



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

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

November 5, 2012

Mr. David A. Heacock  
President and Chief Nuclear Officer  
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Glen Allen, VA 23060-6711

SUBJECT: KEWAUNEE POWER STATION -  
NRC INTEGRATED INSPECTION REPORT 05000305/2012004

Dear Mr. Heacock:

On September 30, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Kewaunee Power Station. The enclosed report documents the results of this inspection, which were discussed on October 3, 2012, with Mr. A. Jordan, the site Vice President, and other members of your staff.

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

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

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

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III; and the NRC Resident Inspector at Kewaunee Power Station.

D. Heacock

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

Sincerely,

*/RA/*

Kenneth Riemer, Branch Chief  
Branch 2  
Division of Reactor Projects

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

Enclosure: Inspection Report 05000305/2012004;  
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000305/2012004

Licensee: Dominion Energy Kewaunee, Inc,

Facility: Kewaunee Power Station

Location: Kewaunee, WI

Dates: July 1, 2012 to September 30, 2012

Inspectors: R. Krsek, Senior Resident Inspector  
K. Barclay, Resident Inspector  
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Approved by: K. Riemer, Branch Chief  
Branch 2  
Division of Reactor Projects

Enclosure

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## SUMMARY OF FINDINGS

Inspection Report (IR) 05000305/2012004, 07/01/2012 – 09/30/2012, Kewaunee Power Station (KPS); Maintenance Risk Assessments and Emergent Work Control, Operability Determinations and Functional Assessments, Plant Modifications, Occupational Dose Assessment, and Other Activities.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Four Green findings were identified by the inspectors. The four findings were considered non-cited violations (NCVs) of NRC regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

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

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

- Green: The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," paragraph (a)(4), for the failure to properly assess and manage risk when the licensee lifted a 44,000-pound motor over the portion of the service water (SW) greenhouse containing the train B SW header. Specifically, the licensee should not have credited train B emergency diesel generator (EDG) in the power availability portion of their shutdown safety assessment (SSA). The licensee entered this into their corrective action program (CAP) as CR491721. The licensee assigned an apparent cause evaluation (ACE) to determine the organizational failures.

The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of protection against external factors, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The licensee did not maintain a shutdown probabilistic risk analysis (PRA) model, so an incremental core damage probability could not be estimated for the specific plant conditions. For this reason, the inspectors determined that IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," could not be used. The inspectors used IMC 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," dated April 12, 2012, which directs inspectors to perform a bounding analysis. The inspectors conservatively assumed that EDG B was actually lost and used Appendix G, "Shutdown Operations Significance Determination Process," Attachment 1, "Phase 1 Operational Checklists for Both PWRs [Pressurized-Water Reactors] and BWRs [Boiling-Water Reactors]," dated May 25, 2004, to determine the risk. Specifically, the inspectors selected Checklist 4, "PWR Refueling Operation," and found, for the power availability function, the licensee met the checklist objective to comply with TSs because only one EDG was required to be operable, and EDG A remained operable and protected. Therefore, the inspectors determined that the finding was determined to have very low safety significance (Green). This finding has a cross-cutting aspect in the

area of human performance, work control, because the licensee did not plan and coordinate work activities consistent with nuclear safety. Specifically, the licensee failed to incorporate risk insights and plant SSCs into their evaluation (H.3(a)). (Section 1R13)

- Green: The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to adequately evaluate a through-wall flaw in the refueling water storage tank (RWST). Specifically, the licensee failed to perform a degradation growth evaluation as required by ASME Code Case (CC) N-705, Section 2.5, and failed to use the appropriate acceptance criteria as required by CC N-705, Section 5, in their operability determination (OD) of the leaking RWST. The licensee subsequently took corrective actions to revise the RWST OD 492 to include the CC N-705, Section 2.5-required calculation of the degradation growth considering all the appropriate acceptance criteria described in CC N-705, Section 5. The licensee's final revision to the POD adequately calculated the allowable time (Tallow) for RWST operation per CC N-705 to be ~25 months. This issue was entered into the licensee's CAP as CR482703.

The finding was determined to be more than minor, and determined to be a performance deficiency, because if left uncorrected, it could become a more significant safety concern. This finding was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance (reliability), and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012 and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power" Exhibit 2, Mitigating Systems Screening Questions, dated June 19, 2012. Because the licensee intended to repair/replace the RWST weld during the next RFO, the inspectors answered "No" to all of the Mitigating Systems Screening questions, and screened the finding screened as having very low safety significance (Green). This finding has a cross-cutting aspect in the area of human performance, resources, because the licensee did not ensure that personnel, equipment, procedures, and other resources were available and adequate to assure nuclear safety, particularly those necessary for maintaining long-term plant safety by maintenance of design margins. Specifically, the licensee failed to provide adequate resources to verify the adequacy of the RWST degradation evaluation and supporting calculations. The inspectors determined the primary cause of this finding based upon discussions with the licensee's engineering staff (H.2(a)). (Section 1R15)

- Green: The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion VII, "Control of Purchased Material, Equipment, and Services," because the licensee failed to adequately dedicate a commercial-grade item for use in a safety-related (SR) application. Specifically, the licensee failed to properly dedicate two motors for use in SR fan coil units (FCUs). The finding was entered into the licensee's CAP as CR 487269. The licensee assigned an ACE to determine the organizational failures that led to the violation.

The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone and adversely affected the design control attribute objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to

properly dedicate a commercial-grade item, the FCU motor, caused the non-functionality of the TBFCU 1B and the inoperability of the train B AFW system. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power" Exhibit 2, Mitigating Systems Screening Questions. The inspectors concluded that the TS equipment supported by TBFCU 1B, which consisted of buses 61, 62, and the train B AFW system, may have been inoperable for a time period greater than the respective TS action statements, and therefore answered "Yes" to Mitigating System Cornerstone Question 3, and determined that a detailed risk assessment was necessary. The inspectors worked with RIII senior reactor analysts (SRAs) and concluded that the finding is of very low safety significance (Green). Specifically, the licensee had abnormal operating procedures (AOPs) in place to prop open doors upon a complete loss of safeguards alley room cooling and supporting calculations that concluded the affected equipment would perform for the 24-hour probabilistic risk assessment (PRA) mission time without the TBFCU. The inspectors concluded there was no cross-cutting aspect with this finding because the failure to properly dedicate the motors occurred in 2005, and was not representative of current performance. (Section 1R18)

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

- Green. The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR 20.1201(c) for the failure to accurately assess occupational dose specific to effective dose equivalent for external exposure ( $E_{DE,ex}$ ) determinations. The issue has been entered into the licensee's CAP as CR487980. Corrective actions include procedural review and required revisions, a review of previous  $E_{DE,ex}$  calculations and appropriate adjustments, and issuance of industry operating experience.

The inspectors reviewed the guidance in IMC 0612, and determined that the finding was more than minor because it was associated with the program and process attribute of Occupational Radiation Safety Cornerstone and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation, in that inaccurate radiation monitoring affects the licensee's ability to control and limit radiation exposures. Using IMC 0609, Attachment C, of the Occupational Radiation Safety SDP, the inspectors determined that the finding was of very low safety-significance because the finding did not involve: (1) As-Low-As-Is-Reasonably-Achievable (ALARA) planning and controls; (2) a radiological overexposure; (3) a substantial potential for an overexposure; or (4) a compromised ability to assess dose. Because this finding was of very low safety significance, was not repetitive or willful, and was entered into the CAP, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. The primary cause of this finding was related to the cross-cutting aspect of human performance, resources. Specifically, the licensee failed to provide complete and accurate procedures to the radiation safety staff (H.2(c)). (Section 2RS4.3)

**B. Licensee-Identified Violations**

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

## REPORT DETAILS

### Summary of Plant Status

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

- On July 15, 2012, KPS reduced power less than a 1/2 percent to prevent thermal power swings from exceeding the licensed thermal power after a steam system moisture separator malfunctioned. KPS replaced a signal card for the valve and returned to full power on July 18, 2012.
- On August 22, 2012, KPS reduced power to approximately 98 percent to repair a small steam leak on a pressure transmitter in the feedwater system. KPS returned to full power on August 23, 2012.

### 1. **REACTOR SAFETY**

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

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

##### .1 Summer Seasonal Readiness Preparations

##### a. Inspection Scope

The inspectors performed a review of the licensee's preparations for summer weather for selected systems, including conditions that could lead to an extended drought.

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. Documents reviewed are listed in the Attachment to this report. The inspectors also reviewed CAP items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their corrective action program in accordance with KPS corrective action procedures. The inspectors' reviews focused specifically on the following plant systems:

- ultimate heat sink (UHS); and,
- battery room A temperature trends.

This inspection constituted one seasonal adverse weather sample as defined in IP 71111.01-05.

##### b. Findings

No findings were identified.

.2 External Flooding

a. Inspection Scope

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

This inspection constituted one external flooding sample as defined in IP 71111.01-05.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

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

- service water (SW) train A;
- component cooling water (CCW) train A;
- emergency diesel generator (EDG) A after testing; and,
- auxiliary feedwater (AFW) B with EDG A inoperable for maintenance.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures and system diagrams to determine the appropriate system lineup. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers, and entered them into the CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- TU-95B, safeguards alley following carbon dioxide suppression isolation;
- AX-33, condensate and makeup tank room;
- AX-37, control rod drive equipment room;
- SC-70A, screenhouse north; and,
- AX-32D, CCW pump 1B.

The inspectors reviewed areas to assess if the licensee had implemented a FP program that adequately controlled combustibles within the plant, effectively maintained fire detection and suppression capability, maintained passive FP features in good material condition, and implemented adequate compensatory measures for out-of-service (OOS), degraded or inoperable FP equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment to this report, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On July 28, 2012, the inspectors observed a fire brigade activation during an announced fire drill with the Kewaunee Fire Department. Based on this observation, the inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified

that the licensee staff identified deficiencies; openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Documents reviewed are listed in the Attachment to this report. Specific attributes evaluated were:

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

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

b. Findings

No findings were identified.

1R06 Flooding (71111.06)

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety-related (SR) equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the USAR, engineering calculations, and AOPs. Documents reviewed are listed in the Attachment to this report. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the CAP to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the auxiliary building internal flood protection for residual heat removal (RHR) system to assess the adequacy of watertight barriers and verify drains and sumps were clear of debris and were operable.

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

b. Findings

No findings were identified.

## .2 Underground Vaults

### a. Inspection Scope

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

- tertiary auxiliary transformer 13.8-kilovolt (kV) splice pit;
- tertiary auxiliary transformer 4160-volt pull pit;
- EDG A and B fuel oil transfer pump pits; and,
- switchyard control cable pit outside the northwest corner of auxiliary building.

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

### b. Findings

No findings were identified.

## 1R07 Annual Heat Sink Performance (71111.07)

### .1 Heat Sink Performance

#### a. Inspection Scope

The inspectors reviewed the licensee's testing of the auxiliary building fan coil unit (FCU) 1B heat exchanger to verify that potential deficiencies did not mask the licensee's ability to detect degraded performance, to identify any common cause issues that had the potential to increase risk, and to ensure that the licensee was adequately addressing problems that could result in initiating events that would cause an increase in risk. The inspectors reviewed the licensee's observations as compared against acceptance criteria, the correlation of scheduled testing and the frequency of testing, and the impact of instrument inaccuracies on test results. Inspectors also verified that test acceptance criteria considered differences between test conditions, design conditions, and testing conditions. Documents reviewed are listed in the Attachment to this document.

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

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

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

a. Inspection Scope

On September 17, 2012, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

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

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

b. Findings

No findings were identified.

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

a. Inspection Scope

On September 18 and September 19, 2012, the inspectors observed the control room observation of technical support center (TSC) diesel generator (DG) work. This was an activity that required heightened awareness or was related to increased risk. 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 procedures;

- control board and equipment manipulations; and,
- oversight and direction from supervisors.

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

This inspection constituted one quarterly licensed operator heightened activity/risk sample as defined in IP 71111.11.

b. Findings

No findings 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:

- service water;
- 480-volt system; and,
- station and instrument air.

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

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

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

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

b. Findings

No findings were identified.

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

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

- heavy load above SW train B during refueling outage (RFO) on April 23;
- risk assessment with EDG A removed from service on August 6;
- risk assessment on August 20;
- risk assessment on September 4; and,
- risk assessment on September 25.

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

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

b. Findings

Inadequate Risk Assessment During Heavy Lift Over Service Water System

Introduction: The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," paragraph (a)(4), for the failure to properly assess risk when the licensee lifted a 44,000-pound motor over the portion of the SW greenhouse containing the train B SW header. Specifically, the licensee should not have credited train B EDG in the power availability portion of their shutdown safety assessment (SSA).

