revision 0
- MA-KW-EPM-MOV-003; MOV Diagnostic Test Analysis and Acceptability Determination; Revision 0
- OP-KW-OSP-SI-001; Diesel Generator Automatic Test; Revision 3
- SP-02-138A; Train "A" Service Water Pump and Valve Test – IST; Revision 20
- SP-06-077; Main Steam Safety Valve Test; Revision 32
- SP-055-167B; Hot/Intermediate Shutdown Valve Tests; Revision 14
- SP-56A-088; Containment Building Integrated Leak Rate Test; Revision 14
- Drawing E-1586; Schematic Diagram; D/G "A" Shutdown, Governor Control and Aux. Relays; Revision AS
- Drawing E-226; AC Schematics; 4160V Switchgear; Bus 1-5 Source Breakers; Revision AJ
- Drawing E-1586; Schematic Diagram; D/G "A" Shutdown, Governor Control and Aux. Relays; Revision AS
- Drawing E-1634; Integrated Logic Diagram; Diesel Generator Electric; Revision X
- Drawing E-1636; Integrated Logic Diagram; Diesel Generator Electric; Revision X
- Drawing E-1871; Schematic Diagram; Automatic Voltage Restoring Bus 1-5; Revision Q
- Drawing E-1872; Schematic Diagram; Bus 5 Voltage Restoring; Revision Z
- Drawing E-1873; Schematic Diagram Automatic Voltage Restoring Bus 1-5; Revision Q
- Drawing E-1874; Schematic Diagram; Bus 5 Voltage Restoring; Revision X
- Drawing E-1875; Schematic Diagram; Load Shedding Train "A"; Revision Q
- Drawing E-1876; Schematic Diagram; Load Shedding Train "A"; Revision P
- Drawing E-3938; W/D LVR And DVR Relay Panel RR-134; Train A

- Dresser Consolidated; Certification of Compliance/Conformance; Hydroset S/N HS-1116; November 12, 2008
- Kewaunee PMT Test Data; September 25 And 26, 2009
- Kewaunee Safety Valve Test Data; September 25, 2009
- Torque Wrench Calculation Sheet; October 19, 2009

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

- Kewaunee Power Station Emergency Plan; Revision 32
- Kewaunee Power Station Emergency Plan; Revision 33
- Kewaunee Power Station EAL Technical Basis; Revision 4
- Kewaunee Power Station EAL Technical Basis; Revision 5

#### 1EP6 Emergency Preparedness Drill Observation

- Drill Scenario; EOF Evaluation 4
- EPIP-AD-02; Emergency Class Determination; Revision AS
- EPIP-AD-19; Determining Protective Action Recommendations, Revision 27
- EPIP-AD-07; Emergency Notifications; Revision 55
- EPIP-EOF-04; Emergency Operations Facility Organization and Responsibilities; Revision AR
- EPIP-AD-11; Emergency Radiation Controls; Revision 23
- CR 339553; 2009 EP Graded Exercise Objective # 20 Met with Comments – Communication Issues

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

- CR097730; Increased RHR System Dose Rates Following RCP Start; May 03, 2008
- CR097955; Unexpected High RCS Activity After Hydrazine Addition; May 05, 2008
- Electronic Dosimeter Alarm Histories; October 2009
- Nuclear Oversight Audit Report 08-06; Radiological Control And Process Control Program; September 2008
- Nuclear Oversight Audit Report 09-08; Radiological Control And Process Control Program And Chemistry; July 2009
- NAD-01.11; Dosimetry And Personnel Monitoring; Revision 20
- SAR000750; Access Control To Radiologically Significant Areas; March 2009
- SAR000751; Radiological Postings, markings, And Labeling, March 2009

#### 2OS2 As-Low-As-Is-Reasonably Achievable Planning and Controls

- ALARA Committee Notes; RTD Bypass Loop Modification; May 2009
- CY-KW-040-007; Hydrogen Peroxide Addition to the Reactor Coolant; Revision 02
- CY-KW-040-008; Chemical Degasification of the Reactor Coolant System; Revision 00
- Dose And Source Term Reduction Strategic Plan; Revision 03
- Dose Tracking Forms; Various Dates
- RP-AA-300; ALARA Program; Revision 00
- RP-AP-1001; Source Term Reduction and Control; Revision 03
- RP-KW-004-001; ALARA Plan; Revision 05
- SAR 530; Evaluate ALARA Procedures; Revision 01



