



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION III  
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LISLE, IL 60532-4352

November 9, 2011

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

**SUBJECT: KEWAUNEE POWER STATION INTEGRATED INSPECTION REPORT  
05000305/2011004**

Dear Mr. Heacock:

On September 30, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Kewaunee Power Station. The enclosed report documents the results of this inspection, which were discussed on October 3, 2011, with Mr. Stephen Scafe and other members of your staff.

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

Based on the results of this inspection, one NRC-identified Severity Level IV violation, one self-revealed finding, and three NRC-identified findings were identified. The Severity Level IV violation and four findings involved violations of NRC requirements, and because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs), in accordance with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the subject or severity of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Kewaunee Power Station. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Kewaunee Power Station.

D. Heacock

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

Sincerely,

***/RA/***

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

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

Enclosure: Inspection Report 05000305/2011004  
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: 05000305/2011004

Licensee: Dominion Energy Kewaunee, Inc.

Facility: Kewaunee Power Station

Location: Kewaunee, WI

Dates: July 1, 2011, through September 30, 2011

Inspectors: R. Krsek, Senior Resident Inspector  
K. Barclay, Resident Inspector  
Rhex Edwards, Reactor Inspector, DNMS  
Lionel Rodriguez, Reactor Inspector, DNMS

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

Enclosure

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## SUMMARY OF FINDINGS

IR 05000305/2011004, 7/01/2011 – 9/30/2011; Kewaunee Power Station; Fire Protection, Maintenance Effectiveness, Surveillance Testing, Event Followup, and Other Activities.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. The inspectors identified one Severity Level (SL) IV violation and three Green findings; one Green finding was self-revealed. The SL IV violation and 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: Initiating Events

- Green. A finding of very low significance and associated non-cited violation of Title 10 of the Code of Federal Regulations (CFR) 50.65(a)(3) was identified by the inspectors for the failure to incorporate industry operating experience into preventive maintenance activities when practical to do so. Specifically, the failure to incorporate the industry operating experience resulted in multiple molded case circuit breaker (MCCB) failures that could have been prevented by implementing an MCCB cycling program. The need to cycle MCCBs was identified in industry operating experience as well as the vendor's instructions for the breakers. The licensee was performing an apparent cause evaluation which was still in-progress at the conclusion of the inspection period. Initial corrective actions included scheduling the MCCBs for the breaker cycling maintenance activity.

This finding was determined to be of greater than minor significance because it was associated with the Protection Against External Factors attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective to limit the likelihood of those events, such as fire, that challenge critical safety functions during shutdown as well as power operations. Specifically, the lack of a cycling program for safety-related MCCBs resulted in breakers remaining in the "on" position after an overcurrent condition. The inspectors determined the finding had very low safety significance (Green) because the breakers and associated cabling did not significantly affect safe shutdown defense-in-depth strategies and the finding did not involve a design or qualification deficiency, did not represent a loss of system safety function, did not represent a loss of Technical Specification equipment for greater than its allowed outage time, and did not affect risk significant equipment per 10 CFR 50.65. This finding has a cross-cutting aspect in the area of human performance, work control, because the licensee did not emphasize the need for work groups to communicate, coordinate, and cooperate with each other during activities in which interdepartmental coordination is necessary to assure plant and human performance (H.3(b)). (Section 1R12.1)

## Cornerstone: Mitigating Systems

- Green. A finding of very low safety significance and associated non-cited violation of license condition 2.C(3) of the Kewaunee Power Station Renewed Operating License was identified by inspectors for the failure to have a self-closing fire door that closed and latched each time it was open. License condition 2.C(3) requires, in part, that the licensee implement and maintain, in effect, all provisions of the approved fire protection program as described in the licensee's fire plan. Appendix B of the Kewaunee Power Station Fire Protection Program Plan lists the 1975 edition of NFPA-80 [National Fire Protection Association], "Fire Doors and Windows," as an applicable NFPA code. NFPA-80 states, in part, that a self-closing door shall be equipped with a closing device to cause the door to close and latch each time it is opened. The licensee entered the issue into its corrective action program and adjusted the door-closing device to ensure the door properly closed when the train A screenhouse ventilation fan was operating.

The inspectors determined that the failure of the door to close and latch was contrary to the requirements of NFPA-80 and was a performance deficiency. The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of protection against external factors (Fire) and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors screened the finding as having very low safety significance (Green). The finding has a cross-cutting aspect in the area of problem identification and resolution, corrective action program, because the licensee did not thoroughly evaluate problems such that the resolutions address causes and extent of conditions. This includes properly classifying, prioritizing, and evaluating for operability and reportability conditions adverse to quality (P.1(c)). (Section 1R05.1)

- Green. A finding of very low safety significance and associated non-cited violation of Technical Specification (TS) 3.1.6, "Control Bank Insertion Limits," was identified by the inspectors for the failure to comply with TS action condition 3.1.6.A due to incorrect use of the applicability note. Specifically, on August 30, 2011, during the performance of SP-49-075, "Control Rod Exercise," operators received a rod control urgent failure while inserting control bank A group 1 control rods. The test was suspended for troubleshooting for approximately 20 hours with control bank A group 2 control rods, inserted one step below the control rod insertion limit in violation of TS 3.1.6.A action condition. The inspectors concluded that, once the test was suspended for troubleshooting activities, use of the applicability note was not appropriate; therefore, the operators should have complied with the TS 3.1.6.A action condition for control bank A group 2 control rods at that time. On August 31, operators withdrew control bank A group 2 rods one step, which restored the rods to within the limit specified in the core operating limits report. At the end of this inspection period, the licensee was still performing an apparent cause evaluation to determine the causes of the event and to develop corrective actions.

The finding was determined to be more than minor because the finding adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent desirable consequences. Specifically, the human performance attributes of the licensee's failure to recognize the misapplication of the applicability note of the TS affected the capability of systems that respond to initiating events. The inspectors screened the finding as having very low

safety significance (Green) because an actual loss of safety function did not occur. The finding has a cross-cutting aspect in the area of human performance, decision-making, because the licensee failed to use conservative assumptions and adopt a requirement to demonstrate that the proposed action is safe in order to proceed rather than a requirement to demonstrate that it is unsafe in order to disapprove the action (H.1(b)). (Section 1R22.1)

- Green. A finding of very low safety significance and associated non-cited violation of Technical Specification 3.8.1 was self-revealed for the failure to maintain a switchyard transformer load tap changer (LTC) at the appropriate setting for the predicted post-trip voltage of offsite power. The incorrect setting resulted in the inoperability of the Reserve Auxiliary Transformer (RAT) offsite power source. The licensee's corrective actions included restoring the RAT supply transformer (RST) LTC to an appropriate setting, creating a short-term standing order to prevent operation of the RST LTC outside settings that were supported by the existing interface agreement with the transmission system operator. The licensee performed an apparent cause evaluation, a root cause analysis and also, as a long-term corrective action, modified procedure OP-KW-NOP-SUB-003 to prevent operation of the RST LTC outside settings that were supported by the existing interface agreement with the transmission system operator.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of configuration control and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors screened the finding 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 maintain complete, accurate, and up-to-date procedures for the use of the RST LTC following its installation during the spring 2011 outage (H.2(c)). (Section 4OA3.1)

## **Cornerstone: Other Findings**

- SL IV. A Severity Level IV non-cited violation of 10 CFR 72.146, "Design Control," was identified by the inspectors for the failure of the licensee to incorporate the lifting yoke, a safety-related device, into the licensee's quality assurance program. Specifically, the inspectors identified that the licensee did not have measures in place to ensure suitability of materials, parts, equipment, and processes which are important to safety. At the conclusion of this inspection, the licensee entered the issue into the corrective action program and was developing corrective actions.

Consistent with the guidance in Section 2.2 of the NRC Enforcement Policy, independent spent fuel storage installations are not subject to the Significance Determination Process and, thus, traditional enforcement was used for this issue. The inspectors compared this violation to the minor questions of Inspection Manual Chapter (IMC) 0612, Appendix B, "Issue Screening," dated January 1, 2010, and determined that this violation was more than minor because, if left uncorrected, it would become a more significant safety concern. Absent NRC intervention, the failure to incorporate the lifting yoke into the licensee's quality assurance program could have allowed nonsafety-related materials, parts, and processes to be installed or performed on the safety-related lifting yoke. Consistent with the guidance in Section 2.6.D of the NRC Enforcement Manual, if a violation does not fit an example in the Enforcement Policy Violation Examples, it should be assigned a severity level: (1) commensurate with its safety significance; and (2) informed by similar violations addressed in the Violation Examples. The inspectors determined that the violation could be evaluated, using example 6.5.d.1 of the NRC Enforcement Policy, as a Severity Level IV Violation because the licensee failed to meet a quality assurance requirement that has more than a minor safety significance. (Section 4OA5.1)

## **B. Licensee-Identified Violations**

No violations of significance were identified.