Description: On April 23, 2012, the inspectors observed that a circulating water pump motor had been lifted from inside the SW greenhouse to a temporary motor stand south of the greenhouse. The inspectors determined that the heavy lift would have crossed over the train B SW pump power supply cables, as well as, the train B SW header. The

inspectors reviewed licensee procedures for assessing risk during a heavy lift and found that administrative procedure OU-KW-201, "Shutdown Safety Assessment Checklist," stated that if a heavy load is maneuvered over, or in close proximity to, an SSC relied upon within the SSA, the failure of the load carrying element must be factored into the assessment as a loss of the SSC. The procedure allowed for crediting the screenhouse roof as protection from the load drop; however, the licensee had not performed the necessary calculations to credit the roof. The inspectors found that the portion of the SW header that would be damaged during a load drop was required for functionality and operability of EDG B. A review of the SSA found that the licensee should not have credited EDG B in the power availability section of the SSA during the lift. When the EDG B was removed from the SSA, the power availability risk changed from green to yellow.

Analysis: The finding was determined to be more than minor because the failure to properly assess risk was a performance deficiency. The finding was associated with the Mitigating Systems Cornerstone attribute of protection against external factors, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The licensee did not maintain a shutdown probabilistic risk analysis (PRA) model, so an incremental core damage probability could not be estimated for the specific plant conditions. For this reason, the inspectors determined that IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," could not be used. The inspectors used IMC 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," dated April 12, 2012, which directs inspectors to perform a bounding analysis. The inspectors conservatively assumed that EDG B was actually lost and used Appendix G, "Shutdown Operations Significance Determination Process," Attachment 1, "Phase 1 Operational Checklists for Both PWRs [Pressurized-Water Reactors] and BWRs [Boiling-Water Reactors]," dated May 25, 2004, to determine the risk. Specifically, the inspectors selected Checklist 4, "PWR Refueling Operation," and found, for the power availability function, the licensee met the checklist objective to comply with TSs because only one EDG was required to be operable, and EDG A remained operable and protected. Therefore, the inspectors determined that the finding was determined to have very low safety significance (Green). This finding has a cross-cutting aspect in the area of human performance, work control, because the licensee did not plan and coordinate work activities consistent with nuclear safety. Specifically, the licensee failed to incorporate risk insights and plant SSCs into their evaluation (H.3(a)).

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

Contrary to the above, on April 23, 2012, the licensee failed to adequately assess the increase in risk for the circulating water pump motor lift over the portion of the SW screenhouse containing the train B SW header and the train B SW pump power supply cables. Specifically, the licensee should not have credited the EDG B in their SSA while the motor lift was in progress. Because this violation was of very low safety significance, and it was entered into the licensee's CAP as CR491721, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy

(NCV 05000305/2012004-01; Inadequate Risk Assessment During Heavy Lift Over Service Water System).

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

1R15 Operability Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- Operability Determination (OD) 492, Pinhole Boric Acid Leak on base Weld of RWST [refueling water storage tank], Revision 0;
- OD 492, Pinhole Boric Acid Leak on base Weld of RWST, Revision 1;
- OD 492, Pinhole Boric Acid Leak on base Weld of RWST, Revision 2;
- OD 293, Atmospheric Dispersion Factors Used in Radiological Accident Analyses, Revision 3; and,
- CR484943, Damper ASV-51A Linkage Coupling Found Broken.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and USAR to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors reviewed a sampling of corrective action documents to verify that the licensee had identified and corrected any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

Inadequate Degradation Evaluation of Leaking Refueling Water Storage Tank

Introduction: The inspectors identified a finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to adequately evaluate a through-wall flaw in the refueling water storage tank (RWST). Specifically, the licensee failed to perform a degradation growth evaluation as required by ASME Code Case (CC) N-705, Section 2.5, and failed to use the appropriate acceptance criteria as required by CC N-705, Section 5, in their OD of the leaking RWST.

Description: In June 2012, following identification of a through-wall leak in the RWST bottom circumferential weld, the licensee performed an OD for the RWST in accordance with their operability procedure. In this OD, the licensee elected to apply NRC-approved CC N-705, "Evaluation Criteria for Temporary Acceptance of Degradation in Moderate Energy Class 2 or 3 Vessels and Tanks," and deferred repair of this flaw until the next RFO. The licensee selected the method under CC N-705, Section 2.5, "Evaluation of Measured Flaws." To support this method, a degradation growth evaluation was required to be performed to predict the time ( $T_{allow}$ ) at which the detected degradation will grow to the maximum structurally allowable size in accordance with the acceptance criteria of CC N-705, Section 5. The inspectors reviewed the licensee's RWST OD 492, Revision 0, and supporting calculation CME-0110, Revision 0, and identified that the licensee had not included degradation growth calculations as required by Section 2.5. In addition, the licensee failed to apply the appropriate acceptance criteria as described in CC N-705, Section 5, to determine the allowable degradation size. The inspectors were concerned that without adequate calculation of allowable degradation size, and without any degradation growth calculations, the licensee could not adequately determine the degradation stability for continued service of the RWST. Therefore, the degraded circumferential weld in the RWST could potentially fail in-service due to unstable degradation propagation and therefore, adversely affect the RWST function to provide the cooling water supply for post-LOCA [loss of coolant accident] core cooling.

On July 17, 2012, the inspectors participated in a teleconference with the licensee to discuss their concerns regarding lack of degradation growth calculations supporting use of CC N-705, and the inadequate calculation of the allowable degradation size. The licensee acknowledged the inspectors' concerns and subsequently performed a revision to the POD and supporting calculation. The inspectors reviewed OD 492, Revision 1, and supporting calculation CME-110, Revision 1, and identified that the licensee had again failed to meet the requirements of CC N-705, Section 2.5, regarding degradation growth calculation and failed to calculate the allowable degradation size in accordance with the acceptance criteria of CC N-705, Section 5. Specifically, the licensee failed to calculate the allowable degradation size and corresponding degradation growth using the CC N-705, Section 5, acceptance criteria for loading conditions levels A and B. Subsequent to the identification of concerns by the inspectors with the licensee's revised OD and supporting calculation, the licensee performed another revision to the OD and supporting calculation. The inspectors reviewed the RWST OD 492, Revision 2, and supporting calculation CME-0110, Revision 2, and did not identify any additional concerns; and concluded the use of CC N-705 allowed continued service of the RWST until the next RFO.

Analysis: The inspectors determined that the licensee's failure to adequately evaluate the leaking RWST in accordance with CC N-705 was a performance deficiency. The performance deficiency was determined to be more than minor, and a finding because if left uncorrected, it could become a more significant safety concern. Absent NRC identification, the failure to adequately evaluate the degradation of the leaking RWST weld could have allowed a potentially unstable flaw to remain in service for greater than the allowed time. The unstable RWST weld degradation/crack could propagate and create a larger thru-wall hole at the bottom of the RWST, resulting in loss of inventory and increase the risk for insufficient core cooling for post-LOCA conditions. This finding was also associated with the Mitigating Systems Cornerstone attribute of Equipment Performance (reliability). The finding adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating

events to prevent undesirable consequences. The licensee's final revision to the OD adequately calculated the allowable time ( $T_{allow}$ ) for RWST operation per CC N-705 to be ~25 months. This  $T_{allow}$  for continued operation of RWST without repair/replacement is greater than the ~12 months until the next scheduled RFO. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power" Exhibit 2, Mitigating Systems Screening Questions. Because the licensee intends to repair/replace the RWST weld during the next RFO, the inspectors answered "No" to all of the Mitigating Systems screening questions. Therefore, this finding screened as having very low safety significance (Green).

This finding has a cross-cutting aspect in the area of human performance, resources, because the licensee did not ensure that personnel, equipment, procedures, and other resources were available and adequate to assure nuclear safety, particularly those necessary for maintaining long-term plant safety by maintenance of design margins (H.2(a)). Specifically, the licensee failed to provide adequate resources to verify the adequacy of the RWST degradation evaluation and supporting calculations. The inspectors determined the primary cause of this finding based upon discussions with the licensee's engineering staff.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that design control measures provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program. An alternative calculational method described in CC N-705, Section 2.5(c), required, in part, that "a degradation growth evaluation shall be performed to predict the time ( $T_{allow}$ ) at which the detected degradation will grow to the maximum structurally allowable size in accordance with the acceptance criteria of Section 5 of the Code Case."

Contrary to the above, on July 17, 2012, the licensee's design control measures failed to verify the adequacy of the design of the circumferential RWST weld postulated to be degraded as evidenced by the inadequate OD 492, Revision 0, and supporting calculation CME-110, Revision 0. Specifically, the methodology and design inputs used to implement CC N-705 in OD-492, Revision 0, and CME-110, Revision 0, did not consider the appropriate acceptance criteria as required by CC N-705, Section 5 (e.g., safety factors for loading condition A and B), and did not include calculation of degradation growth as required by CC N-705, Section 2.5.

The licensee subsequently took corrective actions to revise the RWST OD 492 to include the CC N-705, Section 2.5-required calculation of the degradation growth considering all the appropriate acceptance criteria described in CC N-705, Section 5. Because this violation was of very low safety significance and it was entered into the licensee's CAP as CR 482703, it is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000305/2012004-02, Inadequate Degradation Evaluation of Leaking Refueling Water Storage Tank).

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed and assessed the failure analyses reports, licensee corrective action documents, and dedication paperwork related to the 2005 dedication of two electric motors used as a basic component in safety-related FCUs. These reviews were performed to complete the inspection of URI 05000305/2012002-03, Potential Inadequate Commercial Grade Dedication and determine if a performance deficiency existed.

This inspection was conducted for the closure of a URI and did not constitute an additional plant modification sample.

b. Findings

Inadequate Commercial Grade Dedication Leads to Premature Bearing Failure

Introduction: The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion VII, "Control of Purchased Material, Equipment, and Services," because the licensee failed to adequately dedicate a commercial-grade item for use in a safety-related (SR) application. Specifically, the licensee failed to properly dedicate two motors for use in SR fan coil units (FCUs).

Description: On January 21, 2012, at 2:45 p.m., the licensee identified abnormal noise on turbine building FCU (TBFCU) 1B and declared it non-functional, along with declaring its associated train B auxiliary feedwater (AFW) pump inoperable. The licensee subsequently collected vibration data on the TBFCU 1B motor and determined that the non-drive end bearing was in imminent failure. The licensee replaced the motor and returned TBFCU 1B to a functional status and AFW B to an operable status, at 7:41 a.m., the following day.

On February 13, the licensee received a vendor's failure analysis report, which concluded that excess thrust forces caused the non-drive end motor bearing to prematurely fail. Upon receiving the failure analysis report, the licensee declared the TBFCU 1A inoperable, and replaced its motor to preclude a potential common mode failure. A failure analysis of TBFCU 1A found early signs of the same condition; however, the bearing degradation was not nearly as advanced as TBFCU 1B. Both dedicated motors were installed in December of 2008. The licensee typically operated both trains of TBFCUs together; however, TBFCU 1A had been secured and placed in automatic for an extended period of time because of a small service water (SW) leak in the cooler, which reduced the motor run-time and may explain the difference in bearing degradation between the two trains.

The licensee's initial ACE determined the cause to be incorrect assembly of the motor after installation of sealed bearings at a commercial vendor. The licensee ordered two motors with sealed bearings; however, the local commercial vendor initially missed the sealed bearing specification in the purchase order and the motors had to be returned to the vendor, where the original bearings were replaced with sealed bearings. After receipt of the commercial grade motors with the specified sealed bearings, Kewaunee sent the motors to a dedicating entity. The inspectors reviewed the critical

characteristics (CCs) that were selected for review in the dedication process, which were approved by the licensee, and found that one of the CCs was to open the motor and inspect the bearings to confirm that the bearing model number matched the specified bearings. The licensee's ACE stated that the dedicating entity opened the bearing housing to verify that the correct bearings were installed; however, after review of the dedicating entity's test data, the inspectors found that the CC for visual inspection of the bearings was never performed per the dedicating entity's verification plan.

The licensee's remedial corrective action was to replace the FCU motor. The licensee stated that this was a historical issue, and that their current preferred method of procurement was to purchase SR motors and not dedicate commercial motors. The inspectors were concerned that the licensee did not prohibit procuring commercially dedicated motors in the future without adequately addressing the method for verifying the motor bearings' CCs.

The inspectors held a teleconference between NRC vendor inspectors, the licensee, and the third party dedicating entity. During the call, the dedicating entity stated that they believed this motor was a dual dedication with respect to the motor bearing because of a note that the licensee included in the purchase order. The note in the purchase order stated, "Do not make any changes to bearings as they have been replaced by KNPP with non-greasable bearings, and changes to the bearings would have to have prior approval." The dedicating entity also believed that the cause of the failure was the additional incorrect grease that remained in the bearing housing from the original bearing, which was not properly removed during bearing replacement by the commercial vendor.