## 2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

- SP-14-118B; Auxiliary Building Zone SV Train B Filter Testing; Revision 2
- SP-14-118A-1; Auxiliary Building Zone SV Train A Filter Laboratory Testing; Revision 2
- SV-24-122B-1; Shield Building Vent (SBV) Train B Filter Laboratory Testing; Revision 2
- SV-24-122A-1; Shield Building Vent (SBV) Train A Filter Laboratory Testing; Revision 2
- Work Order KW100275486; PM14-709; Charcoal and HEPA Filter Testing; April 17, 2009
- Work Order KW100278150; PM14-708; Charcoal and HEPA Filter Testing; April 22, 2009
- Work Order KW100294113; PM24-545; Charcoal and HEPA Filter Testing; April 21, 2009
- Work Order KW100272062; PM24-546; Charcoal and HEPA Filter Testing; April 15, 2009
- 2007 Annual Radioactive Effluent Release Report
- 2008 Annual Radioactive Effluent Release Report
- SP-32A-136; Radiological Liquid Discharges (Batch Mode); Revision 32
- Permit 08-00082L; B CVC Monitor Tank; August 4, 2008
- Permit 07-00059L; B SGBT Monitor Tank; May 24, 2007
- SP-29-069; Liquid Continuous Radioactive Releases – Steam Generators, Turbine Building Sump; Revision 30
- Permit 09-00007L; Turbine Building Sump; January 22, 2009
- Permit 08-00001L; A S/G BLDN; January 7, 2008
- Self-Assessment 752; Effluent Program; April 18, 2009
- SP-32-113; Gaseous Radioactive Effluent Reports for Continuous Releases; Revision 16
- Offsite Dose Calculation Manual; Revision 11
- Audit 07-10; ODCM/REMP/EPP; February 4, 2008
- CA022643; Turbine Building Sump Flow Totalizer Was Not Functioning Properly; December 11, 2007
- CA084896; Evaluate Differences Between the Monthly Tritium Release Levels; December 11, 2008
- CA025009; NOD Recommends Adding User Groups to Fleet Benchmarking Guidance; May 20, 2008
- CR324424; Service Water Radiation Monitor Sensitivity Discrepancy; February 25, 2009

## 4OA1 Performance Indicator Verification

- KPS1 Power Graph And Data History; Cycle 29; May 9, 2008 – September 26, 2009

## 4OA2 Identification and Resolution of Problems

- ACE 001905; Operability Determination Not Found for Degraded CUNO Filter Casing
- CAP 012847; Operability Determination Not Found for Degraded CUNO Filter Casing
- CAP 019722; Continued Reliance on Manual Action for Replacement of SW Seal Water CUNO Filter
- CAP 028776; Evaluation Not Initiated for The SW Seal Water CUNO Filter Application Event
- CAP 029915; Service Water Pump B2 CUNO Filter Changeover Valve Handle Broke
- CAP 035925; SW Pump A1 CUNO Filter Assembly Valve Unable To Be Operated
- CR 013764; Turbine Building Roof Damper Operation Safety Concerns
- CR 017710; SW Pump A2 CUNO Selector Lever Requires Extensive Pressure to Move
- CR 018170; Checklist N-AS-01-CL Not Updated for Air Comp 1C Switch Position Note
- CR 115972; Floors In AFW Area Need Paint Following AFW Mod
- CR 319800; NOD ID's Turbine Operation on VPL Not Evaluated As Impact to Aggregate Index
- CR 322466; Use of Wrong Specific Gravity in DG Fuel Oil Tank Level Indication Calibration
- CR 338278; Request Mechanical Maintenance Change SW CUNO Filter for 1A1 SW Pump

- CR 338513; A1 SWP Service Water CUNO Filters Housing Selector Valve Leaking By Or Not Reposition
- CR 338840; PPCS Alarm for Service Water Pump B2 T2638A SW Pump 1B2 MTR OBRG Metal Temp High
- CR 339482; Evaluate Seismic Monitoring System As Possible Operator Workaround
- CR 343982; SW-1306A/B Failed Open During Electrical Transient
- CR 344438; Evaluate SW-1306A/B As An Operator Workaround
- CR 351925; SW-1306A Failed Open
- E-0; Reactor Trip Or Safety Injection; Revision 40
- EWR 015019; Plant Effects Evaluation
- ESOMS Station Narrative Log; July 15, 2009
- KPS USAR 7.7-7; Controls; Revision 21
- KW 100322059; DPI-11359 A1 SW Pump CUNO Filter D/P Gage Pegged
- KW 100545465; Change SW Pump 1A1 CUNO Filters
- KW 100546089; Replace A1 SWP Service Water Cuno Filter Housing
- MRE 010510; MRE for SW-4B Failure Regarding SW
- MRE 010511; MRE for SW-4B Failure Regarding Air Leaks
- MRE Second and Third Quarter of 2009 Maintenance Rule Data
- OP-AA-1700; Operations Aggregate Impact; Revision 2
- OP-KW-AOP-AS-001; Loss Of Instrument Air; Revision 1
- OP-KW-AOP-EHV-007; Loss Of Offsite Power; Revision 0
- OP-KW-AOP-GEN-001; Immediate Operator Actions; Revision 4
- OP-KW-AOP-GEN-002; Rapid Power Reduction; Revision 4
- OP-KW-ARP-47051-1; Station And Instrument Air System Fault; Revision 0
- OP-KW-NOP-AS-001; Station And Instrument Air System; Revision 2
- Dominion Nuclear Trend Report; Kewaunee Power Station; Second Quarter Of 2009
- Dominion Nuclear Trend Report; Kewaunee Power Station; Third Quarter Of 2009
- Kewaunee Power Station; Department Human Performance Event-Free Day Clock Resets Data; September 22 – October 19, 2009
- Kewaunee Operations Department Data; Department Self Evaluation; Department Key Performance Indicators; August 2009
- Kewaunee Power Station; Service Water – Category A; Maintenance Rule (a)(2) Data; Second Quarter of 2009
- Kewaunee Power Station; Service Water – Category A; Maintenance Rule (a)(2) Data; Third Quarter of 2009
- Kewaunee Power Station; Number Of Operator Work Arounds Equipment Reliability Index Metric 1a; September, 2008 – August, 2009
- Maintenance Department Rework List Data; December 30, 2009
- Nuclear Oversight – Open Audit Report; December 17, 2009