## 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, and for the following two instances:

- on July 14, 2011, KPS reduced power to approximately 91 percent power for unplanned switchyard maintenance. KPS returned to full power the same day; and
- on July 21, 2011, KPS reduced power to 94 percent after the failure of heater drain pump A. KPS returned to full power around 1:00 a.m. on July 22.

### 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.

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. The inspectors also reviewed corrective action program (CAP) items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into the CAP in accordance with station corrective action procedures. The inspectors' reviews focused specifically on the following plant systems:

- turbine building ventilation;
- emergency diesel generators (EDGs); and
- service water (SW) system.

Documents reviewed are listed in the Attachment to this report.

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

##### b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

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

- internal containment spray (ICS) train A;
- safety injection (SI) train B; and
- auxiliary feedwater (AFW) train B.

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

These activities constituted three 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 areas:

- TU-92, TU-93, EDG 1B day tank, and EDG 1B rooms, door 1 issue.

The inspectors reviewed areas to assess if the licensee had implemented an FP program that: adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive FP features in good material condition; and implemented adequate compensatory measures

for out-of-service, degraded, or inoperable FP equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on the overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional risk insights, or the potential to impact equipment which could initiate or mitigate a plant transient. The inspectors verified that: fire hoses and extinguishers were in the designated locations and available for immediate use; fire detectors and sprinklers were unobstructed; 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 one quarterly fire protection inspection sample as defined in IP 71111.05-05.

b. Findings

(1) Failure to Maintain Fire Barrier and Automatic Fire Suppression

Introduction: A finding of very low safety significance and associated non-cited violation (NCV) of license condition 2.C(3) of the KPS Renewed Operating License was identified by the inspectors for the failure to have a self-closing fire door that closed and latched each time it was open. License condition 2.C(3) requires, in part, that the licensee implement and maintain in effect, all provisions of the approved FP program as described in the licensee's fire plan. Appendix B of the KPS Fire Protection Program Plan lists the 1975 edition of [Nuclear Fire Protection Association] NFPA-80, "Fire Doors and Windows," as an applicable NFPA code. NFPA-80 states, in part, that a self-closing door shall be equipped with a closing device to cause the door to close and latch each time it is opened.

Description: On August 24, 2011, the inspectors found door 1 open and unattended with the door latch resting on the outside of the passive door strike plate. Door 1 is a Title 10 Code of Federal Regulations (CFR) Part 50 Appendix R door that separates EDG B and 4160-volt safeguards bus 1-6, both alternate shutdown systems, from the train A SW system, which is a dedicated shutdown system. The closest alternate shutdown components outside of door 1 were the train A SW pump power supply cables that run in the overhead above door 1. The inspectors recalled that they found the door open in April 2011. A review of the CAP identified another instance of door 1 being found open on June 28, 2011. The inspectors reviewed the functionality assessment of door 1 and found that the licensee was not properly assessing functionality of the door when it was found open. The functionality assessments evaluated the Appendix R function of the door, but failed to evaluate the functionality of the carbon dioxide fire suppression system with the door open. The licensee's updated functionality assessment of the carbon dioxide system found that it was non-functional. The licensee's investigation also identified that the door closing mechanism was not set strong enough to overcome differential pressure caused by an operating ventilation fan.

Analysis: The inspectors determined that the failure of door 1 to close and latch was contrary to the requirements of NFPA-80 and was a performance deficiency. The finding was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated December 24, 2009, because

it was associated with the Mitigating Systems Cornerstone attribute of Protection Against External Factors (Fire) and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the finding created a non-functional fire barrier between alternate and dedicated fire zones, and also rendered the EDG B automatic carbon dioxide fire suppression system non-functional.

In accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 3b, dated January 10, 2008, the inspectors determined that the finding degraded the FP defense-in-depth strategies. Therefore, screening under IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated February 28, 2005, was required.

The finding involved fire confinement per Appendix F Table 1.1-1, and was assigned a high degradation due to the door failing to close and latch. The Duration Factor was 0.01 due to the duration of the degradation being at most 3 hours. The generic fire frequency of  $2E-2$  for a switchgear room was assumed per Table 1.4.2. Since the Phase 1  $\Delta$ CDF (delta core damage frequency) screening value was greater than  $1E-6$ , the Region III senior reactor analyst (SRA) was contacted to perform further evaluation.

The frequency of fire in a diesel generator (DG) room listed in Table 6-1 of NUREG-CR 6850, "Fire PRA Methodology for Nuclear Power Facilities," was  $2.1E-2$ /year. The SRA used the Kewaunee Standard Plant Analysis Risk (SPAR) Model, Version 8.16, and calculated a bounding conditional core damage probability of  $1.86E-2$ , assuming that, given a fire in the EDG B room; the EDG B, 4160-volt bus 1-6, and the train A SW system pumps would fail. The dominant sequence involved the fire, successful reactor trip, and failure of secondary and primary heat removal functions. Considering the 3-hour duration, the  $\Delta$ CDF was calculated to be  $1.3E-7$ , a finding of very low risk significance (Green).

This finding has a cross-cutting aspect in the area of problem identification and resolution, CAP, because the licensee did not thoroughly evaluate problems such that the resolutions address causes and extent of condition. This includes properly classifying, prioritizing, and evaluating for operability and reportability conditions adverse to quality. Specifically, the licensee previously failed to thoroughly evaluate the failure of the door to close and did not correct the door-closing device such that it closed against the pressure caused when greenhouse A ventilation fan was in operation. Additionally, the licensee failed to properly assess the functionality of the open door, such that the carbon dioxide containment function of the automatic fire suppression system was addressed in the functionality assessment. (P.1(c))

Enforcement: License condition 2.C(3) required the licensee to implement and maintain, in effect, all provisions of the approved FP program as described in the licensee's Fire Plan, and as referenced in the USAR, and as approved through Safety Evaluation Reports dated November 25, 1977, and December 12, 1978, and supplement dated February 13, 1981. Appendix B of the KPS Fire Protection Program Plan lists the 1975 edition of NFPA-80, "Fire Doors and Windows," as an applicable NFPA code. NFPA-80 states, in part, that a self-closing door shall be equipped with a closing device to cause the door to close and latch each time it is opened.

Contrary to the above, on August 24, 2011, the licensee failed to implement and maintain, in effect, all provisions of the approved FP program as described in the licensee's Fire Plan. Specifically, the inspectors found door 1 open and unattended with the door latch resting on the outside of the passive door strike plate. Further investigation by the licensee found that the closing device was not strong enough to overcome the pressure caused by the operating train A screenhouse ventilation fan. Because this violation was of very low safety significance and was entered into the licensee's CAP, as condition report (CR) 439332 and CR442071, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. (NCV 05000305/2011004-01, Failure to Maintain Fire Barrier and Automatic Fire Suppression)

Licensee corrective actions included adjusting the door 1 closing device to ensure the door properly closed when the train A screenhouse ventilation fan was operating, and also updating the operations department guidance on functionality determinations for doors that act as part of a carbon dioxide fire suppression envelope.

(2) Failure to Perform Maintenance Rule Evaluations for Risk Significant Fire Door Failures

Introduction: During the inspection of the door 1 failure to close, the inspectors identified that the licensee was not performing maintenance rule evaluations for risk significant fire doors as required by its maintenance rule program.

Description: During the inspection of the door 1 failure to close, the inspectors identified that the licensee was not performing maintenance rule evaluations for risk significant fire doors as required by its maintenance rule program. The licensee entered this into the CAP and was performing a historical review of door failures to determine if the maintenance rule doors system should be monitored in accordance with 10 CFR 50.65a(1). At the conclusion of this inspection period, the licensee had not completed the historical review of the CAP. The inspectors needed these results to determine if a performance deficiency was more than minor. (URI 05000305/2011004-02, Failure to Perform Maintenance Rule Evaluations for Risk Significant Fire Door Failures)

.2 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- SC-70A, screenhouse north;
- AX-23D, component cooling water (CCW) pump 1B room; and
- TU-97, battery room 1A.

The inspectors reviewed areas to assess if the licensee had implemented an FP program that: adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive FP features in good material condition; and implemented adequate compensatory measures for out-of-service, degraded, or inoperable FP equipment, systems, or features, in

accordance with the licensee's fire plan. The inspectors selected fire areas based on the overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional risk insights, or the potential to impact equipment which could initiate or mitigate a plant transient. The inspectors verified that: fire hoses and extinguishers were in the designated locations and available for immediate use; fire detectors and sprinklers were unobstructed; 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 three quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On August 8, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

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

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

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

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluation (71111.12Q)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving molded case circuit breakers in the direct current (DC) distribution system.

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

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

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

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

b. Findings

Repetitive Molded Case Circuit Breaker Failures

Introduction: A finding of very low safety significance and associated NCV of 10 CFR 50.65(a)(3) were identified by the inspectors for the failure to incorporate industry operating experience (OE) into preventive maintenance activities when practical to do so. Specifically, the failure to incorporate the industry OE resulted in multiple molded case circuit breaker (MCCB) failures that could have been prevented by implementing an MCCB cycling program. The need to cycle MCCBs was identified in industry OE as well as the vendor instruction for the breakers.