After the teleconference, the licensee revised the ACE with new insights obtained during the course of the discussion. The revised ACE found the apparent cause to be, "The replaced bearings were not inspected due to weaknesses in the commercial-grade dedication of the motors. Had the bearings been inspected to insure it was the proper bearing they may have identified the improper assembly or nonstandard grease and initiated actions to insure the bearings were properly assembled and greased." Additionally, the revised ACE stated that a review of the dedication process used in purchasing these motors would be performed to determine if the commercial grade dedication process was sufficiently thorough. The licensee concluded that important design, material, and performance characteristics necessary to provide reasonable assurance that a commercial-grade item would perform its intended safety function were addressed during the dedication. However, the inspectors disagreed with the licensee's perspective that the dedication was sufficient. The inspectors determined that the motor did not come directly from the commercial manufacturer; and that a local motor distributor disassembled the motor and replaced the bearings. The inspectors determined the licensee did not verify the CC for the proper type of bearings in the TBFCU motors. The inspectors concluded that verification that the correct bearings were properly installed would have identified that excess and incorrect grease from the original bearings was removed from the bearing housings. Licensee management concurred with the inspectors' final assessment.

Analysis: The inspectors determined that the failure to adequately dedicate a commercial-grade item for use in an SR application was contrary to regulatory requirements, and was a performance deficiency. The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone

and adversely affected the design control attribute objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to properly dedicate a commercial-grade item, the FCU motor, caused the non-functionality of the TBFCU 1B and the inoperability of the train B AFW system.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power" Exhibit 2, Mitigating Systems Screening Questions. The inspectors concluded that the TS equipment supported by TBFCU 1B, which consisted of buses 61, 62, and the train B AFW system, may have been inoperable for a time period greater than the respective TS action statements, and therefore answered "Yes" to Mitigating System Cornerstone Question 3, and determined that a detailed risk assessment was necessary. The inspectors worked with RIII senior reactor analysts (SRAs) and concluded that the finding is of very low safety significance (Green). Specifically, the licensee had abnormal operating procedures (AOPs) in place to prop open doors upon a complete loss of safeguards alley room cooling and supporting calculations that concluded the affected equipment would perform for the 24-hour probabilistic risk assessment (PRA) mission time without the TBFCU. The inspectors concluded there was no cross-cutting aspect with this finding because the failure to properly dedicate the motors occurred in 2005, and was not representative of current performance.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion VII, "Control of Purchased Material, Equipment, and Services," requires, in part, that measures be established to include provisions, as appropriate, to ensure the quality of equipment furnished by contractors.

Contrary to the above, in 2005, the licensee failed to ensure the quality of equipment furnished by contractors for use in an SR application. Specifically, the dedication process did not verify that the replacement bearings were properly installed and that the excess grease from the bearing housing was properly removed. Because this violation was of very low safety significance and it was entered into the licensee's CAP as CR 487269, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000305/2012004-03, Inadequate Commercial Grade Dedication Leads to Premature Bearing Failure).

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

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

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

- Work Order (WO) KW100915957, Replace Fire Pump B Controller Contacts, on August 4;
- WO KW100274864, SW-1300 Actuator Maintenance, on August 16;
- WO KW100873657, CCW Pump A Oil Change, on August 23;
- WO KW100920587, ICCMS [inadequate core cooling monitoring system] Train A Power Supply Failure, replace on September 5; and,
- WO KW100904096, Replace TSC D/G Voltage Regulator, on September 17.

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

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

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

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

- ESP-DGE-005A (Routine);
- RHR on September 20 (containment isolation valve (CIV)); and,
- OP-KW-OSP-ICS-003B, train B containment spray pump and valve test ((in-service testing (IST)).

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

- did preconditioning occur;
- were the effects of the testing adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- were acceptance criteria clearly stated, demonstrated operational readiness, and consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency was in accordance with TSs, the USAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for IST, testing was performed in accordance with the applicable version of ASME code, Section XI, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for SR instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and,
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

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 September 25, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator and TSC to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the CAP. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report.

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

b. Findings

No findings were identified.

**2. RADIATION SAFETY**

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

The following inspection activities supplement those documented in Integrated Inspection Report (IR) 05000305/2012003, and constitute one complete sample as defined in IP 71124.01-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed all licensee performance indicators for the Occupational Exposure Cornerstone for follow-up. The inspectors reviewed the results of radiation protection (RP) program audits (e.g., licensee's quality assurance audits or other independent audits). The inspectors reviewed any reports of operational occurrences related to occupational radiation safety since the last inspection. The inspectors reviewed the results of the audit and operational report reviews to gain insights into overall licensee performance.

b. Findings

No findings were identified.

.2 Radiological Hazard Assessment (02.02)

a. Inspection Scope

The inspectors determined if there had been changes to plant operations since the last inspection that may result in a significant new radiological hazard for onsite workers or members of the public. The inspectors evaluated whether the licensee assessed the potential impact of these changes and has implemented periodic monitoring, as appropriate, to detect and quantify the radiological hazard.

b. Findings

No findings were identified.

.3 Instructions to Workers (02.03)

a. Inspection Scope

The inspectors reviewed selected occurrences where a worker's electronic personal dosimeter noticeably malfunctioned or alarmed. The inspectors evaluated whether workers responded appropriately to the off-normal condition. The inspectors assessed whether the issue was included in the CAP and dose evaluations were conducted as appropriate.

b. Findings

No findings were identified.

.4 Contamination and Radioactive Material Control (02.04)

a. Inspection Scope

The inspectors reviewed the licensee's criteria for the survey and release of potentially contaminated material. The inspectors evaluated whether there was guidance on how to respond to an alarm that indicates the presence of licensed radioactive material.

The inspectors reviewed the licensee's procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters. The inspectors assessed whether or not the licensee has established a de facto "release limit" by altering the instrument's typical sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high-radiation background area.

The inspectors selected several sealed sources from the licensee's inventory records and assessed whether the sources were accounted for and verified to be intact.

The inspectors evaluated whether any transactions, since the last inspection, involving nationally tracked sources were reported in accordance with 10 CFR 20.2207.

b. Findings

No findings were identified.

.5 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

The inspectors examined the licensee's physical and programmatic controls for highly activated or contaminated materials (nonfuel) stored within spent fuel and other storage pools. The inspectors assessed whether appropriate controls (i.e., administrative and physical controls) were in place to preclude inadvertent removal of these materials from the pool.

The inspectors examined the posting and physical controls for selected high radiation areas (HRAs) and very high radiation areas (VHRAs) to verify conformance with the occupational performance indicator (PI).

b. Findings

No findings were identified.

.6 Risk-Significant HRA and VHRA Controls (02.06)

a. Inspection Scope

The inspectors discussed with the RP manager the controls and procedures for high-risk HRAs and VHRAs. The inspectors discussed methods employed by the licensee to provide stricter control of VHRA access as specified in 10 CFR 20.1602, "Control of Access to Very High Radiation Areas," and Regulatory Guide (RG) 8.38, "Control of Access to High and Very High Radiation Areas of Nuclear Plants." The inspectors assessed whether any changes to licensee procedures substantially reduce the effectiveness and level of worker protection.

The inspectors discussed the controls in place for special areas that have the potential to become VHRAs during certain plant operations with first-line health physics supervisors (or equivalent positions having backshift health physics oversight authority). The inspectors assessed whether these plant operations require communication beforehand with the health physics group, so as to allow corresponding timely actions to properly post, control, and monitor the radiation hazards including re-access authorization.

The inspectors evaluated licensee controls for VHRAs and areas with the potential to become VHRAs to ensure that an individual was not able to gain unauthorized access to the VHRA.

b. Findings

No findings were identified.

.7 Radiation Worker Performance (02.07)

a. Inspection Scope

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be human performance errors. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors

assessed whether this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. The inspectors discussed with the RP manager any problems with the corrective actions planned or taken.

b. Findings

No findings were identified.

.8 Radiation Protection Technician Proficiency (02.08)

a. Inspection Scope

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be RP technician error. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

b. Findings

No findings were identified.

.9 Problem Identification and Resolution (02.09)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring and exposure control were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involve radiation monitoring and exposure controls. The inspectors assessed the licensee's process for applying operating experience to their plant.

b. Findings

No findings were identified.

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

The inspection activities supplement those documented in IR 05000305/2012003, and constitute a partial sample as defined in IP 71124.03-05.

.1 Use of Respiratory Protection Devices (02.03)

a. Inspection Scope

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

devices were used consistent with their NIOSH/MSHA certification or any conditions of their NRC approval.

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

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

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

The inspectors chose multiple respiratory protection devices staged and ready for use in the plant or stocked for issuance for use. The inspectors assessed the physical condition of the device components (mask or hood, harnesses, air lines, regulators, air bottles, etc.) and reviewed records of routine inspection for each. The inspectors selected several of the devices and reviewed records of maintenance on the vital components (e.g., pressure regulators, inhalation/exhalation valves, hose couplings). The inspectors reviewed the respirator vital components maintenance program to ensure that the repairs of vital components were performed by the respirators' manufacturer.

b. Findings

No findings were identified.

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

a. Inspection Scope

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

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

The inspectors determined whether appropriate mask sizes and types are available for use (i.e., in-field mask size and type match what was used in fit-testing). The inspectors determined whether on-shift operators had no facial hair that would interfere with the

sealing of the mask to the face and whether vision correction (e.g., glasses inserts or corrected lenses) was available as appropriate.

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

b. Findings

No findings were identified.

.3 Problem Identification and Resolution (02.05)

a. Inspection Scope

The inspectors evaluated whether problems associated with the control and mitigation of in-plant airborne radioactivity were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP. The inspectors assessed whether the corrective actions were appropriate for a selected sample of problems involving airborne radioactivity and were appropriately documented by the licensee.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04)

This inspection constituted a partial sample as defined in IP 71124.04-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

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

A review was conducted of the licensee procedures associated with dosimetry operations, including issuance/use of external dosimetry (routine, multibadging, extremity, neutron, etc.), assessment of internal dose (operation of whole body counter, assignment of dose based on derived air concentration-hours, urinalysis, etc.), and

evaluation of and dose assessment for radiological incidents (distributed contamination, hot particles, loss of dosimetry, etc.).

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

b. Findings

No findings were identified.

.2 External Dosimetry (02.02)

a. Inspection Scope

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

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

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

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

b. Findings

No findings were identified.

.3 Special Dosimetric Situations (02.04)

Declared Pregnant Workers

a. Inspection Scope

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

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

monitoring controls employed by the licensee and with respect to the requirements of 10 CFR Part 20.

b. Findings

No findings were identified.

Dosimeter Placement and Assessment of Effective Dose Equivalent for External Exposures

a. Inspection Scope

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

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

b. Findings

Effective Dose Equivalent Determination

Introduction: The NRC identified a finding of very low safety significance (Green) and associated NCV of 10 CFR 20.1201, for the failure to accurately assess occupational dose specific to effective dose equivalent for external exposure (EDE<sub>ex</sub>) determinations.

Description: The licensee performed several evolutions during the 2011 RFO (KR31) that utilized EDE<sub>ex</sub> for dose determination. EDE<sub>ex</sub> is a specialized dose assessment technique that requires licensees to evaluate total dose to the individual by the use of tissue and body organ weighting factors relative to the exposed portions of the human body. The use of the EDE<sub>ex</sub> dose assessment technique requires close radiological dose monitoring and the use of dosimetry methods that are pre-approved by the NRC. The licensee has an NRC-approved EDE<sub>ex</sub> method on record (ML090370032) dated February 29, 2009. This approval states, in part, "To ensure that the estimates of EDE<sub>ex</sub> are conservative, the licensees have committed to measuring the dose to each compartment (and/or combined compartment) by locating the dosimeter, calibrated to DDE [deep dose equivalent], at the highest exposed portion of that compartment,"

As a part of the baseline occupational radiation safety inspection program, the inspectors reviewed the licensee's implementation of EDE<sub>ex</sub> dose assessments for the KR31 RFO for various individuals and identified errors. The inspectors noted that, when the licensee utilized EDE<sub>ex</sub> to assess the dose for several individuals, the licensee failed to measure the highest exposed portion of combined thorax and abdomen compartment. Specifically, the thorax and abdomen were being treated as combined compartments with the dosimeter located on the thorax while the highest exposed portion of that combined compartment was the abdomen.

This issue was entered into the licensee's CAP as CR487980. Corrective actions include procedural review and required revisions, a review of previous EDE<sub>ex</sub>

calculations and appropriate adjustments, and issuance of industry operating experience.