#### 4OA5 Other Activities

- OPERXK-100-18; Flow Diagram Residual Heat Removal System; Revision AX
- Drawing M-957-1; RHR-From RC Loops A & B Hot Legs to CNTMT PEN. 9 & 10 to CNTMT Sump B; Revision B
- Drawing M-957-2; RHR-From RC Loops A & B Hot Legs to CNTMT PEN. 9 & 10 to CNTMT Sump B; Revision B
- Drawing M-1360; CVC-From REGEN.HX.1A and Point Near VLV.LD-60 to CNTMT.PEN.11; Revision A

- Drawing M-1456; CC-From Line 10-AC-601R-3 to VLV.RHR-33 to AUX.RELIEF VLV.LINE  
4-RC-151R-32; Revision C
- Drawing M-1728; RHR Expansion Tank Piping to RHR Valves RHR-30B & RHR-32A;  
Revision B
- Drawing M-963; RHR-From RC Loops A & B Hotlegs to CNTMT PEN.9 & to CNTMT SUMP B;  
Revision A
- DCR 3750; GL 2008-01 Gas Accumulation Venting and Risk Mitigation Capabilities for SI,  
RHR, and ICS; Revision 0
- KW 07-008213; Perform Field Walkdown to Determine Locations Required for Additional Vent  
Valve;
- KW 07-008215; Perform Field Walkdown to Determine Locations Required for Additional Vent  
Valve;
- KW 07-008217; Perform Field Walkdown to Determine Locations Required for Additional Vent  
Valve.

## LIST OF ACRONYMS USED

ACE	Apparent Cause Evaluation
ADAMS	Agencywide Document Access Management System
ALARA	As-Low-As-Is-Reasonably-Achievable
ASME	American Society of Mechanical Engineers
BACC	Boric Acid Corrosion Control
CAP	Corrective Action Program
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CR	Condition Report
CVC	Chemical and Volume Control
DCR	Design Change Request
DRP	Division of Reactor Projects
EAL	Emergency Action Level
ECN	Engineering Change Notice
EDG	Emergency Diesel Generator
FSAR	Final Safety Analysis Report
IEL	Initiating Event Likelihood
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
ISI	Inservice Inspection
IST	Inservice Test
LER	Licensee Event Report
mrem	Millirem
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
OSP	Outage Safety Plan
OWA	Operator Workaround
P&ID	Piping And Instrumentation Diagram
PARS	Publicly Available Records System
PI	Performance Indicator
PI&R	Problem Identification and Resolution
POS	Plant Operating State
PT	Dye Penetrant Testing
PWR	Pressurized Water Reactor
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RETS	Radiological Effluent Technical Specifications
RFO	Refueling Outage
RHR	Residual Heat Removal
RPVUH	Reactor Pressure Vessel Upper Head
RWP	Radiation Work Permit
SDP	Significance Determination Process
SG	Steam Generator
SI	Safety Injection
SRA	Senior Reactor Analyst
SSC	Structure, Systems, and Components

TAT	Tertiary Auxiliary Transformer
TI	Temporary Instruction
TS	Technical Specification
UHS	Ultimate Heat Sink
USAR	Updated Safety Analysis Report
URI	Unresolved Item
WO	Work Order

D. Heacock

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Sincerely,

**/RA/**

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

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Letter to D. Heacock from M. Kunowski dated February 8, 2010

SUBJECT: KEWAUNEE POWER STATION INTEGRATED INSPECTION REPORT  
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