Description: During a review of maintenance rule evaluations, the inspectors identified a trend with MCCBs in the DC distribution system failing to trip during the 300 percent over-current testing that occurred during the 2008, 2009, and 2011 outages. The inspectors found that one MCCB failed during the spring 2008 outage, one failed during the 2009 outage, and another two failed during the 2011 outage. The inspectors reviewed apparent cause evaluation (ACE) 13611 that was associated with an MCCB failure that occurred in January 2008, and found that the licensee had reviewed external

OE in 2005 that identified the need for an MCCB cycling program to prevent breaker binding from internal grease hardening. The resulting action by the licensee was to implement a more frequent cycling program for the MCCB breakers. The inspectors, however, found multiple extensions for the implementation of the cycling program and the program was still not implemented in 2011 for the breakers that had failed in the DC system. During subsequent interviews, the inspectors found that the delay resulted from an ongoing lack of agreement between engineering, maintenance, and operations as to the best course of action for implementation of the program. The four breakers that failed to trip were in the DC distribution system, but downstream of the DC to alternating current (AC) inverters and were all 120-volt AC breakers. The specific breakers that failed and the components that they supplied were:

- BRB-113 circuit 11, which supplied the control room mechanical vertical panel B, failed during testing on March 27, 2011;
- BRA-114 circuit 6, which supplied the train A shield building ventilation damper hydraulic package, failed during testing on March 11, 2011;
- BRA-114 circuit 13, which supplied safeguards rack RR128 in the relay room, failed during testing on October 24, 2009; and
- BRB-105 circuit 36, which supplied the fused disconnect switch for the DG B room carbon dioxide FP system discharge valve failed during testing on May 4, 2008.

The inspectors' review of the four circuits found that the breakers always supplied power to their downstream components, and none of the circuits were required for Appendix R safe shutdown.

Analysis: The inspectors determined that the failure to incorporate industry OE into preventive maintenance activities when practical to do so, was a performance deficiency warranting a significance evaluation.

This finding was determined to be of greater than minor significance in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated December 24, 2009, because it was associated with the Protection Against External Factors attribute of the Initiating Events Cornerstone, and adversely affected the cornerstone objective to limit the likelihood of those events, i.e., fire, that challenge critical safety functions during shutdown as well as power operations. Specifically, the lack of a cycling program for safety-related MCCBs resulted in breakers remaining in the "on" position after an over-current condition. Because FP was affected, screening under IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated February 28, 2005, was required. The Region III SRA assigned a category of post-fire safe shutdown to the finding and determined the degradation rating to be low in Step 1.2, because, after reviewing licensee documents and records, the breakers and associated cabling did not significantly affect safe shutdown defense-in-depth strategies. The SRA also reviewed the licensee's risk evaluation documented in KPS.RA.024, "Significance Determination of Kewaunee Breaker Issue," Revision 0, November, 2011. The licensee calculated a delta-CDF of  $1.6E-7/yr$  and a delta-LERF of  $3.7E-8/yr$ .

In addition, the inspectors evaluated the finding under the Mitigating Systems Cornerstone using IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings." Using Table 4a, "Characterization Worksheet for IE, MS, and BI Cornerstones," dated

January 10, 2008, the finding did not involve a design or qualification deficiency, did not represent a loss of system safety function, did not represent loss of TS equipment for greater than its allowed outage time, and did not affect risk-significant equipment per 10 CFR 50.65. Based on the Phase 3 analysis, the inspectors determined that the finding was of 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 emphasize the need for work groups to communicate, coordinate, and cooperate with each other during activities in which interdepartmental coordination was necessary to assure plant and human performance. Specifically, the long-term lack of agreement between engineering, maintenance, and operations as to the best course of action for implementation of the MCCB program led to an environment where maintenance scheduling was not preventative. (H.3(b))

Enforcement: Title 10 CFR 50.65(a)(3) states, in part, that performance and condition monitoring activities and associated goals and preventive maintenance activities shall be evaluated at least every refueling cycle provided the interval between evaluations does not exceed 24 months. The evaluations shall take into account, where practical, industry-wide operating experience. Adjustments shall be made where necessary to ensure that the objective of preventing failures of SSCs through maintenance is appropriately balanced against the objective of minimizing unavailability of SSCs due to monitoring or preventive maintenance.

Contrary to the above, prior to March 27, 2011, the licensee failed to incorporate OE when it was practical to do so. Specifically, the actions from OE007174, "Point Beach PI&R – Molded Case Circuit Breakers Evaluation," which were documented in OTH007414, "Implement MCCB cycling program," dated January 17, 2005, were not incorporated when practical to do so. Because this violation was of very low safety significance (Green) and it was entered into the licensee's CAP (as CR445958), it is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. (NCV 05000305/2011004-03, Repetitive Molded Case Circuit Breaker Failures)

The licensee was performing an apparent cause evaluation, which was still in-progress at the conclusion of this inspection period. Initial corrective actions included scheduling the MCCBs for the breaker cycling maintenance activity.

## .2 Routine Quarterly Evaluations (71111.12Q)

### a. Inspection Scope

The inspectors evaluated repetitive failures of letdown valves LD-4A, LD-4B, and LD-4C, which have a containment isolation function.

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 SSCs/functions classified as (a)(2) or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

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

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

b. Findings

(1) Inconsistent Maintenance Rule Evaluations Performed on Containment Isolation Valves

Introduction: During the inspection of LD-4A, LD-4B, and LD-4C valve failures between 2008 and 2011, the inspectors found multiple inconsistencies with the evaluations, and in one case, found that an evaluation was not performed.

Description: The inspectors found inconsistencies in how LD-4A/B/C valves were scoped in as risk significant or non-risk significant. An evaluation performed in 2008 called the valves risk significant, and an evaluation performed in 2009 called the valves non-risk significant. The difference in scoping would determine if a maintenance rule functional failure existed. Additionally, inspectors found an instance where a maintenance rule evaluation was not performed following an as-found test failure. The licensee entered these into the CAP and was evaluating the inspectors' concerns. The inspectors need the results to determine if a performance deficiency existed and if it was more than minor. (URI 05000305/2011004-04, Inconsistent Maintenance Rule Evaluations Performed on Containment Isolation Valves)

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

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

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

- August 1;
- August 8;
- August 15; and
- September 6.

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

b. Findings

No findings were identified.

1R15 Operability Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- SI accumulator;
- CR 436536, gas void found in residual heat removal (RHR) cooldown piping; and
- CR 440417, received rod control urgent failure during surveillance SP-49-075.

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

These operability inspection activities constituted three samples as defined in IP 71111.15-05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing (PMT)

a. Inspection Scope

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

- turbine-driven auxiliary feedwater (TDAFW) pump high temperature;
- technical support center (TSC) DG after maintenance;
- SI oil cooler replacement;
- TDAFW coupling disassembly and greasing;
- group rod position indication display replacement;
- investigation and repair of rod control urgent failure; and
- SI valve SI-5B maintenance.

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

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

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

a. Inspection Scope

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

- SP-49-075, control rod exercise on August 30 (routine).

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; test data and results were accurate, complete, within limits, and valid;
- 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 as defined in IP 71111.22, Sections -02 and -05.

b. Findings

Misapplication of Technical Specification 3.1.6 Applicability Note

Introduction: A finding of very low safety significance and associated NCV of TS 3.1.6, "Control Bank Insertion Limits," was identified by the inspectors for the failure to comply with TS action condition (TSAC) 3.1.6.A, due to incorrect application of the applicability note. Specifically, during the performance of surveillance SP-49-075, "Control Rod Exercise," a rod control urgent failure was received while inserting control bank A group 1 control rods. The test was suspended for troubleshooting approximately 20 hours with control bank A group 2 control rods inserted one step below the control rod insertion limit, in violation of TSAC 3.1.6.A. The inspectors concluded that use of the applicability note in the TS once the test was suspended for troubleshooting activities was not appropriate; therefore, the operators should have complied with the TSAC 3.1.6.A for control bank A group 2 control rods at that time.

Description: On August 30, 2011, the licensee completed replacement of the shutdown bank A group 2 step counter, and at 1:37 p.m., commenced implementation of surveillance procedure SP-49-075, "Control Rod Exercise," which implemented TS

surveillance requirement (SR) 3.1.4.2. SR 3.1.4.2 required completion of the procedure every 92 days to verify freedom of control rod movement (trippability) by moving each control rod not fully inserted into the core greater than or equal to 10 steps in each direction. The applicability statement for TS 3.1.6, "Control Bank Insertion Limits," contained a note that stated, in part, that the limiting condition for operation (LCO) 3.1.6 is not applicable while performing TS SR 3.1.4.2.