Analysis: The inspectors determined that this issue of concern was a performance deficiency because the licensee did not perform EDE<sub>ex</sub> dose assessment in accordance with an NRC-approved dosimetry method. The inspectors determined that the cause of the performance deficiency was reasonably within the licensee's ability to foresee and correct and should have been prevented.

The finding was not subject to traditional enforcement since the incident did not have a significant safety consequence, did not impact the NRC's ability to perform its regulatory function, and was not willful.

The inspectors reviewed the guidance in IMC 0612, Appendix E, "Examples of Minor Issues," and did not find any similar examples. The performance deficiency was determined to be of more than minor safety significance in accordance with IMC 0612, Appendix B, "Issue Screening," because it was associated with the program and process attribute of the Occupational Radiation Safety Cornerstone. Specifically, the performance deficiency affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation, in that inaccurate radiation monitoring affects the licensee's ability to control and limit radiation exposures.

In accordance with IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined that the finding had very low safety significance (Green) because the finding did not involve: (1) ALARA planning and controls; (2) a radiological overexposure; (3) a substantial potential for an overexposure; or (4) a compromised ability to assess dose.

The inspectors identified that the primary cause of this finding was related to the cross-cutting aspect of human performance in the component of resources. Specifically, licensee failed to provide complete and accurate procedures to the staff (H.2(c)).

Enforcement: Title 10 CFR 20.1201(c) states in part, that "when the external exposure is determined by measurement with an external personal monitoring device, the DDE must be used in place of the EDE<sub>ex</sub>, unless the EDE<sub>ex</sub> is determined by a dosimetry method approved by the NRC." Contrary to the above, during diving activities at the Kewaunee Power Station in February and March, 2011, the licensee failed to use an NRC-approved method for determining EDE<sub>ex</sub>. Since the violation of 10 CFR 20.1201 was of very low safety significance and has been entered in the licensee's CAP as CR487980, this violation is being treated as an NCV consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000305/2012004-04; Effective Dose Equivalent Determination).

#### Shallow Dose Equivalent

a. Inspection Scope

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

b. Findings

No findings were identified.

Assigning Dose of Record

a. Inspection Scope

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

b. Findings

No findings were identified.

.4 Problem Identification and Resolution (02.05)

a. Inspection Scope

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

b. Findings

No findings were identified.

4. **OTHER ACTIVITIES**

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

4OA1 Performance Indicator 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 period from the third quarter 2011 through the second quarter 2012. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's event reports and computer plots of thermal power for the period from the third quarter 2011 through the second quarter

2012 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CAP to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

.2 Unplanned Scrams with Complications

a. Inspection Scope

The inspectors sampled licensee submittals for the Unplanned Scrams with Complications PI for the period from third quarter 2011 through the second quarter 2012. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's event reports and computer plots of thermal power for the period from the third quarter 2011 through the second quarter 2012 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CAP to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings 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 period from the third quarter 2011 through the second quarter 2012. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's event reports and computer plots of thermal power for the period from the third quarter 2011 through the second quarter 2012 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CAP to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

.4 Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors sampled licensee submittals for the Reactor Coolant System (RCS) Specific Activity PI for Kewaunee Power Station for the period from the fourth quarter 2011 through the second quarter 2012. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's RCS chemistry samples, TS requirements, issue reports, event reports and NRC Integrated Inspection Reports to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CAP to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze an RCS sample. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

.5 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals for the Occupational Radiological Occurrences PI for the period from the fourth quarter 2011 through the second quarter 2012. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's assessment of the PI for occupational radiation safety to determine if indicator-related data was adequately assessed and reported. To assess the adequacy of the licensee's PI data collection and analyses, the inspectors discussed with RP staff, the scope and breadth of its data review and the results of those reviews. The inspectors independently reviewed electronic personal dosimetry dose rate and accumulated dose alarms and dose reports and the dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized occurrences. The inspectors also conducted walkdowns of numerous locked high and VHRA entrances to determine the adequacy of the controls in place for these areas. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

.6 Radiological Effluent TS/Offsite Dose Calculation Manual Radiological Effluent Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the Radiological Effluent TS (RETS)/ Offsite Dose Calculation Manual (ODCM) Radiological Effluent Occurrences PI for the period from the third quarter 2011 through the second quarter 2012. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's issue report database and selected individual reports generated since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous effluent summary data and the results of associated offsite dose calculations for selected dates to determine if indicator results were accurately reported. The inspectors also reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one RETS/ODCM radiological effluent occurrences sample as defined in IP 71151 05.

b. Findings

No findings were identified.

40A2 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: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue.

Minor issues entered into the licensee's CAP as a result of the inspectors' observations are included in the Attachment to this report.

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

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.3 Selected Issue Follow-Up Inspection: Apparent Cause Evaluation (ACE) 019137, Not Precisely Controlling Plant Evolutions That Led to an RCS T Deviation

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 operators to control plant evolutions in accordance with procedures. The inspectors reviewed the licensee's ACE, previous occurrences, and the licensee's planned remedial corrective actions, as well as long term corrective actions to address the issue. Documents reviewed are listed in the Attachment to this report. The inspectors determined that a licensee identified violation occurred and this performance deficiency is documented in Section 4OA7.2 of this report.

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

b. Findings

No findings were identified.

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

.1 (Closed) Licensee Event Report (LER) 05000305/2012-003-00: Nuclear Instruments Inoperable For Longer Period Than Allowed By Technical Specifications

a. Inspection Scope

The inspectors reviewed the plant's response to the discovery on April 15, 2012, with the reactor defueled, that the as-found pressure testing of the nuclear source and intermediate range detector cable for channels N31 and N35 identified a leak in the cable wall near a cable penetration connector. Leakage had been previously identified in this cable in April 2008; however, the source of the leakage was considered to have been from the connector interface based on previous operational experience. The April 15, 2012, test indicated that the 2008 leak had been incorrectly characterized. During subsequent repairs, a second leak was identified. Since the leakage was through the cable wall itself and not from the connector interface, the ability of the cable to function for an extended period in a post-accident environment could no longer be assured

The inspectors determined that a licensee identified violation occurred and this performance deficiency is documented in Section 4OA7.3 of this report. Documents reviewed are listed in the Attachment to this report.

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

.2 (Discussed) LER 05000305/2012-005-00: Both Safety Injection Trains Inoperable Due To Venting

On June 27, 2012, during routine quarterly monitoring for gas voids, the licensee discovered a gas void in the 12-inch diameter common suction piping and the 2-inch diameter safety injection bypass piping. The common suction piping was found to be partially voided and approximately half full and the bypass piping was completely voided. At that time the licensee determined that the system was operable but nonconforming.

Upon discovery the licensee took prompt action to vent the gas void through installed vent valves. From 14:46 until 15:00 the licensee opened the vent valves to vent the voids and declared both trains of safety injection inoperable. Following the venting evolution, ultrasonic testing on the piping revealed the void had been adequately vented.

The inspectors continued to review the circumstances surrounding the event to determine if a performance deficiency occurred that created the void. In addition, the inspectors continue to review the licensee's efforts to determine the overall effect of the void that was discovered. Until the inspector's evaluations are complete, this LER will continue to remain open.

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

#### 4OA5 Other Activities

.1 (Closed) URI 05000305/2012002-03, Potential Inadequate Commercial Grade Dedication

On January 21, the licensee discovered elevated noise on TBFCU motor 1B. Subsequent vibration data indicated that the outboard bearing was in imminent failure. The licensee declared the FCU inoperable, replaced the motor, and returned the FCU to a functional status at 7:41 a.m. on January 22. A failure analysis of the motor and bearing determined that the apparent cause of the motor failure was incorrect assembly of the motor after installation of sealed bearings at a local vendor. The licensee also considered an undetected original manufacturing defect of the motor that resulted in excessive thrust load on the bearing was also a potential apparent cause because it couldn't be ruled out. The motor was procured as NSR; the original bearings were replaced at a local vendor for double shielded bearings; and then the motor was commercially dedicated. Since the opposite train motor was procured at the same time using the same process, the licensee replaced that the motor and also sent it off for analysis. The inspectors were concerned that the incorrect assembly error was not discovered during the commercial dedication process and inspected the commercial dedication package for the motor. The inspectors found that the critical characteristics for the dedication process may have been inadequate to identify the incorrect assembly at the vendor; however, the licensee informed the inspectors near the end of the first quarter inspection period that the failure analysis for the second motor may have had different conclusions than the first.

After a review of the failure analyses and licensee corrective actions, the inspectors held a conference call with NRC vendor inspectors, the licensee, and the dedicating entity; and concluded that the commercial grade dedication was inadequate. A finding and NCV is documented in section 1R18. This URI is closed.

.2 (Closed) URI 05000305/2012002-01, Incorrectly Modeled Ventilation Damper Changes Daily Risk Color

During the daily review of CRs, inspectors reviewed CR464332, which documented that cross connect damper TAV-82, which connected two trains of turbine building ventilation, was modeled in the licensee's PRA tool as open, when the actual position of the damper was closed. When the licensee's PRA tool was updated with the correct damper position, the daily risk calculated to comply with 10 CFR 50.65(a)(4) increased from green to orange on train B, and from green to red on train A. The licensee reevaluated the model taking credit for a nonsafety-related (NSR) general turbine building ventilation system that also provided air flow to the two rooms in question and the risk was reduced. The updated model for the removal of a TBFCU from service maintained green risk for train B and only increased train A to yellow risk.

At the conclusion of the inspection period the inspectors needed additional information to determine if an error in the original inputs to the base PRA tool, versus an error in the daily application of the PRA tool, was a violation of 10 CFR 50.65(a)(4).

After consulting with Region III SRAs and NRC maintenance rule specialists in headquarters, the inspectors concluded that a finding and violation of 10 CFR 50.65(a)(4) did occur. This violation is documented in Section 4OA7. This URI is closed.

.3 (Discussed) Temporary Instruction 2515/187 – Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns

a. Inspection Scope

Inspectors verified that licensee's walkdown packages KW-F-2012-002, KW-F-2012-021B, and KW-F-2012-022B, contained the elements as specified in NEI 12-07 Walkdown Guidance document.

The inspectors accompanied the licensee on their walkdown of the screenhouse door 165, screenhouse train B floor covers and floor vent pipe; and verified that the licensee confirmed the following flood protection features:

- visual inspection of the flood protection feature was performed if the flood protection feature was relevant. External visual inspection for indications of degradation that would prevent its credited function from being performed was performed;
- critical SSC dimensions were measured;
- available physical margin, where applicable, was determined; and
- flood protection feature functionality was determined using either visual observation or by review of other documents.

The inspectors independently performed their walkdown and verified that the following flood protection features were in place:

- screenhouse door 164.

The inspectors also independently reviewed the licensee's procedure for construction of temporary flood barriers, SA-KW-EVL-GEN-001, "Planned Barrier Impairment Control," to assess the available physical margin when permanent barriers were removed and temporary barriers installed.

The inspectors verified that noncompliances with current licensing requirements, and issues identified in accordance with the 10 CFR 50.54(f) letter, Item 2.g of Enclosure 4, were entered into the licensee's CAP. In addition, issues identified in response to Item 2.g that could challenge risk significant equipment and the licensee's ability to mitigate the consequences will be subject to additional NRC evaluation.

b. Findings

No findings were identified.

.4 (Discussed) Temporary Instruction 2515/188 – Inspection of Near-Term Task Force Recommendation 2.3 Seismic Walkdowns

The inspectors accompanied the licensee on their seismic walkdowns of the following areas:

- Walk-By Area 3, DG room 1A on July 9, 2012; seismic walkdown equipment list (SWEL) item 38, oil cooler water outlet valve; SWEL item 61, DG 1A; SWEL item 67, damper control temperature switch;

- Walk-By Area 5, service water screenhouse on July 11, 2012; SWEL item 39 screenhouse exhaust fan 1A discharge damper solenoid valve; SWEL item 66 screenhouse 1A area temperature switch; SWEL item 13 service water pump 1A;
- Walk-By Area 19, relay room on July 10, 2012; SWEL item 89, RR104, safety injection/aux coolant panel 1C1; SWEL item 91, RR128, train A engineered safeguard panel; and,
- Walk-By Area 23, control rod drive room on July 10, 2012; SWEL item 6, RD106, reactor trip breakers panel.

The inspectors verified that the licensee confirmed that the following seismic features associated with the SWEL items noted above were free of potential adverse seismic conditions:

- anchorage was free of bent, broken, missing or loose hardware;
- anchorage was free of corrosion that is more than mild surface oxidation;
- anchorage was free of visible cracks in the concrete near the anchors;
- anchorage configuration was consistent with plant documentation;
- SSCs will not be damaged from impact by nearby equipment or structures;
- overhead equipment, distribution systems, ceiling tiles and lighting, and masonry block walls are secure and not likely to collapse onto the equipment;
- attached lines have adequate flexibility to avoid damage;
- the area appears to be free of potentially adverse seismic interactions that could cause flooding or spray in the area;
- the area appears to be free of potentially adverse seismic interactions that could cause a fire in the area; and,
- the area appears to be free of potentially adverse seismic interactions associated with housekeeping practices, storage of portable equipment, and temporary installations (e.g., scaffolding, lead shielding).