The licensed operators successfully performed the control rod exercises for shutdown banks A and B. In accordance with procedure SP-49-075, control bank A group 2 control rods were moved in one step, which caused these control rods to be in noncompliance with the control rod insertion limits contained in the core operating limits report. However, this was allowed by TS due to the previously mentioned applicability note for TS 3.1.6, because the operators were performing procedure SP-49-075, associated with TS SR 3.1.4.2.

At 2:04 p.m., the operators selected control bank A group 1 and upon attempting to insert those rods, the operators received alarm 47042-P, "Control Rod Urgent Failure," an unexpected alarm for this test. The operators entered the abnormal operating procedure for the control rod drive system as required. The inspectors observed that the operators, along with instrumentation and control technicians, quickly identified that the urgent failure was in a control rod logic cabinet. Within approximately 20 minutes, the operators concluded that rods were trippable in accordance with TS 3.1.4, "Rod Group Alignment Limits." However, the inspectors also noted, after this occurrence, that the control room logs and CR 440417 did not reflect the assessments performed by the operators in the control room to confirm trippability of the control rods.

Following the initial operability assessment, the licensee commenced troubleshooting to determine the cause of the control rod urgent failure alarm, while control bank A group 2 control rods remained moved into the reactor core one step. Troubleshooting continued through the night and into the morning of August 31. Upon arrival of a new oncoming operations crew, the question was raised as to whether the continued use of the TS 3.1.6 applicability note was appropriate, since the surveillance test was suspended and troubleshooting took place since the previous afternoon. Discussion with operations management concluded, at that time, that use of the note was appropriate. At approximately 9:00 a.m. on August 31, the inspectors questioned whether the note was still applicable, since the licensee had suspended the surveillance on the previous day. The inspectors also contacted the Office of Nuclear Reactor Regulation (NRR), Technical Specifications Branch, to confirm the inspectors' concern with the inappropriate continued use of the TS note, while the test was suspended for troubleshooting. NRR staff concurred with the inspectors' assessment.

The inspectors again questioned the licensee staff as to the applicability of the TS 3.1.6 note, at which time the licensee had concluded the evaluation of the inspectors' previous questions and validated the inspectors' concern. At 12:16 p.m., on August 31, operators withdrew control bank A group 2 rods one step, which restored the control bank A group 2 rods to within the limits specified in the core operating limits report.

Analysis: The inspectors determined that the failure to properly implement the TS for the control rod insertion limits was a performance deficiency warranting a significance evaluation.

The finding was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated December 24, 2009, because the finding adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent desirable consequences. Specifically, the human performance attributes of the licensee's failure to recognize their misapplication of the applicability note of the TS affected the capability of systems that respond to initiating events. The inspectors determined the finding could be evaluated using IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 Initial Screening and Characterization of Findings," Table 4a for the Mitigating Systems Cornerstone, dated January 10, 2008. The inspectors answered "No" to the Mitigating Systems questions and screened the finding as having very low safety significance (Green) because an actual loss of safety function did not occur.

The finding has a cross-cutting aspect in the area of human performance, decision-making, because the licensee failed to use conservative assumptions and adopt a requirement to demonstrate that the proposed action is safe in order to proceed rather than a requirement to demonstrate that it is unsafe in order to disapprove the action. Specifically, although the licensee procedures and basis did not specifically address this issue, the licensee staff failed to use conservative decision-making to question the adequacy of their actions as it related to the use of the applicability note. (H.1(b))

Enforcement: TS 3.1.6, "Control Bank Insertion Limits," requires, in part, that control banks be within the insertion, sequence, and overlap limits specified in the core operating limits report. This limiting condition for operation (LCO) is amended by an applicability note that states, in part, that the LCO is not applicable while performing TS SR 3.1.4.2, which verifies control rod freedom of movement (trippability).

Contrary to the above, on August 30, 2011, the licensee commenced surveillance procedure SP-49-075, "Control Rod Exercise," to implement TS SR 3.1.4.2, and at 2:04 p.m., suspended the test due to the receipt of a rod control urgent failure alarm after control bank A group 2 control rods were inserted one step below the control bank insertion limits for testing. Because the test in support of SR 3.1.4.2 was suspended, the applicability note in TS 3.1.6 no longer applied and the operators were required to comply with TSAC 3.1.6.A. Following questions by the inspectors regarding control bank insertion limit operability on control rod group A, on August 31, 2011, at 12:16 p.m. the operators withdrew control bank A group 2 control rods one step restoring their operability. Because this violation was of very low safety significance (Green) and it was entered into the licensee's CAP (as CR441154), it is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. (NCV 05000305/2011004-05, Misapplication of Technical Specification 3.1.6 Applicability Note)

At the end of this inspection period, the licensee was still performing an apparent cause evaluation to determine the causes of the event and to develop corrective actions. As a remedial corrective action on August 31, operators withdrew control bank A group 2 control rods one step to restore compliance with the control rod insertion limits.

## .2 Surveillance Testing

### a. Inspection Scope

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

- containment entry on August 2 (routine);
- SW pump and valve train B on September 13 (inservice testing (IST));
- CCW pump and valve train B on September 15 (IST); and
- AFW pump and valve train B on September 16 (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 activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers (ASME) code, and reference values were consistent with the system design basis;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- where applicable for SR instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and

- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

.1 Training Observation

a. Inspection Scope

The inspector observed one simulator training evolution for licensed operators on September 12, which required emergency plan implementation by a licensee operations crew. These evolutions were planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the Attachment to this report.

These inspections of the licensee's training evolution with emergency preparedness drill aspects constituted one sample as defined in IP 71114.06-05.

b. Findings

No findings were identified.

**4. OTHER ACTIVITIES**

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

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 performance indicator (PI) for the 3<sup>rd</sup> quarter 2010 through 2<sup>nd</sup> quarter 2011. To determine the accuracy of the data reported, 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 operator narrative logs, condition reports, maintenance rule records, event reports, and NRC Integrated Inspection Reports (IRs) for the 3<sup>rd</sup> quarter 2010 through 2<sup>nd</sup> quarter 2011 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CAP to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one 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 3<sup>rd</sup> quarter 2010 through 2<sup>nd</sup> quarter 2011. To determine the accuracy of the data reported, PI definitions and guidance contained in NEI 99-02 were used. The inspectors reviewed the licensee's operator narrative logs, CRs, maintenance rule records, event reports, and NRC Integrated IRs for the 3<sup>rd</sup> quarter 2010 through 2<sup>nd</sup> quarter 2011 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CAP to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one 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 3<sup>rd</sup> quarter 2010 through 2<sup>nd</sup> quarter 2011. To determine the accuracy of the data reported, PI definitions and guidance contained in NEI 99-02 were used. The inspectors reviewed the licensee's operator narrative logs, CRs, maintenance rule records, event reports, and NRC Integrated IRs for the 3<sup>rd</sup> quarter 2010 through 2<sup>nd</sup> quarter 2011 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's CAP to determine if any problems had been identified with the PI data collected or transmitted for this indicator and none were identified. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

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

.1 Routine Review of Items Entered into the Corrective Action Program

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

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

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

b. Findings

No findings were identified.

.3 Selected Issue Follow-Up Inspection: Transformer Load Tap Changer Setting Below Minimum Required For Acceptable Operation

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item documenting the incorrect setting of the licensee's reserve auxiliary transformer (RAT) supply transformer (RST) load tap changer (LTC). The inspectors reviewed the appropriateness of the licensee's previous and planned corrective actions to address this issue. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

One finding is documented in Section 4OA3.1.

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

.1 (Closed) Licensee Event Report (LER) 05000305/2011-004-00 and 2011-004-01 Required Action For One Offsite AC Electrical Circuit Inoperable Not Performed Until After Discovery

On March 31, 2011, the licensee determined that one of the two offsite power sources was inoperable because settings on the RST LTC were not appropriate for the calculated post-trip voltage. The licensee entered the issue into the CAP, restored the LTC to an appropriate setting, put in place short-term corrective actions, and conducted a causal evaluation. Documents reviewed are listed in the Attachment to this report. This LER is closed.

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

a. Findings

(1) Incorrect Transformer Load Tap Changer Setting Causes Inoperable Offsite Power

Introduction: A finding of very low safety significance and associated NCV of TS 3.8.1 was self-revealed for the failure to maintain a switchyard transformer LTC at the appropriate setting for the predicted post-trip voltage of offsite power. The incorrect setting resulted in the inoperability of the RAT offsite power source.

Description: During the spring 2011 outage, the licensee replaced the RAT with a new transformer configuration, which included a new RAT supplied from a new RST. The new RST was equipped with an LTC that allowed the licensee to change the transformer settings to maintain the SR AC bus voltage within the TS requirements. Prior to the new transformers, the licensee could not change voltage locally and could

only request the transmission company to change grid voltage if a different voltage was needed on the SR busses. As part of the interface agreement between the licensee and the transmission system operator (TSO), the TSO used a post-trip voltage calculator that routinely calculated the post-trip voltage for Kewaunee to ensure the post-trip voltage was above 140 kilovolts (kVs), the minimum voltage required for operability of the offsite power. If voltage dropped below the minimum, the TSO would attempt to restore voltage and notify Kewaunee that the offsite power sources were below the minimum post-trip voltage required for operability. After the new transformer configuration was installed, the minimum post-trip voltage would change depending on the RST LTC settings; however, the licensee did not update the interface agreement with the TSO to put controls in place for this new configuration.

On March 28, 2011, Kewaunee lowered the RST LTC settings, using procedure, OP-KW-NOP-SUB-003, "RST and TST Load Tap Changer Operation," to reduce the SR bus 1-6 voltage to the low end of the acceptable band for a planned surveillance of EDG B. The minimum post-trip voltage for the new LTC setting was 141.2 kVs; however, the interface agreement with the TSO still had 140 kVs as the voltage where the TSO contacted the licensee. Later in the day, the licensee started an additional main feed pump which reduced the post-trip voltage below 141.2 kVs; however, because post-trip voltage did not drop below 140 kVs, the TSO never contacted the licensee. Kewaunee unknowingly operated with an inoperable offsite power source until March 31, 2011, when a bus overvoltage alarm occurred and Kewaunee, through conversations with the TSO, determined that the RST LTC settings were not appropriate for the existing post-trip voltage. The licensee restored the RST LTC to an appropriate setting and created a standing order as a short-term corrective action to prevent operation of the RST LTC outside settings that were supported by the existing interface agreement with the TSO. The licensee's causal evaluation later determined that procedure OP-KW-NOP-SUB-003 was written inadequately to ensure that the applicable procedure attachments for LTC operation were fully performed when the tap settings were adjusted.

Analysis: The inspectors determined that having an inadequate procedure for the operation of the RST LTC was a performance deficiency. The finding was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated December 24, 2009, because the finding was associated with the Mitigating Systems Cornerstone attribute of configuration control and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the incorrect RST LTC settings resulted in one out of two offsite power sources not meeting the required minimum post-trip voltage and being declared inoperable.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a, for the Mitigating Systems Cornerstone, dated January 10, 2008. The inspectors answered "no" to the Mitigating Systems Cornerstone questions and screened the finding 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 maintain complete, accurate, and up-to-date procedures for

the use of the RST LTC following its installation in the spring 2011 outage. Specifically, OP-KW-NOP-SUB-003 was inadequate in that it allowed operators to change the RST LTC settings to those that were outside the band specified in the interface agreement between the licensee and the transmission company. (H.2(c))

Enforcement: TS 3.8.1 states, in part, that two qualified circuits between the offsite transmission network and the onsite Class 1E AC electrical power distribution system shall be operable. The Required Action for TS 3.8.1 Condition A, which is one offsite circuit inoperable, requires the licensee to perform SR 3.8.1.1 for the operable offsite circuit with a completion time of one hour.

Contrary to the above, between March 28 and March 31, 2011, the RAT offsite power circuit was inoperable and SR 3.8.1.1 was not performed within one hour as required. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program (as CR420101), this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. (NCV 0500305/2011004-06, Incorrect Transformer Load Tap Changer Setting Causes Inoperable Offsite Power)

The licensee's corrective actions included restoring the RST LTC to an appropriate setting and creating a short-term standing order to prevent operation of the RST LTC outside settings that were supported by the existing interface agreement with the TSO. The licensee performed an apparent cause evaluation, a root cause analysis, and also, as a long-term corrective action, modified procedure OP-KW-NOP-SUB-003 to prevent operation of the RST LTC outside settings specified in the existing interface agreement with the TSO.

#### 4OA5 Other Activities

##### .1 Operation of an Independent Spent Fuel Storage Installation (60855.1)

###### a. Inspection Scope

The inspectors observed and evaluated select licensee loading, processing, and transfer operations of the second canister during the licensee's 2011 dry fuel storage campaign to verify compliance with the applicable certificate of compliance conditions, the associated TSs, and Independent Spent Fuel Storage Installation (ISFSI) procedures. Specifically, the inspectors observed: loading and independent verification of the fuel assemblies into the dry shielded canister (DSC); lifting of the transfer cask from the spent fuel pool; decontamination and surveying; welding of the DSC lid; draining of water; vacuum drying; transfer of the DSC to the ISFSI pad; and insertion of the DSC into a Horizontal Storage Module (HSM).

The inspectors performed tours of the ISFSI pad to assess the material condition of the pad and HSMs. The inspectors reviewed the licensee's evaluations of flammable materials near the ISFSI and the radiation monitoring program. Additionally, the inspectors performed independent radiation surveys around the ISFSI pad and HSMs and verified that the contamination and radiation levels from the transfer cask were well below the regulatory limits.

The inspectors reviewed select documents, in part, after the licensee completed certain loading activities and a review of the fuel selection documentation was performed to

verify that the fuel placed in the DSC met the TS requirements. The inspectors observed the licensee perform a daily crane inspection and reviewed the applicable procedures for compliance with the licensee's control of heavy loads program. In addition, the inspectors reviewed CRs, and the associated corrective actions, as well as reviewed changes to the licensee's 10 CFR 72.212 evaluations since the last ISFSI inspection. The inspectors verified that the licensee took adequate corrective actions in a timely manner to correct the issues.

b. Findings

Quality Assurance Controls of Safety Related Lifting Yoke

Introduction: A Severity Level (SL) IV NCV of 10 CFR 72.146, "Design Control," was identified by the inspectors for the failure of the licensee to incorporate the lift yoke, an SR device, into the licensee's Quality Assurance Program. Specifically, the inspectors identified that the licensee did not have measures in place to ensure suitability of materials, parts, equipment, and processes which are important to safety.

Description: The lifting yoke is used to lift and move the transfer cask, containing the DSC, with the overhead crane inside the licensee's auxiliary building. The lifting yoke was specified as SR in Table 3.4-1 of the USAR for the Nutech Horizontal Storage Modular System (NUHOMS), Revision 11.

Section 11.2 of the USAR provided a description of how components in the NUHOMS were categorized as important-to-safety and SR. This section stated, in part, "For 'Safety Related' items, the program is applied as described in Category A items." The same section described Category A items as those important-to-safety that were critical to safe operation.

The lifting yoke was identified by KPS as SR in "Kewaunee Independent Spent Fuel Storage Installation (ISFSI) 10 CFR 72.212 Evaluation Report," Revision 1. Kewaunee Nuclear Engineering Standard, DNES-KW-MEL-4001, "Nuclear Safety Design and Quality Classification," Revision 0, provided guidance for determining the nuclear safety design and quality classifications of SSCs, and related activities. The standard stated, in part, that the "Safety classification methodology described in this standard is intended to cover all items within the current plant and ISFSI design and licensing basis." The standard describes in Section 2 that "These classifications invoke governing criteria for the design and analysis associated with structures, systems, and components credited in the described design basis events."

The lifting yoke used at KPS was shared with the Millstone Power Station, and KPS had generated work orders for inspections of the lifting yoke. The inspectors identified that the licensee did not classify the lifting yoke as SR in accordance with the Quality Assurance Program standard that provided governing criteria for the design and analysis of the lifting yoke. Therefore, the licensee did not have measures in place to ensure the suitability of the application of materials, parts, equipment, and processes that were essential to the function of the SR lift yoke. The licensee documented this deficiency in the CAP as CR435310.

Analysis: The inspectors determined that the licensee's failure to incorporate the lifting yoke into the KPS quality assurance program was contrary to the design control measures per 10 CFR 72.146 and was a violation that warranted a significance

evaluation. Consistent with the guidance in Section 2.2 of the NRC Enforcement Policy, ISFSIs are not subject to the Significance Determination Process and, thus, traditional enforcement was used for this issue. The inspectors compared this violation to the minor questions of IMC 0612, Appendix B, "Issue Screening," dated January 1, 2010, and determined that this violation was more than minor because, if left uncorrected would become a more significant safety concern. Absent NRC intervention, the failure to incorporate the lifting yoke into the licensee's quality assurance program could have allowed non-SR materials, parts, and processes to be installed or performed on the SR lifting yoke.

Consistent with the guidance in Section 2.6.D of the NRC Enforcement Manual, if a violation does not fit an example in the Enforcement Policy Violation Examples, it should be assigned a severity level: (1) commensurate with its safety significance; and (2) informed by similar violations addressed in the Violation Examples. The inspectors determined that the violation could be evaluated, using Section 6.5.d.1 of the NRC Enforcement Policy, as an SL IV Violation because the licensee failed to meet a quality assurance requirement that has more than a minor safety significance.

Enforcement: Title 10 CFR 72.146, "Design Control," requires, in part, that measures be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the functions of the structures, systems, and components which are important to safety.