The inspectors independently performed their walkdown and verified that the above seismic features as applicable, associated with the following SWEL items were free of potential adverse seismic conditions:

- Walk-By Area 3, DG room A on 7/11/12; SWEL item 83, DR101, EDG control cabinet; SWEL item 50, outside air inlet damper to DG room 1A;
- Walk-By Area 16, CCW heat exchanger area on 7/11/12; SWEL item 99, component cooling heat exchanger 1A;
- Walk-By Area 15, station battery A room on 7/12/12; SWEL item 57, station battery A; and,
- Walk-By Area 7, inside refueling water storage tank shield structure; SWEL item 100, refueling water storage tank.

Observations made during the walkdown that could not be determined to be acceptable were entered into the licensee's CAP for evaluation.

Additionally, inspectors verified that items that could allow the spent fuel pool to drain down rapidly were added to the SWEL and these items were walked down by the licensee.

b. Findings

No findings were identified.

40A6 Management Meetings

.5 Exit Meeting Summary

On October 3, 2012, the inspectors presented the inspection results to Mr. A. Jordan and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.6 Interim Exit Meetings

Interim exits were conducted for:

- the inspection results for the areas of Radiological Hazard Assessment and Exposure Controls; In-Plant Airborne Radioactivity Control And Mitigation; Occupational Dose Assessment; RCS Specific Activity, Occupational Exposure Control Effectiveness; and RETS/ODCM Radiological Effluent Occurrences Performance Indicator verification with Mr. R. Simmons, Plant Manager, on September 14, 2012.

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.

40A7 Licensee-Identified Violations

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

.1 Incorrectly Modeled Ventilation Damper Changes Daily Risk Color

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

Contrary to this, from 2006 until February 28, 2012, licensee failed to adequately assess risk on multiple occasions because ventilation damper TAV-82 was modeled as open in the licensee's risk model instead of the actual position of closed. The open cross-connect damper was credited as providing cooling to the opposite trains' 480-Volt safeguards bus during maintenance on the room coolers. When the risk model was corrected, the daily risk changed from green to red for various maintenance activities that been previously performed.

The inspectors and Region III SRAs assessed risk using IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." The licensee calculated the combined incremental core damage probability

deficit to be 8.7E-7 and the combined incremental large early release probability deficit to be 1.1E-7. The licensee also credited one risk management action. The inspectors and Region III SRAs independently reviewed the calculation and determined that the finding was of very low risk significance (Green).

The licensee documented this violation in CR464332 and CR479176. The licensee took immediate corrective actions to update damper position in the daily risk model.

.2 Failure to Precisely Control Plant Evolutions In Accordance With Procedures

Technical Specification 5.4.1, "Procedures," requires, in part, that written procedures shall be implemented covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Section 2.0, "General Plant Operating Procedures," requires, in part, that procedures for power operation and process monitoring be implemented. Procedure OP-AA-300, required, in part, that licensed reactor operators closely monitor parameters for reactor coolant temperature, reactor power, axial flux difference, rod insertion limits and turbine power and report trends to the crew during reactivity maneuvers.

Contrary to the above, on May 10, 2012, during a planned load increase from 29 to 49 percent power following a reactor startup, reactor coolant system average temperature was allowed to increase 6.2 degrees Fahrenheit above the reference temperature resulting in a deviation alarm and temperature being 2.2 degrees Fahrenheit above the critical parameter band. Immediate action was directed by the Shift Supervisor to ensure reactor coolant system temperature was brought back into the critical parameter band. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power" Exhibit 1, Initiating Events Screening Questions. The inspectors answered no to all the screening questions and determined the finding screened as very low significance (Green).

The licensee documented this violation in CR474731 and conducted an apparent cause determination.

.3 Nuclear Instruments Inoperable for Longer Than Period Allowed By Technical Specifications

Title 10 CFR 50, Appendix B, Criterion XVI, states in part that measures shall be established to assure that conditions adverse to quality such as failures or malfunctions are promptly identified and corrected.

Contrary to the above, in April 2008, the licensee identified that the nuclear source and intermediate range detector cable for channels N31 and N35 exhibited a leak during pressure testing to ensure the integrity of the cable. At that time, without further investigation, the leak was attributed to a bad connector interface without any further action. On April 15, 2012, the same pressure testing was performed and identified the same leakrate; however, additional evaluation was performed that determined the leak was not from the connector but from the cable itself (this issue is discussed further in Section 4OA3.1 of this report). Therefore, the licensee determined that in 2008 they failed to promptly correct this condition adverse to quality. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609,

“Significance Determination Process,” Attachment 0609.04, “Initial Characterization of Findings,” and Appendix A, “The Significance Determination Process (SDP) for Findings At-Power” Exhibit 1, Initiating Events Screening Questions. The inspectors answered no to all the screening questions and determined the finding screened as very low significance (Green).

The licensee documented this violation in CR470789 and conducted a causal evaluation.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

A. Jordan, Site Vice President  
R. Simmons, Plant Manager  
S. Yuen, Director of Engineering  
J. Stafford, Director, Safety & Licensing  
M. Hale, Radiation Protection Manager  
D. Shannon, Health Physics Operations Supervisor  
C. Olson, Radiation Protection Technical Support Supervisor  
M. J. Haese, Licensing  
J. Gadzala, Licensing  
R. Repshas, Licensing  
J. Grau, Maintenance Manager  
D. Lawrence, Operations Manager  
D. Asbel, Planning & Scheduling Manager  
J. Madden, System Engineering Manager  
T. Olson, Engineering Programs Manager  
K. Morris, Security Manager  
J. Palmer, Training Manager  
C. Edwards, Maintenance  
K. Phillips, Outage and Planning

#### Nuclear Regulatory Commission

K. Riemer, Branch Chief, Reactor Projects Branch 2

## LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

### Opened

05000305/2012004-01	NCV	Inadequate Risk Assessment During Heavy Lift Over Service Water System (Section 1R13)
05000305/2012004-02	NCV	Inadequate Degradation Evaluation of Leaking Refueling Water Storage Tank (Section 1R15)
05000305/2012004-03	NCV	Inadequate Commercial Grade Dedication Leads to Premature Bearing Failure (Section 1R18)
05000305/2012004-04	NCV	Effective Dose Equivalent Determination (Section 2RS4)

### Closed

05000305/2012-003-00	LER	Nuclear Instruments Inoperable For Longer Period Than Allowed By Technical Specifications (Section 4OA3.1)
05000305/2012004-01	NCV	Inadequate Risk Assessment During Heavy Lift Over Service Water System (Section 1R13)
05000305/2012004-02	NCV	Inadequate Degradation Evaluation of Leaking Refueling Water Storage Tank (Section 1R15)
05000305/2012004-03	NCV	Inadequate Commercial Grade Dedication Leads to Premature Bearing Failure (Section 1R18)
05000305/2012004-04	NCV	Effective Dose Equivalent Determination (Section 2RS4)
05000305/2012002-03	URI	Potential Inadequate Commercial Grade Dedication (Section 4OA5.1)
05000305/2012002-01	URI	Incorrectly Modeled Ventilation Damper Changes Daily Risk Color (Section 4OA5.2)

### Discussed

05000305/2012-005-00	LER	Both Safety Injection Trains Inoperable Due To Venting (Section 4OA3.2)
TI 2515/187		Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns (Section 4OA5.3)
TI 2515/188		Inspection of Near-Term Task Force Recommendation 2.3 Seismic Walkdowns (Section 4OA5.4)

## LIST OF DOCUMENTS REVIEWED

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

### 1R01 Adverse Weather Protection

- CA198621; Det, Doc And Resolve NRC Questions On RAS000105 Assumptions Following Walkdown (Inactive)
- CR348087; Possible Inadequate Door Seal On Seiche Door 165
- CR464546; Rain Water Intrusion By The Spent Fuel Pool
- Drawing S-619; Screenhouse Structural Steel Gate 1 & 2, Revision D
- KW-F-2012-018-00; Beyond Design Basis Project – Walkdowns Of Flood Protection And Mitigation Features; Completed September 2, 2012
- OP-KW-AOP-GEN-004; Response To Natural Events; Revision 11
- OP-KW-AOP-MDS-001; Abnormal Operation Of Miscellaneous Drains And Sumps; Revision 6
- OP-KW-ORT-MISC-006; Hot Weather Operations; Completed May 31, 2012
- RTO-EOP-002-r14.1; MISO Market Capacity Emergency Procedure; Effective June 1, 2012
- SAR001634; Non-SA: Implement Fleet-Common Severe Weather Process
- WO KW100709130; PM08-805: Inspection – Doors On Elevations 569 And 586

### 1R04 Equipment Alignment

- CR484158; LOCA-101B Found Poorly Locked
- CR485786; Diesel Generator A Startup Air Dryer Has A Small Leak
- CR486014; PI-11297J, DG A Damper Control Air Pressure Indicates 111 psig
- Drawing OPERM-205; Feedwater System; Revision BM
- Drawing OPERM-213-13; Operation Flow Diagram Station And Instrument Air System Diesel Generator A and B Ventilation Damper; Revision B
- Drawing OPERM-213-9; Flow Diagram Diesel Generator Startup Air Compressor A & B And Fish Screen Air
- Drawing OPERM-220; Flow Diagram Fuel Oil Systems, Revision BA
- E-0; Reactor Trip Or Safety Injection; Revision 45
- E-2; Faulted Steam Generator Isolation; Revision 25
- OP-KW-AOP-001; Abnormal Auxiliary Feedwater System Operation; Revision 4
- OP-KW-NCL-AFW-001; Auxiliary Feedwater System Prestartup Checklist, System No. 05B; Revision 3
- OP-KW-NCL-DGM-001A; Diesel Generator A Prestartup Checklist; Revision 8

### 1R05 Fire Protection

- 3<sup>rd</sup> Quarter Fire Brigade; August 2, 2012
- Drawing PFP-19; Condensate Storage And Rx Make-Up Water Storage Room And Adjacent Areas; Revision D
- Drawing PFP-22; RHR Hx Area, Component Cooling Water Pump Area, Letdown And Seal Water Filter Area, And RWST And Valve Gallery; Revision E
- Drawing PFP-25; Control Rod Drive, Rx Trip Cabinet Area, Instrument Lab, And Emergency Air Lock Area; Revision G
- Drawing PFP-4; Screen House; Revision C

- Fire Protection Program Analysis; Fire Zone Summary; AX23D Component Cooling Water Pump 1B Room; Revision 10
- Fire Protection Program Analysis; Fire Zone Summary; AX-33; Revision 10
- Fire Protection Program Analysis; Fire Zone Summary; AX-37 Control Rod Drive Equipment Room; Revision 10
- Fire Protection Program Analysis; Fire Zone Summary; SC-70A; Revision 10
- MA-KW-MPM-FP-033B; Mechanical Preventive Maintenance; System 08; Revision 2
- SA-KW-FPP-010; Attachment A, Fire Drill Evaluation/Critique Form; Revision 0