Contrary to the above, on July 22, 2011, the inspectors identified that the licensee did not have measures in place to ensure the suitability of application of materials, parts, equipment, and processes that are essential to the function of the SR lifting yoke. Because of the very low safety significance of this violation and because the issue was entered into the CAP (as CR435310), it will be treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. At the conclusion of the inspection, the licensee was developing corrective actions. (NCV 07200064/2011001-01, Quality Assurance Controls of Safety-Related Lifting Yoke)

#### 40A6 Management Meetings

##### .1 Exit Meeting Summary

On October 3, 2011, the inspectors presented the inspection results to Mr. S. Scace and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

##### .2 Interim Exit Meetings

The ISFSI operational inspection included an interim exit meeting on July 22, 2011. The inspectors presented the inspection results to members of the licensee management and staff. Licensee personnel acknowledged the information presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

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

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

S. Scace, Site Vice-President  
M. Wilson, Director, Safety and Licensing  
S. Yuen, Director, Engineering  
R. Simmons, Plant Manager  
D. Asbel, Outage and Planning Manager  
D. Lawrence, Operations Manager  
J. Gadzala, Licensing Engineer  
R. Repshas, Licensing Engineer  
M. Aulik, Engineering Design Manager  
T. Breene, Licensing Manager  
J. Hale, Radiation Protection and Chemistry Manager  
M. Hovis, Radiation Protection Supervisor  
A. Maly, Health Physicist  
J. Helfenberger, Lead Reactor Engineer  
B. Wakeman, ISFSI Project Engineer  
D. Jeanquart, Nuclear Fuel Handling Supervisor

#### Nuclear Regulatory Commission

M. Kunowski, Chief, Division of Reactor Projects, Branch 5  
D. Passehl, Senior Reactor Analyst

### LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

#### Opened

05000305/2011004-01	NCV	Failure to Maintain Fire Barrier and Automatic Fire Suppression (Section 1R05.1)
05000305/2011004-02	URI	Failure to Perform Maintenance Rule Evaluations for Risk Significant Fire Door Failures (Section 1R05.1)
05000305/2011004-03	NCV	Repetitive Molded Case Circuit Breaker Failures (Section 1R12.1)
05000305/2011004-04	URI	Inconsistent Maintenance Rule Evaluations Performed on Containment Isolation Valves (Section 1R12.2)
05000305/2011004-05	NCV	Misapplication of Technical Specification 3.1.6 Applicability Note (Section 1R22.1)
05000305/2011004-06	NCV	Incorrect Transformer Load Tap Changer Setting Causes Inoperable Offsite Power (Section 4OA3.1)
07200064/2011001-01	NCV	Quality Assurance Controls of Safety-Related Lifting Yoke (Section 4OA5.1)

Closed

05000305/2011004-01	NCV	Failure to Maintain Fire Barrier and Automatic Fire Suppression (Section 1R05.1)
05000305/2011004-03	NCV	Repetitive Molded Case Circuit Breaker Failures (Section 1R12.1)
05000305/2011004-05	NCV	Misapplication of Technical Specification 3.1.6 Applicability Note (Section 1R22.1)
05000305/2011004-06	NCV	Incorrect Transformer Load Tap Changer Setting Causes Inoperable Offsite Power (Section 4OA3.1)
07200064/2011001-01	NCV	Quality Assurance Controls of Safety-Related Lifting Yoke (Section 4OA5.1)
05000305/2011-004-00	LER	Required Action For One Offsite AC Electrical Circuit Inoperable Not Performed Until After Discovery (Section 4OA3.1)
05000305/2011-004-01	LER	Required Action For One Offsite AC Electrical Circuit Inoperable Not Performed Until After Discovery (Section 4OA3.1)

Discussed

None.

## LIST OF DOCUMENTS REVIEWED

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

### 1R01 Adverse Weather Protection

- Calculation No. C10044; Diesel Generator Room Temperatures; Completed February 28, 2007
- Calculation No. C11864; Screenhouse Temperatures; November 18, 2009
- CR415074; C11450 R2 Identifies Control Circuit Pickup Delays
- CR428207; Screen House Exhaust Fan B Abnormal Indications
- CR432037; Train B Screenhouse Dampers Not Modeled In PRA
- CR432039; Technical Specifications And PRA Implications Identified At Pre-Job Brief
- CR432052; Add Tech Spec Information To ICP-TAV-012
- CR432067; Screenhouse Temperature Switch 16249 Found Out Of Spec
- CR437304; NRC Identified Concerns With Screenhouse Temperature Control And C11864
- CR437314; ORT-MISC-006 Hot Weather Operations Procedure Step 5.1.1 Completion
- OP-KW-AOP-TAV-001; Abnormal Turbine Building And Screenhouse Ventilation System Operation; System TAV-16; Revision 5
- OP-KW-ARP-47034-22; TLA-27 Circ Water Inlet Temperature High; System 04; Revision 0
- OP-KW-ORT-MISC-006; Hot Weather Operations; Completed May 17, 2010
- OP-KW-ORT-MISC-006; Hot Weather Operations; Completed May 31, 2011

### 1R04 Equipment Alignment

- CR415132; Substation North Control House At SD1 Switches Not In Expected Position
- CR421529; OSP-ESF-002 Valves Not Verified
- CY-AA-CTL-510; Chemical Control; Revision 4
- Drawing OPERM-205; Flow Diagram Feedwater System; Revision BL
- Drawing OPERM-217; Flow Diagram Internal Containment Spray System; Revision AT
- Drawing OPERXK-100-20; Flow Diagram Component Cooling System; Revision AE
- Drawing OPERXK-100-28; Flow Diagram Safety Injection System; Revision BA
- Drawing OPERXK-100-29; Flow Diagram Safety Injection System; Revision AN
- N-ICS-23-CL; Containment Spray System Prestartup Checklist; Revision 34
- N-SI-33-CL; Safety Injection System Prestartup Checklist; Revision 45
- OP-KW-AOP-CC-001; Abnormal Component Cooling Operation; System CC-31; Revision 5
- OP-KW-NCL-AFW-001; Auxiliary Feedwater System Prestartup Checklist; Revision 2

### 1R05 Fire Protection

- CR422025; Control Room Notified Door 1 Found Ajar
- CR432503; Door 001 Found Open
- CR439332; Door 1 Does Not Shut By Itself When Screenhouse Exhaust Fan 1A Is Running
- CR440076; Door #2 Is Not Latching
- CR442071; NRC Question Regarding Door 1 And Door 2
- Drawing A-535, PFP-4; Screenhouse SC-70A, SC-70B / Elevations 569' & 586'; Revision B

- Drawing A-537, PFP-6; 1B Diesel Generator And DG Day Tank Rooms TU-92, TU-93 / Elevation 586'; Revision C
- Drawing E-1923; Schematic Diagram – Solenoid Valves 33367, 368, 369, 370, MV32414, MV32415; Revision Q
- Drawing E-2154; Schematic Diagram – Cardox Low Pressure Fire Extinguishing System Sheet 5 Of 5; Revision N
- Drawing OPERM-213-9; Flow Diagram Diesel Generator Startup Air Compressor A & B And Fish Screen Air; Revision G
- Fire Protection Program Analysis; SC-70A Screenhouse North; August 2011
- Fire Protection Program Analysis; TU-92 Diesel Generator 1-B; August 2011
- Fire Protection Program Analysis; TU-93 Diesel Generator 1-B Day Tank Room; August 2011
- Fire Protection System Impairment No. 07-81; Appendix R Lighting; Prepared August 24, 2007
- FPP-08-08; FP – Control Of Transient Combustible Materials; Revision 10
- Maintenance Rule System Basis; 08 Fire Protection; Revision 5; September 7, 2011
- Maintenance Rule System Basis; DOR Doors; Revision 10; September 7, 2011
- MA-KW-MPM-FP-030B; Inspection And Dry Test Of CO2 System For Diesel Generator Room 1B; System 08; Revision 6
- WO KW100444261; DCR 3720-2 Install Appendix R Lighting By Diesel Gen. “B”

#### 1R11 Licensed Operator Regualification Program

- Lesson Plan LRC-11-DY301; Remedial Training Plan for LOR/Cycle 11-03 Dynamic; August 10, 2011
- LOR 11-03 Cycle Dynamic (Simulator Exam); Revision A
- Operations Watchstander Temporary Restriction Record; September 13, 2011