#### 1R06 Flooding

- Calculation 2005-05708; Project 11166-012; Table 1 – Flood Zone Definitions; Revision 1
- CDR 3622; RHR Pump Flooding Protection; Revision 1; May 14, 2006
- CR091013; Lugs For RHR Sump Level Switches LA-16638 & LA-16694 Will Not Fit New Switches
- CR350662; RHR Pump Pit Sump Pump System Not Responding As Expected
- CR458107; Annunciator 47032R Did Not Actuate As Expected During ICP-30-03
- CR458267; Evaluate ICP-30-02 & 03 For Procedure Change
- CR470422; Level Switch For Annunciator 47032-R RHR Pump Pit Sump Level High Doesn't Work
- CR470551; As Found/As Left Voltage On BRA-105 Circuit 30 Higher Than Acceptance Criteria
- CR482982; TST To TAT Inspection
- CR490161; NRC Question on RHR Area Flood Barriers
- Drawing E-2017; Miscellaneous Drains & Sumps; Revision L
- Drawing E-2165; Solenoid Valves 0 SV33330 & SV33331; Revision N
- Drawing OPERM-213-5; Station & Instrument Air System; Revision AE
- Drawing OPERM-350; Reactor Plant Misc. Vents, Drains & Sump Pump Piping; Revision AZ
- Drawing S-500; Turbine Building Plan-Base Slab Floor Drains; Revision J
- Drawing S-508; Administration Building Foundation Plan & Floor Drains; Revision S
- KPS USAR; 6.2.3.8, Recirculation Loop Leakage; Revision 23.01
- KPS USAR; 6.5, Leakage Detection And Provisions For The Primary And Auxiliary Coolant Loops; Revision 23.01
- KPS USAR; 9.3-12; Residual Heat Removal System; Revision 23.01
- KPS USAR; B-11, Internal Flooding; Revision 23.01
- Log Entries Report; February 12 To February 16, 2008
- ML031750847; NRC information Notice 2003-08; Potential Flooding Through Unsealed Concrete Floor Cracks; June 25, 2003
- OP-KW-AOP-MDS-001; Abnormal Operation Of Miscellaneous Drains And Sumps; Revision 6
- OP-KW-ARP-47032-Q; RHR Pump Pit A/B Level High; Revision 1
- OP-KW-ARP-47032-R; RHR Pump Pit Sump Level High; Revision 0
- Serial No. 06-140A; Dominion Energy Kewaunee, Inc.; Response To NRC Request For Additional Information Regarding License Amendment Request 215, "Modification Of Internal Flooding Design Basis"; April 17, 2007
- WO KW-07-002417; No Failure, Rebuild RHR Pump 1A Pit Cont/High LA Switch
- WO KW07-002418; No Failure: Rebuild RHR Pump 1B Pit Cont/High LA Switch
- WO KW100460985; PM30-528: 36 Mo Funct (MDS RHR Pmp B LC)
- WO KW100475413; PM30-527: 36 Mo Funct Check (MDS RHR Pmp Pit Sump Pmp A LC)
- WO KW100780769; PM89A055: Inspect Flood Barriers
- WO KW100859699; Replace RHR Pump Pit Sump Pump B Switch 1669302
- WO KW100861367; PM34-538: Train A RHR Pump And Valve Test – IST (Task 2)

- WO KW100878497; PM34-539: Train B RHR Pump And Valve Test – IST

#### 1R07 Annual Heat Sink Performance

- WO KW100469012; Auxiliary Building Fan Coil Unit B Performance Monitoring Test O September 13, 2012
- CR488016; Performance Monitoring Test for Auxiliary building Fan Floor Fan Coil Unit 1B

#### 1R11 Licensed Operator Requalification Program

- LRC-12-DY401; Licensed Operator Requalification Program Cycle 12-04; Revision B
- LRC-12-DY401 for Crew D; Licensed Operator Requalification Program Simulator Performance Summary; September 17, 2012
- OP-AA-100; Conduct Of Operations; Revision 18

#### 1R12 Maintenance Effectiveness

- 393593; SW Sys 02: TWS Exceed In Hand Run Time Of 72 Hrs, Require To Be Lubed
- A1G000328; Track System 40 ELV(480VAC) Return to MR (a)(2) Status – BKR Static Trip Units
- A1G000330; Track System 40 ELV(480VAC) Return To MR (a)(2) Status – Protection Relays
- CR393685; SW Sys 02: SW Pump A1 Has Packing Leakage, Requires Adjustment
- CR393781; 1A1 SW Pump Needs To Be Repacked
- CR393798; Take Flow Readings On Service Water Supply To Control Room A/C
- CR393828; Critical Observation Findings From Work Order KW100573768
- CR393880; When Performing Timing Of SW-4A, The Stopwatch Was Stopped Early
- CR393923; Tubing Troubles On Traveling Water Screen Replacement 1A
- CR393929; TWS 1A2 Was Found To Have A Broken Shear Pin
- CR394159; SW Sys 02: SW Strainer Motor A1 Oil Getting Low, Need To Add Oil
- CR394160; SW Sys 02: TWS B1 And B2, All 4 Lights Burnt Out, Need To Be Replaced
- CR394646; This CR Is Being Generated To Document Critical Observation # 25948
- CR395007; Traveling Water Screen A2/B1/B2 Run Time > 72 Hours
- CR395948; Replaced Red Indicating Light For SW Pump A1
- CR396112; PRA Model Error When Service Water Pumps A1 And A2 Are Both Unavailable
- CR396453; SW-910B Shroud Cooling Coil A/B Supply From Header B Green Light Burned Out
- CR396896; SW-910B/CV-31695, Green Indicating Light Burned Out
- CR397102; SW-910B/CV-31695, Green Indicating Light Discovered Burned Out
- CR397605; SW-910D/CV-31699 Green Light Burned Out When Valve Was Closed
- CR397651; Service Water Pump A2 Packing Needs Adjustment
- CR397865; Operability Assessment Affecting Redundant ECCS Based Upon Questioned 50.59
- CR398078; 2010 Fall Service Water System Zebra Mussel Treatment Results
- CR398646; Electrical Maintenance Had A Late Start Of A PRA Activity
- CR399414; Control Room Switches Indications For SW-911 A/B & SW-911 C/D Are Worn
- CR399607; 2 Inch Gouge In Metal Shroud Of The Insulation On Train A SW Header
- CR400110; Light Bulb On MCC 52D SW A2 Rotating Strainer Burned Out
- CR400277; SW Strainer B1 Packing Is Leaking And Water Is Dripping On The Floor
- ER-AA-MRL-100; Implementing Maintenance Rule; Revision 5
- Historical Maintenance Rule Function Failure List – Service Water
- Maintenance Rule Data Sheets; Service Water; September 2010 To August 2012
- Maintenance Rule Expert Panel Meeting Minutes June 28, 2012

- Maintenance Rule Scoping Questions; 01 Station and Instrument Air; Revision 1
- Maintenance Rule Scoping Questions; 40 480 VAC; Revision 1
- Maintenance Rule Scoping Questions; System No.02 Service Water; Revision 4
- Maintenance Rule System Basis; 02 Service Water; Revision 15
- Maintenance Rule System Basis; Revision 7
- MRE011862; MRE for Aux Bldg Fan Floor FCU A Would Not Run Per Op-KW-NOP-ACA-001
- MRE012615; Systems Eng (Ehlen/Streich) For SW-4A Opened
- MRE012951; SA-2F was Difficult to Operate/Busing Broke During Operation
- MRE012982; Shield Building Vane Fan B Failed To Start When Switch Take To On Position
- MRE013069; Service Water Header A Pressure Indicator In The Control Room Is Off Scale Hi
- MRE013394; Regulator Found High Out Of Tolerance For Air Motor On SW-901B-1
- MRE013395; Open Limit Switch Found Out Of Tolerance During Performance Of ICP-SW-051
- MRE014894; MRE for Unable to Pressurize Instr Air Dryer due to SA-150C Exhausting
- MRE014961; BKR 13504 as-found 900% Short Time Trip Was Low Out of Band
- MRE015011; SW-910A Shroud Cooling Isolation Red Indicating Light I Burnt Out
- SAR001141; Kewaunee power Station Maintenance Rule (a)(3) Formal Self-Assessment; August 19, 2010
- SSC performance Criteria Sheet; 01 Station and Instrument Air; Revision 4
- SSC performance Criteria Sheet; 40 480 VAC; Revision 4
- SSC Performance Criteria Sheet; System No. 02 Service Water; Revision 6

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

- CA032591; Evaluation of SWGR Room Equipment Due to Service Water Pipe Break
- CA226900; Evaluate Inclusion of Safeguards Fan Coil Units in OP-KW-601
- CA231614; Perform A Thermal Hydraulic Calculation to Justify Operation
- CA238271; Track Revision of C12020
- Calculation C12020; Environmental Conditions in the AFW Pump and 480V Switchgear Rooms Following a Trip from 100% Power with Turbine Building Basement FCU 1A and 1B Unavailable, Revision 0
- CR395014; ECN 3699-02
- CR464332; Normally Closed Damper TAV82 is Modeled As Normally Open in the Kewaunee PRA
- CR479176; NRC Concerns with PRA Assessment of TAV-82 Modeled Closed Issue
- CR482980; PRA Model For Week Of 07/19/12 Incorrectly Modeled Scheduled Work On RHR-299
- Drawing S-750; Screenhouse Appendix R Hatch Cover & Elect. Manholes; Revision A
- EPRI 1016744; An Approach For Evaluating Heavy Load Lifts And Related Maintenance Tasks In Maintenance Rule (a)(4) Risk Evaluation; 2008 Research Task
- GNP-08.12.02; Controls For Use Of Cranes Within The Protected Area; Revision 27
- KPS PRA Notebook; Volume KPS-RA.031-Risk Assessment of Turbine Building Fan Coil Unit Unavailability Since 2009, Revision 0
- KPS Probabilistic Risk Assessment Notebook; Part V, Volume DOM.RA.001, Revision 0
- KPS Probabilistic Risk Assessment Notebook; Part V, Volume RA.027, Revision 0
- Letters From W. Ruland, Director, Division Of Safety Systems, ONR, NRC; To T. Houghton, Director, Strategic Regulatory Programs, Nuclear Generation Division, NEI; Subject: Industry Initiative On Control Of Heavy Loads; May 16, 2008 And May 27, 2008
- Log Entries Report; April 23, 2012, And August 6, 2012
- Major Activities For Work Week 1232; August 5 To August 11, 2012
- NF-AA-PRA-101-3081; Probabilistic Risk Assessment Procedures And Methods: Configuration Risk Assessment Of Load Lifts; Revision 1

- NF-AA-PRA-101-3081; Probabilistic Risk Assessment Procedures And Methods: Configuration Risk Assessment Of Load Lifts; Revision 1
- NF-AA-PRA-370; Probabilistic Risk Assessment Procedures And Methods: PRA Guidance For MRule (a)(4); Revision 12
- NRC RIS 2008-28; Endorsement Of Nuclear Energy Institute Guidance For Reactor Vessel Head Heavy Load Lifts; December 1, 2008
- OP-KW-AOP-SW-001; Abnormal Service Water Operation; Revision 7
- OU-KW-201; Shutdown Safety Assessment Checklist; Revision 11
- Rigging Lift Plan: B Circulating Pump Motor; March 18, 2012
- Scheduler's Risk Evaluation For August 6, 2012
- WM-AA-100; Work Management; Revision 17
- WM-AA-20; Risk Assessment Of Maintenance Activities; Revision 1

### 1R15 Operability Determinations and Functional Assessments

- 08-0013D; Correspondence From J. A. Price, Dominion Energy Kewaunee To NRC; Re: Nine-Month Response To NRC Generic Letter 2008-01, Managing Gas Accumulation In Emergency Core Cooling, Decay Heat Removal, And Containment Spray Systems; October 14, 2008
- ASME Article C-7000; Flaw Evaluation For Nonductile Fracture Using LEFM Criteria; 2007 Section XI, Division 1; September 2, 2009
- ASME Case N-705; Evaluation Criteria For Temporary Acceptance Of Degradation In Moderate Energy Class 2 or 3 Vessels And Tanks; Section XI, Division 1; October 12, 2006
- BKG ES-0.2; Natural Circulation Cooldown; Revision 4
- CA242270; Review Damper ASV-51A Linkage Coupling Found Broken For Past Operability
- Calculation 0064-0031-PCC-01; High Head Safety Injection Pump Design Basis Operating Time; Revision 1; January 17, 2007
- CR320055; Gas Void Found Near SI-4A And SI-4B
- CR475077; Potential Inconsistency Between Locked Rotor Accident Analysis And EOP ES 0.2
- CR477008; Non-Conservative Method Used To Determine Intermediate Wind Speed
- CR477297; Damper ASV-51A/CD-34022, Found Indicating Mid Position When Closed
- CR480150; Gas Voiding Identified In SI Suction Piping During NSP-RHR-003A WO KW100860311
- CR481431; Pinhole Boric Acid Leak Identified On Base Weld Of RWST
- CR483888; ASV-51A/CD-34022 Failed to Indicate Fully Closed
- CR484943; Damper ASV-51A Linkage coupling found Broken
- CR487507; ASV-51A Slow To Operate
- Drawing E-1535; Schematic Diagram-Solenoid Valves 33420, 3326401, 02, 33265, 33266
- Drawing E-1616; Integrated Logic Diagram Aux Bldg Vent
- Drawing KPS-SI-ISO-001; Composit Isometric Safety Injection Pumps Suction Piping; Revision 0
- Drawing OPERXK-100-29; Safety Injection System; Revision AN
- Drawing-M-933; Safety Injection Pumps Suction Piping; Revision E
- Drawing-M-992-1; Safety Injection Pumps Suction Piping; Revision F
- EN 48051; Suction Pipe Voiding; June 27, 2012
- ER-KW-NSP-SI-003; Operability Assessment Of Gas Accumulation In SI Piping; Revision 2
- ES-0.2; Natural Circulation Cooldown; Revision 25
- ES-0.3; Natural Circulation Cooldown With Steam Void In Vessel; Revision 19
- ETE-CME-2012-0009; Conversion Of Technical Report ME-0181 To ETE And Resolution Of Issues Raised During The Fall 2011 NRC GL 2008-01 Gas Management Inspection; Revision 1