#### 1R12 Maintenance Effectiveness

- A1G000248; No Failures Of Bkrs In BRA/B104, BRA/B105, BRA/B113, BRA/B113EXP, BRA/B114 For 18Mo
- ACE013611; MCCB From BRB-105 Circuit 26 Failed During Performance of GMP-244
- ACE018668; LD-4A/4B/4c LLRT In Excess Of Local Leak Rate Action Limits
- CA072222; Evaluate The LD-4A, B And C Leakage To Determine And Initiate Required Actions
- CA072366; Establish A Cycling Program For Single Pole And Two Pole Breakers
- CA072366; Establish A Cycling Program For Single Pole And Two Pole Breakers
- CR096777; ILLRT Performed In LD-4A, B, C Exceeded Administrative Limits
- CR096777; ILLRT Performed On LD-4A, B, C Exceeded Administrative Limits
- CR096839; Higher Than Expected Flow Noise Heard On LD-4B Valve While Testing For Leakage
- CR349850; Penetration 11 LLRT Failure For LD-4A/B/C
- CR349850; Penetration 11 LLRT Failure For LD-4A/B/C
- CR351143; Penetration 11 LLRT Failure For LD-4A/B/C
- CR351143; Penetration 11 LLRT Failure For LD-4A/B/C
- Drawing E-843; Wiring Diagram DC Auxiliary & Emergency AC; Revision CU
- Drawing E-845; Wiring Diagram DC Auxiliary & Emergency AC; Revision BJ
- Eaton Instruction Leaflet IL 29C101H; Installation Instructions For EHD, EDB, EDS, ED, EDH, EDC, FDB, FD, HFC, FDC, HFDDC Circuit Breakers And Molded Case Switches; Effective January 2011
- EPRI Molded Case Circuit Breaker Application And Maintenance Guide; Revision 2

- Kewaunee Power Station System Health Report; DC Supply And Distribution; July 1 To September 30, 2011
- LER 92-001-01; Trip Testing Of Westinghouse Type EB Molded Case Circuit Breaker Reveals High Rate Of Out-Of-Tolerance Trip Values; November 9, 1992
- LTR000430; LTR For Licensing On LD-4A/4B/4C LLRT Leak Rate
- Maintenance Rule Scoping Questions; 38 DC Supply and Distribution
- Maintenance Rule Scoping Questions; 56A Containment Isolation
- Maintenance Rule System Basis; 38 DC Supply and Distribution; Revision 9
- Maintenance Rule System Basis; 56A Containment Isolation; Revision 5
- MRE006703; MRE For BRB105-36BKR Fails As-Found 300% Overcurrent Trip Testing
- MRE011154; Penetration 11 LLRT Failure For LD-4A/B/C
- MRE011297; Breaker Removed From BRA114-13 Would Not Trip At 300% Of Current Rating
- MRE013272; Penetration 11 LLRT Failure For LD-4A/B/C
- MRE013351; Breaker Removed From BRA-114 Circuit 16 Failed 300% Time Band Test
- MRE013449; Breaker Removed From BRB-113 Circuit 11 Failed 300% Time Band Test
- OE7174; Point Beach PI&R – Molded Case Circuit Breakers
- OTH7414; Implement MCCB Cycling Program
- SSC Performance Criteria Sheet; 38 DC Supply and Distribution
- SSC Performance Criteria Sheet; 56A Containment Isolation
- Summary Table of Cable 1NC4707 Routing Path and Affected Fire Zones
- Summary Table of Cable 1S5CO45 Routing Path and Affected Fire Zones
- Summary Table of Cable 1S6C1458 Routing Path and Affected Fire Zones
- Summary Table of Cable 1S6C335 Routing Path and Affected Fire Zones
- Summary Table of Cable 1SC467 Routing Path and Affected Fire Zones
- WO KW100378537; ILLRT Performed on LD-4A, B, C Exceeded Administrative Limits

### 1R13 Maintenance Risk

- Troubleshooting Sheet For CR427292; June 29, 2011
- Planning and Scheduling, Work Week Risk and Work Schedule Documentation for the Weeks of August 1, August 8, August 15, and September 6, 2011

### 1R15 Operability Evaluations

- Complex Troubleshooting Failure Mode/Cause Table; Traveling Water Screens (TWS) dpi/dps (16426) Is Indicating Less Than 0" Of Water When The TWS's Are Clean; WO KW100677276
- CR436536; A Void Was Found In The RHR Line By Penetration 9 Between High Points 957-6 And 958-8
- CR437386; Radiation Levels Elevated At R-6 While Purging RCS Sample
- Human Performance Review Board Documentation For CR437286; August 9, 2011
- ODM000135; Revision 2 – Attachment 1
- Operational Decision Making Checklist For CR362131; April 18, 2011
- Testoil Industrial Analysis; Analysis Report; Component Cooling 1A OB BRG 145-151-1; September 23, 2011
- Testoil Industrial Analysis; Analysis Report; Component Cooling 1A OB BRG 145-151-2; September 23, 2011
- Testoil Industrial Analysis; EDXRF Analysis Report; Component Cooling 1A OB BRG 145-151-1; September 23, 2011
- Testoil Industrial Analysis; EDXRF Analysis Report; Component Cooling 1A OB BRG 145-151-2; September 23, 2011

## 1R19 Post-Maintenance Testing

- CR414237; CRPAR PMT Lessons Learned
- CR416764; Diesel Engine 1A Low Lube Oil Alarm Did Not Reset
- CR417816; Procedures Required To Be Updated For DG "A"
- CR425056; Procedure Change Concerning PMT Of 4160 V Breaker In Question
- CR425807; MA-KW-MPM-DGM-004 Step 5.6.3 Directs Wrong Procedure For PMT
- CR428018; Document Extra PMT After Work On Turbine Building FCU B
- CR438526; Complex Troubleshooting Plan For Traveling Water Screen B DPI Was Not Completed
- Feedback Incorporation Process; For SP-33-098A, Train A Safety Injection Pump And Valve Test – IST; Revision 13; Submitted September 15, 2010
- High Risk Contingency Plan Actions For CR440417/KW100824867; August 31, 2011
- High Risk Contingency Plan Actions For KW100274056 (FPC-11A) And KW100270801 (FPC-11B); August 11, 2011
- ICP-82B-098; ICE – Stopwatch And Digital Timer Functional Test; Revision 21; Completed October 4, 2010
- MA-KW-MPM-DGM-004; Changing Oil And Filters On TSC Diesel Generator; System 10; Revision 6
- OPKW-ORT-DGM-002; TSC Diesel Generator Monthly Availability Tests; System 10; Revision 12; Completed August 22 And August 23, 2011
- OP-KW-OSP-AFW-005; Auxiliary Feedwater Pump A Low Suction Pressure Trip Test & SW Valve IST; Revision 1; Completed on August 25, 2011
- OP-KW-OSP-SI-006A; Train A Safety Injection Pump And Valve Test – IST; Revision 0; Completed August 23, 2011
- PMP-88B-05; MAE – Measuring & Test Equipment (M&TE) Calibration By Vendors For MTE 93418; Completed On October 20, 2010
- SP-49-075; Control Rod Exercise; Revision 33 (FREQ Q); Completed August 31, 2011
- SP-49-075; Control Rod Exercise; Revision 33 (FREQ Q); Completed September 1, 2011
- SP-55-177; Inservice Testing Of Pumps Vibration Measurements; Revision 33; Completed On August 25, 2011
- SP-87-125; Shift Instrument Channel Checks – MODE 1-4; Completed August 31, 2011
- SP-87-125; Shift Instrument Channel Checks – MODE 1-4; Completed August 30, 2011
- WO KW100430582; DC KW-10-01005 SI-5B/MV-32108, Install New Actuator Gearing
- WO KW100694895; PM10-633: Change Fuel Oil Filters/Fuel Oil Strainers-TSC D/G
- WO KW100796148; Replace TSC Diesel Engine Lube Oil And Filters
- WO KW100824422; Repair The Shutdown Bank A Group 2 Step Counter
- WO KW100824867; Investigate And Repair Rod Control Urgent Failure

## 1R22 Surveillance Testing

- AD-AA-102; Procedure Use And Adherence; Revision 4
- Commitment Change Evaluation; Commitment Number 83-142; May 5, 2011
- Commitment Number 80-002; IE Bulletin 80-24: Prevention Of Damage Due To Water Leakage Inside Containment; February 19, 2009
- Commitment Number 83-142; Response To Notice Of Violation (NOV) And Proposed Imposition Of Civil Penalty; May 25, 2011
- CR419236; System Integrity Program Requirements Not Verified Prior To Mode 3 Entry
- CR422024; Accumulator 1B Boron Is Less Than "Limit" Stated On SP-33-072-01
- CR440417; Received 47042-P Rod Control Urgent Failure While Performing SP-49-075
- CR440727; NRC Observation – TS 3.1.4 May Not Have Been Properly Applied