- OD 000490; Gas Voiding Identified In SI Suction Piping During NSP-RHR-003
- OP-AA-102; Operability Determination; Revision 8
- OP-AA-102-1001; Development Of Technical Basis To Support Operability Determinations; Revision 6
- OP-KW-AOP-SI-001; Voids In SI Piping, System No. SI-33; Revision 2
- POD 239; Evaluation Of Existing Radiological Accident Analyses Revealed Adequate Bases Not Found; Revision 3
- POD 250; CR320055; Safety Injection Trains A And B; Revision 0
- POD OD000492; Perform Visual Inspection of RWST Boric Acid Leakage For Compensator Measures; Revisions 1, 2, and 3
- Standing Order 12-40; ODM-263 – Leakage Has Been Identified On A Base Weld Of The RWST; Completed July 30, 2012
- Tagout Coversheet; Online Cycle 31; Tagout 17-ACA-FIN-00001
- Tagout Tag List; Online Cycle 31; Tagout 17-ACA-FIN-00001
- Void Volume Calculation – Partially Filled Pipe – Truncated Void
- WO KW100651423; ASV-51B Open Limit Switch Is Sticking
- WO KW100851800; PM45-040: 3 Month Functional Test
- WO KW100852431; PM97C279; Shift Running Equipment
- WO KW100862696; PM97C279; Shift Running Equipment
- WO KW100918263; Damper ASV-51A/CD-34022, Repair Linkage

#### 1R18 Plant Modifications

- ACE19016; Turbine Building FCU 1B Motor Failure; Revision 1
- CA241867; Lessons Learned From Procurement of TB FCU 1B Motor
- CA241868; Review CR484299 and ACE 19016 and Revise ACE 19016 If Appropriate
- CA242615; Consider Revising MS-AA-PTE-401 to Incorporate Enhancements
- CA242616; Review the Shortfalls with PO & Dedication with Vendor
- Calculation C11748; Ambient Conditions in the MDAFW Pump Rooms and 480V SWGRs Following a Loss of Cooling Capability, Revision 0
- CR462496; Potential Common Cause Failure of 1A Turbine Bldg Basement FCU 1A Motor
- CR468113; 1A Turbine Building Basement FCU Motor Bearing Analysis Results
- CR478726; NRC Question on Past Operability Review of Fan Coil Unit Non-Functionality
- CR484299; Procurement of Failed Motor Warrants Further Investigation For Lessons Learned
- CR485786; Diesel Generator A Startup Air Dryer Has A Small Air Leak
- CR487269; Proposed NRC Violation for Commercial Grade Dedication of Fan Coil Unit
- Drawing OPERM-213-9; Flow Diagram Diesel Generator Startup Air Compressor A & B And Fish Screen Air; Revision J
- Drawing OPERM-601; Flow Diagram Turbine & Aux. BLDG Ventilation; DH
- KPS Inservice Testing Basis Valve Data Sheet; 10-DGM, Diesel Generator Mechanical
- MA-KW-MPM-AS-008A; Diesel Generator Startup Air 1A Compressor Check Valve Testing And Inspection, System No. 01; Completed May 11, 2011
- NRC Information Notice 88-70; Check Valve Inservice Testing Program Deficiencies; August 29, 1988
- Procedure MS-AA-PTE-401-1004; Commercial Grade Dedication; Revision 0
- Purchase Order Package P205350; Kurz Electric Solutions; February 11, 2005
- Purchase Order Package P207879; Nuclear Logistics Inc, September 12, 2005

#### 1R19 Post-Maintenance Testing

- Last Measurement Report – GMP-131; Performed August 23, 2012

- MA-AA-103; Troubleshooting Sheet For CR488341, TSC DG; September 17, 2012
- OP-KW-NOP-DGM-001C; TSC Diesel Generator Operation, System No. 42; Revision 9
- OP-KW-OSP-CC-002A; Train A Component Cooling Pump And Valve Test – IST, System No. 31; Completed August 23, 2012
- WO 100659392; SW-1300B/MV-32010, AF Diagnostic Test, Adjust Torque Switch, AL Diagnostic Test
- WO KW100274864; PM02-101: Perform Actuator Maintenance
- WO KW100873657; PM31-001: Sample/Change Oil-Component Cooling Pump 1A
- WO KW100904096; Replace TSC D/G Voltage Regulator
- WO KW100915957; 1B Fire Pump Control Cabinet Repair
- WO KW100920587; ICCMS Train A Power Supply Failure, Replace Power Supply
- WO KW100925643; Perform Bench Test Of MOP For TSC Diesel

### 1R22 Surveillance Testing

- AD-AA-102; Procedure Use And Adherence; Revision 6
- CA223569; Eval Pushbutton Released Prior To Time Delay Relay Actuation For HU Clock Reset
- CA239249; Evaluate Adding Steps To OSP-RHR-003B (A) To Vent From SI-353B-1 & SI-353B-3
- CR458403; Pushbutton Released Prior To Time Delay Relay Actuation During SP-47-062A
- Drawing E-1038; 4160V Breaker 1-504; Revision AN
- Drawing E-1354; MCC 1-52C Motor 1-280; Revision AC
- Drawing E-1878; Sequence Loading Bus 1-5; Revision W
- Drawing E-1880; Sequence Loading Bus 1-5; Revision M
- Drawing E-775; W/D Sequence Loading Panel Dr 106 Train “A”; Revision BD
- Drawing OPERXK-100-18; Residual Heat Removal System; Revision BJ
- K-99-003; Correspondence From NRC To M. Marchi, Wisconsin Public Service Corporation; Subject: Completion of Licensing Action For Generic Letter 96-01; January 14, 1999
- KAP No. 1852; The GL 96-01 Review Of AFW Lube Oil Pump Start Identified Two Contacts Per Train Not Tested; January 14, 1999
- KPS Inservice Testing Basis Valve Data Sheet for Valves SI-350A, SI-351A, SI-302A, and SI-300A; System Id 33-SI; Revision 10;
- MA-KW-ICP-ICE-168; ICE – Heise PTE-1 And HQS Pressure Module Calibration; Completed September 18, 2012
- NRC Generic Letter No. 96-01; testing Of Safety-Related Logic circuits; January 10, 1996
- NRC-96-34; Correspondence From C.R. Steinhardt, Wisconsin Public Service Corporation, To NRC; Subject: NRC Generic Letter 96-01 Response; April 19, 1996
- NRC-97-121; Correspondence From M. Marchi, Public Service Corporation, To NRC; Subject: Completion Of Actions Requested By NRC Generic Letter 96-01; December 21, 1998
- NRC-98-129; Correspondence From C.R. Steinhardt, Wisconsin Public Service Corporation, To NRC; Subject: NRC Generic Letter 96-01 Schedule Update; November 10, 1997
- OP-KW-GCL-102C; Mode 5 To Mode 4 Checklist; Completed May 5, 2012
- OP-KW-OSP-ICS-003B; Train B Containment Spray Pump And Valve Test – IST, System No. 23; Completed August 29, 2012
- OP-KW-OSP-RHR-003A; Train A RHR Pump And Valve Test – IST, System No. 34; Revision 1
- OP-KW-OSP-SI-001; Revision 10
- WO KW100748092; PM42-541: Verification Of Contact Positions

## 1EP6 Drill Evaluation

- Emergency Preparedness Condition Reports From January 1, 2009 to Present
- EPIPF-AD-07-01; Drill NARS Forms; dated September 25, 2012
- EP-KW-EIP-AD-002; Emergency Class Determination; Revision 0
- EP-KW-EIP-AD-007; Emergency Notifications; Revision 0
- EP-KW-EIP-AD-019; Determining Protective Action Recommendations; Revision 1

## 2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

- CR414693; Radiation Area Posting On The Wrong Side Of The Door
- CR416808; RP-AA-230 Enhancement For Radon Release Criterion
- CR418534; Site Notified Of RAM Found On Article Released From KPS As Clean
- CR459516; Loading Dock Source Storage Room Posting
- Memorandum To Establish Beta To Alpha Ratio That Allows For The Screening Of Personnel Exiting The RCA For Radon Daughter Contamination; June 7, 2011
- NSTS Annual Inventory Reconciliation
- RP-AA-201; Access Controls For High And Very High Radiation Areas; Revision 6
- RP-AA-202; Radiological Posting; Revision 6
- RP-AA-225; Unrestricted Release of Material; Revision 4
- RP-AA-232; Radioactive Material Control; Revision 4
- RP-KW-HSP-HPE-005 Appendix B; Kewaunee Power Station Radioactive Source Leak Test Data Sheet For Source 09-5159 and 323-063-1; May 29 And May 3, 2012
- RP-KW-HSP-HPE-005; Radioactive Source Inventory And Leak Testing Requirements; Revision 6

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

- CR427736; Incorrect Fit Test Conducted
- CR454330; Personnel Issued Voluntary Use Respirators Do Not Receive Required Information
- CR477053; Fit Test Conducted Contrary To RP-KW-006-060
- NAD-01.14; Respiratory Protection Program; Revision 17
- NU-KPS-NET-LPFIREHAWK; FireHawk M7 Air Mask Self-Contained Breathing Apparatus; Revision C
- RP-AA-110; Radiological Respiratory Protection Program; Revision 1
- RP-AA-162; Issue And Control Of Respiratory Protection Equipment; Revision 0
- RP-KW-002-006; Quality Tests of Vendor – Supplied Breathing Air; Revision 0

## 2RS4 Occupational Dose Assessment (71124.04)

- CR415028; TLD Issued To Wrong Individual
- CR436363; Electronic Dosimeter Dose Rate Alarm
- CR470837; NAO Received Unanticipated Dose Rate Alarm
- Request for Supplemental Information for Application To Use Weighting Factors For External Exposure; Dated September 22, 2008
- RP-AA-105; External Radiation Exposure Control Program; Revision 0
- RP-AA-123; Effective Dose Equivalent; Revision 2
- RP-AA-124 Attachment 2; Dosimetry Discrepancy Investigation; For Various Individuals In August 2012
- RP-AA-124; Dosimetry Discrepancy And ED Alarm; Revision 2

- RP-KW-003-001 Attachment 2; Effective Dose Equivalent TLD Calculation/Worksheet; For Various Individuals During The 2011 (KR31) Outage
- RP-KW-003-011; Use of Special Dosimetry; Revision 6
- Use of EDEX at KPS for 2011 Refuel Outage Benchmark Report; August 3, 2010

#### 4OA1 Performance Indicator Verification

- CHEM-50.003; Iodine, Radioactive; Revision 6
- CR433489; changes To MSPI Baseline Data Without Notation To Quarterly Data Submittal
- CR434334; NOD ID: Misalignment Between Perf. Ind. And Procedure
- CR434984; Performance Indicator Lacks Owner
- CR470105; Vital Area Door #9 Found Unsecure
- CR480244; MSPI 2011 Audit By NRC
- CY-KW-040-004; Primary Sampling System; Revision 9
- Dominion Energy Kewaunee; Off Year Functional Exercise Actual Time Line; September 25, 2012
- Load Reductions And Trips; December 2011, And August 2012
- Log Entries Report; April 6, 2012
- MSPI Derivation Report; MSPI Cooling Water System; July 2012
- MSPI Derivation Report; MSPI Emergency AC Power System; July 2012
- NARS Form; September 25, 2012, 0925 And 0751 Hours
- RP-AA-112 Attachment 1; KPS Radiological Protection Regulatory Assessment Performance Indicator Tracking Form; Various Dates
- RP-AA-112; Radiation Safety Performance Indicator Reporting; Revision 4
- SP-32A-266; Effluent Dose Limit Verification; Revision 12

#### 4OA2 Identification and Resolution of Problems

- ACE 019137; Not Precisely Controlling Plant Evolutions That Led To A Tavg-Tref Deviation; Event Date May 10, 2012

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

- ACE 019063; Charging Motor For Breaker Installed At Location 1-606BKR (Safety Injection Pump 1B) Failed To Stop; February 29, 2012
- CR470789; Identified Leak In N31/N35 Detector Cable (1R1087R)
- LER 2012-002-00; Safety Injection Inoperable For Longer Period Than Allowed By Technical Specifications; April 29, 2012
- LER 2012-003-00; Nuclear Instruments Inoperable For Longer Period Than Allowed By Technical Specifications; June 13, 2012

#### 4OA5 Other Activities

- 9.6-7 And 2.6-1; KPS USAR; Revision 23.01
- AWC No. KW-WB-003; Diesel Generator 1A; Completed August 7, 2012
- AWC No. KW-WB-005; "A" SW Pump Area East Of "A" CW Pit; Completed July 12, 2012
- AWC No. KW-WB-007; Inside RWST Shield Structure; Completed July 12, 2012
- AWC No. KW-WB-019; Relay Room; Completed August 7, 2012
- AWC No. KW-WB-023; Control Rod Drive Room; Completed August 7, 2012
- CA198621; Det, Doc And Resolve NRC Questions On RAS000105 Assumptions Following Walkdown (Inactive)
- CR348087; Possible Inadequate Door Seal On Seiche Door 165

- CR384397; Apparent Degradation Of Floor Plate Between Traveling Water Screens B1 And B2
- CR438386; Pipe Not Shown On Drawing
- CR472733; NRC Resident Comment On Pre Job Briefs
- CR481430; Can Not Measure CO2 At levels Necessary To Evaluate EAL HA3.1
- CR481431; Pinhole Boric Acid Leak Identified On Base Weld Of RWST
- CR481556; Inadequate Compensatory Measure
- CR481947; Revision Needed To OD 492
- CR482181; BDB 2.3 Seismic – Light Fixture Attached To Hanger AC-H68 W68 With Temporary Wire
- CR482597; Flooding BDB Walkdown – Door 87
- CR482631; Door 166 Is Missing The Drip Shield That Is Required By Design
- CR482656; Pen 815 Has Signs Of Moisture Weepage
- CR482665; 1A1 Traveling Water Screen Issues
- CR482703; NRC Questions Concerning OD 492 Revision 1
- CR482724; Screenhouse Roof Inspection Issues (BDB 2.3 Flooding)
- CR482733; BDB 2.3 Flooding Walkdowns – NRC Resident Comment
- CR482779; BDB 2.3 Flooding: Plug Near High Rad Sample Room Condensing Unit Is Degraded
- CR482782; BDB 2.3 Auxiliary Building North Missing Or Degraded Plugs
- CR482785; Storm Drain Covers
- CR482799; Staining On Wall Below Cable Penetration
- CR482810; BDB 2.3 Flooding: Staining Noted On Wall/Ceiling Above Door 83
- CR482813; BDB 2.3 Flooding: Pen In Aux Bldg 585' Rad Waste Area Shows Previous Leakage
- CR482814; BDB 2.3 Staining On Walls In Potatoe Bins (PB-4, PB-5, PB-7) And At Hatch #996
- CR482863; Flooding Credited Cable Seals Were Inspected
- CR482914; A Diesel Transfer Pump Discharge Line Seal
- CR482921; BDB 2.3 Flooding: Door 449 (TSC Back Strwl) Material Condition Not IAW Drawings
- CR482959; BDB 2.3 Flooding: Door 437 Is Not Consistent With The Drawings
- CR482999; BDB 2.3 Flooding: Additional Evaluation required Of Potential Ponding Near Door
- CR483043; BDB 2.3 Flooding ISFSI Walkdown
- CR483091; BDB 2.3 Flooding – Configuration Enhancements Storm Drain Walkdown
- CR483100; BDB 2.3 Flooding: Drawings Don't Represent Actual Configuration And Weatherstrip
- CR483104; BDB 2.3 Flooding Walkdowns – Configuration Control
- CR483108; BDB 2.3 Flooding Walkdowns – Preventive Maintenance
- CR483111; BDB 2.3 Flooding: Degradation Of Rubber Barrier On Outside Of The Turbine Building
- CR483117; BDB 2.3 Flooding: Design Drawing Discrepancy For Door 64
- CR483128; Minor corrosion And Weather Stripping Damage On Door 61 Frame
- CR483330; 1B1 Traveling Water Screen Door Seal Dislodged (BDB 2.3 Flooding)
- CR483337; 1B2 Traveling Water Screen Minor Issues (BDB 2.3 Flooding)
- CR483394; BDB Flooding Walkdown – Door 182
- CR483417; Area Drain Slow To Drain
- CR483452; B Screenhouse Wall Walkdown Results
- CR483459; BDB 2.3 Flooding NRC Comment On Temporary Flood Barrier
- CR483460; B Diesel Transfer Pump Pit Walkdown Results
- CR483475; BDB 2.3 Flooding NRC Question On Flooding Actions
- CR483697; Forebay Inspection Material Conditions

- Drawing A-213; General Arrangement Screenhouse And Circulating Water Discharge; Revision AA
- Drawing A-586-12; Door Weather Stripping; Revision B
- Drawing A-586-3-1; Door Schedule Doors 144-196; Revision D
- Drawing A-586-3-2; Door Schedule Doors 144-196; Revision D
- Drawing A-586-7; Door Notes; Revision K
- Drawing A-586-9; Door Frames; Revision B
- Drawing S-602; Screenhouse Floor Plan – El. 586'-0"; Revision Y
- EPRI Seismic Walkdown Guidance For Resolution Of Fukushima Near-Term Task Force Recommendation 2.3: Seismic; 2012 Technical Report
- ER-KW-BDB-FLD-001; Walkdown Of Flood Protection Features; Revision 0
- KW-F-2012-001-01; Beyond Design Basis Project – Walkdowns Of Flood Protection And Mitigation Features; Completed September 21, 2012
- KW-F-2012-002-00; Beyond Design Basis Project – Walkdowns Of Flood Protection And Mitigation Features; Completed July 23, 2012
- KW-F-2012-004-00; Beyond Design Basis Project – Walkdowns Of Flood Protection And Mitigation Features; Completed September 2, 2012
- KW-F-2012-018-00; Beyond Design Basis Project – Walkdowns Of Flood Protection And Mitigation Features; Completed September 2, 2012
- KW-F-2012-021B-00; Beyond Design Basis Project – Walkdowns Of Flood Protection And Mitigation Features; Completed September 2, 2012
- KW-F-2012-022B-00; Beyond Design Basis Project – Walkdowns Of Flood Protection And Mitigation Features; Completed September 2, 2012
- NEI 12-07; guidelines For Performing Walkdowns Of Plant Flood Protection Features; Revision 0-A
- RAS Documentation For CRS 348085, 348087, 348081 / RAS000105; September 18, 2009
- SA-KW-EVL-GEN-001; Planned Barrier Impairment Control; Revision 2
- SWC No. KW-WD-SWEL-006; Reactor Trip Breakers; Completed August 7, 2012
- SWC No. KW-WD-SWEL-038; EDG 1A Oil Cooler Water Outlet; Completed August 7, 2012
- SWC No. KW-WD-SWEL-039; Scrnhse Exh Fan 1A Disch Dmpr A SV; Completed July 13, 2012
- SWC No. KW-WD-SWEL-050; Outside Air Inlet Damper To DG Room 1A; Completed August 7, 2012
- SWC No. KW-WD-SWEL-061; Diesel Generator 1A; Completed August 7, 2012
- SWC No. KW-WD-SWEL-066; Screenhouse 1A Area TS; Completed July 13, 2012
- SWC No. KW-WD-SWEL-067; D/G Room 1A Dmpr Control TS; Completed August 7, 2012
- SWC No. KW-WD-SWEL-089; safety Inj/Aux Coolant 1C1; Completed August 7, 2012
- SWC No. KW-WD-SWEL-091; Engineered Safeguard Train A; Completed August 7, 2012
- SWC No. KW-WD-SWEL-100; Refueling Water Storage Tank; Completed July 13, 2012
- SWC No. KW-WD-SWEL-013; Service Water Pump 1A1; Completed July 13, 2012
- Walkdown Package (WDP) For KW-F-2012-001-00; Beyond Design Basis Project – Walkdowns Of Flood Protection And Mitigation Features; Completed August 31, 2012
- Walkdown Package (WDP) For KW-F-2012-002-00; Beyond Design Basis Project – Walkdowns Of Flood Protection And Mitigation Features; Completed July 23, 2012
- Walkdown Package (WDP) For KW-F-2012-049-00; Beyond Design Basis Project – Walkdowns Of Flood Protection And Mitigation Features; Completed September 2, 2012

#### NRC-Identified Condition Reports

- CR481430; Can Not Measure CO2 At levels Necessary To Evaluate EAL HA3.1
- CR481431; Pinhole Boric Acid Leak Identified On Base Weld Of RWST

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- CR483459; BDB 2.3 Flooding NRC Comment On Temporary Flood Barrier
- CR483475; BDB 2.3 Flooding NRC Question On Flooding Actions
- CR483761; NRC Questions About Void Immediate Operability Determination
- CR484027; BDB 2.3 Flooding Walkdown – Flood Barrier Procedure Review
- CR484299; Procurement Of Failed Motor Warrants Further Investigation For Lessons Learned
- CR484530; Evaluate AOP-GEN-004 For Enhancement
- CR484536; Update OD239 To Clarify The Issues Related To The Locked Rotor Accident Analysis
- CR484764; ROP Scram Audit By The NRC For 2011-2012
- CR484838; Clarification Of TRM 8.7.3, Steam Exclusion System
- CR485168; Licensing Basis For SFP Cooling May Not Be Appropriately Incorporated Into USAR
- CR485676; Numerous Lamps Being Replaced During ESF Testing Monthly
- CR485892; NRC Question Related To ESP-DGE-005A/B And Mode Change Checklist
- CR486014; PI-11297J, DG A Damper Control Air Pressure Indication Indicates 111 PSIG
- CR487269; Proposed NRC Violation For Commercial Grade Dedication Of Fan Coil Unit Motor
- CR487346; Door 260 Floor Stop Loose
- CR487392; EDG A Startup Air Receiver Pressure Drop Rate
- CR487782; 2012 PI&R Inspections – NRC RI Questioned The Operability Call For ASV-51A
- CR487875; NRC Identified Gaps Between The Battery Cells And The Endrails On BRA And BRB101
- CR487980; NRC Briefed Non-Cited Violation Related To 10CFR20.1201(c)
- CR488108; NRC Resident Identified A 55 Gallon Drum Cover Not Properly Installed
- CR488451; NRC Resident Inspector Question Concerning ACC-22, Relay Room CO2, And HELB
- CR488594; Potential Enhancements To Fire Protection Program Implementation
- CR488871; Operator Recorded Data Out Of Order[
- CR489029; Flooding BDB 2.3 – Walkdown Package Inaccurate
- CR489129; 2012 PI&R Inspection – Use Of Substitution Test, ACE19013, B EDG Output Bkr
- CR489379; 2012 PI&R Inspection – Identification Of Missed Opportunity
- CR489380; 2012 PI&R – Procedure OP-KW-GOP103 Was Not Included For Revision For DCR 3741
- CR489442; 2012 PI&R – Screening Of Reactivity Management Issues Per OP-AP-300
- CR489462; 2012 PI&R - Screening Of Condition Reports For Significance Per PI-AA-200
- CR489618; NRC Identified Piping Leak At Penetration In CC Pump B Room

## LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access Management System
AFW	Auxiliary Feedwater
ALARA	As-Low-As-Is-Reasonably-Achievable
AOP	Abnormal Operating Procedure
ASME	American Society of Mechanical Engineers
BA	Boric Acid
BWR	Boiling Water Reactor
CAP	Corrective Action Program
CC	Code Case
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CIV	Containment Isolation Valve
CR	Condition Report
DDE	Deep Dose Equivalent
DG	Diesel Generator
DRP	Division of Reactor Projects
EDE <sub>ex</sub>	Effective Dose Equivalent For External Exposure
EDG	Emergency Diesel Generator
EP	Emergency Plan
FCU	Fan Cooler Unit
FP	Fire Protection
HRA	High Radiation Area
ICCMS	Inadequate Core Cooling Monitoring System
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
KPS	Kewaunee Power Station
kV	Kilovolt
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
MSHA	Mine Safety and Health Administration
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
OD	Operability Determination
ODCM	Offsite Dose Calculation Manual
OOS	Out-of-Service
PARS	Publicly Available Records System
PI	Performance Indicator
PI&R	Problem Identification and Resolution
PMT	Post-Maintenance Testing
PRA	Probabilistic Risk Analysis
PWR	Pressurized Water Reactor
RCS	Reactor Coolant System
RETS	Radiological Effluent Technical Specification
RFO	Refueling Outage
RG	Regulatory Guide
RHR	Residual Heat Removal
RP	Radiation Protection

RWST	Refueling Water Storage Tank
SCBA	Self-Contained Breathing Apparatus
SDP	Significance Determination Process
SR	Safety-Related
SRA	Senior Reactor Analyst
SSA	Shutdown Safety Assessment
SSC	Systems, Structures, and Components
SW	Service Water
SWEL	Seismic Walkdown Equipment List
T <sub>allow</sub>	Allowable Time
TS	Technical Specification
TSC	Technical Support Center
UHS	Ultimate Heat Sink
URI	Unresolved Item
USAR	Updated Safety Analysis Report
VHRA	Very High Radiation Area
WO	Work Order

D. Heacock

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Sincerely,

*/RA/*

Kenneth Riemer, Branch Chief  
Branch 2  
Division of Reactor Projects

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