- CR441025; Request Clarification Of TS 3.1.5 And 3.1.6 Applicability NOTE
- CR441154; NRC Concern – TS 3.1.6 NOTE May Have Been Improperly Applied
- CR442558; Lessons Learned From Rod Control Urgent Failure, Work Order KW100824867
- CRD-49; Rod Control Urgent Failure
- EN 46475; Technical Specification Required Shutdown Due To Not Meeting Rod Group Alignment Limits
- EN 46482; Unit 2 Manual Reactor Trip During Startup
- GNP-03.01.01-1; OP-KW-OSP-006B, Train B Safety Injection Pump And Valve Test – IST; Completed On September 14, 2011
- GNP-03.01.01-3; SP 02-138A, Train A Service Water Pump And Valve Test IST; Completed September 13, 2011
- GNP-03.01.01-3; SP 02-138B, Train B Service Water Pump And Valve Test IST; Completed September 13, 2011
- OP-KW-NOP-CCI-001; Containment Access; System 56; Completed August 2, 2011
- SP-02-138B; Train B Service Water Pump And Valve Test – IST; Completed September 13, 2011
- SP-02-138B; Train B Service Water Pump And Valve Test – IST; May 26, 2011
- SP-05B-283B; Motor Driven AFW Pump B Full Flow Test – IST; Revision 27 (Freq Q); Completed September 16, 2011
- SP-05B-284; Turbine Driven AFW Pump Full Flow Test – IST; Revision 39 (Freq Q); Completed September 16, 2011
- SP-31-168B; Train B Component Cooling Pump And Valve Test – IST; Completed September 15, 2011
- SP-49-075; Control Rod Exercise; Revision 33 (FREQ Q)
- SP-49-075; Control Rod Exercise; Revision 33 (FREQ Q); Completed August 31, 2011
- TS 3.1.6; Control Bank Insertion Limits; Amendment No. 207; February 2, 2011

#### 1EP6 Drill Evaluation

- LOR 11-03 Cycle Dynamic (Simulator Exam); Revision A
- Operations Watchstander Temporary Restriction Record; September 13, 2011

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

- CR402462; CV-31195, Cylinder Heating Steam For Train B Not Maintaining In Required Band
- CR422942; MS-3B-22/CV31195, Discharge Pressure Swinging From 186psi – 180psi
- CR432713; ERO Participation PI Data Contains Two Retired Personnel
- CR433489; Changes To MSPI Baseline Data Without Notation To Quarterly Data Submittal
- Cycle 31 – Reactor Engineering Monthly Reports; July 2010 To June 2011
- Kewaunee PI Load Reductions And Trips Log, Dated July 2010 To June 2011
- Log Entries Report; July 24, 2010 00:05 To July 25, 2010 16:45
- Table Of MREs For July 2010 To June 2011

#### 4OA2 Identification and Resolution of Problems

- CR358861; 3Q2009 – Documentation Of Potential Adverse Trend For Engineering Products
- CR404723; Procedure Revisions For DCR 3484-2
- CR427344; Engineering DSEM – Performance Improvement – Modification Turnover
- CR435765; Requests Associated With Closeout Of DC KW-10-01082 (Seal Table Mod)
- CR436316; No Failure – Track Completion Of Procedure Revisions For DCR 3609-2
- CR436717; PM's For SP-87-133 And SP-87-270 Deleted

- CR436784; FFD Failure To Self Report
- CR437655; Design Change DCR 3669 Exceeds 90 Day Closeout Requirement
- CR437664; Design Change DCR 3697 Exceeds 90 Day Closeout Requirement
- CR437733; Weld Filler Wire Used In Manufacture Of Fuel Assembly Skeleton Components And RC
- CR439235; No Failure. Update ISI And IST Documents For DCR 3609-2
- CR441473; AOP-FP-002 Not Update After DC10-01062, Removal Of RHR-44 And RHR-45
- CR441696; MOP-RHR-001A/B Will Leave Piping Between SI-351A/B And SI-350A/B Empty
- CR441846; CA Needed To Track Closeout Of DCR-3368
- CR442560; TWS Complex Troubleshooting Conclusions
- Engine Systems, Inc. Document 8001798-FA; Failure Analysis For Woodward UG8D Governor; Revision 0: September 1, 2011

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

- LER 2011-004-00; Required Action For One Offsite AC Electrical Circuit Inoperable Not Performed Until After Discovery; May 31, 2011
- LER 2011-004-01; Required Action For One Offsite AC Electrical Circuit Inoperable Not Performed Until After Discovery; September 6, 2011

#### 40A5 Other Activities

- CR346274; Inadvertent Venting Of DSC During Disconnection Of Vent/Siphon Booms
- CR381904; QC ID's Procedural Non-Compliance
- CR385299; ISFSI – Lessons Learned From DSC#4 (2nd Canister)
- CR434765; Foreign Material On Top Of Assembly In Position 10 Of DSC-06
- CR435165; NRC Inspection Identified That ISFSI 72.212 Evaluation Has Incorrect Statement
- CR435307; NRC ISFSI Inspection Identified That There Is A Deficiency In Fuel Accounting
- CR435310; NRC ISFSI Inspection Issue – Add Yoke To The Asset Database Or Equivalent
- Dry Shielded Canister (DSC) Serial No. KPS32PT-S100-A-HZ005 ISFSI Fuel Assembly Certification And Canister Loading Map
- ETE-NAF-2010-0001; Kewaunee Independent Spent Fuel Storage Installation (ISFSI) 10 CFR 72.212 Evaluation Report, Revision 1
- ETE-NAF-2011-0094; NUHOMS Canister KPS32PT-S100-A-HZ002 ISFSI Fuel Certification And Canister Loading Map; Dated June 29, 2011
- FPP-08-08; Control Of Transient Combustible Materials, Revision 10
- Kewaunee Power Station Independent Spent Fuel Storage Installation Fire Hazards Analysis, Revision 1
- MA-AA-102; Foreign Material Exclusion; Revision 9
- MA-AA-OCR-101; Overhead Cranes/Hoists; Revision 3
- MA-KW-GMP-ISF-003; Dry Shielded Canister Loading; Revision 0
- RP-AA-202; Radiological Posting, Revision 4
- RP-KW-ISF-001; Dry Shielded Canister (DSC) Surveys; Revision 0
- Updated Final Safety Analysis Report For The Standardized NUHOMS Horizontal Storage System For Irradiated Nuclear Fuel, Revision 11

#### NRC-Identified Condition Reports

- CR433489; Changes To MSPI Baseline Data Without Notation To Quarterly Data Submittal
- CR433960; BKR 16211 Green Tripped Indicating Lightbulb Replaced
- CR433962; Diesel Gen 1-A 1-509 BKR Green Tripped Indicating Lightbulb Replaced

- CR433964; D-1A Diesel A Engine Control Panel Power On (L8) Indicating Lightbulb Replaced
- CR434516; Leak On Plumbing Piping
- CR435018; NRC Non-Cited Violations Identified During 6/30/11 NRC Exit Meeting
- CR435165; NRC Inspection Identified That ISFSI 72.212 Evaluation Has Incorrect Statement
- CR435307; NRC ISFSI Inspection ID'd There Is A Deficiency In Combustible Fuels Accounting
- CR435310; NRC ISFSI Inspection Issue – Add Yoke To The Asset Database Or Equivalent
- CR436693; NRC NCV For Shield Building Vent From SCE Results In NSR Parts In SR Component
- CR436965; Evaluate NRC Finding For Missed Opportunity
- CR437173; Insulation Resistance Checks Not Performed On Small Ventilation Fan Motors
- CR437298; Containment Pressure Sensing Line Penetration Labeling Clarity
- CR437304; NRC Identified Concerns With Screenhouse Temperature Control And C11864
- CR437305; Evaluate Revising ODM135 (SI Accumulator B In-Leakage)
- CR437314; ORT-MISC-006 Hot Weather Operations Procedure Step 5.1.1 Completion
- CR437317; OSP-CCI-002, Attachment C Not In Containment During Walkthrough
- CR437321; NRC Question Concerning SI Accumulator Draining
- CR438526; Complex Troubleshooting Plan For Traveling Water Screen B DPI Was Not Completed
- CR438673; Floor Painted Leaving Insufficient Walkway Next To MCC 52E
- CR439332; Door 1 Does Not Shut By Itself When Screenhouse Exhaust Fan 1A Is Running
- CR440327; LAR 244 Attachment Not Submitted In Proper Format To NRC
- CR440603; NRC Observation – Safety Injection (SI) Flow Indication Difficult At Low Flow
- CR440727; NRC Observation – TS 3.1.4 May Not Have Been Properly Applied
- CR441025; Request Clarification Of TS 3.1.5 And 3.1.6 Applicability NOTE
- CR441154; NRC Concern – TS 3.1.6 NOTE May Have Been Improperly Applied
- CR442071; NRC Question Regarding Door 1 And Door 2
- CR442078; NRC Questions Trend In DCR Installations With Inadequate Or No Procedure Revs
- CR442991; NRC Sr. Resident Identified An Issue With SP 02-138B Note Implementation
- CR443000; Discrepancies Between Procedures NSTP-0003 And GO-KW-0119
- CR443277; NRC Requests Additional Information For LAR 252, Service Water
- CR444725; NRC Resident Stop Watch Calibration Question
- CR444743; Piping Stubs In ICS Suction Piping Not Shown On P&ID Drawings

## LIST OF ACRONYMS USED

AC	Alternating Current
ACE	Apparent Cause Evaluation
ADAMS	Agencywide Document Access Management System
AFW	Auxiliary Feedwater
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CCW	Component Cooling Water
$\Delta$ CDF	Delta Core Damage Frequency
CFR	Code of Federal Regulations
CR	Condition Report
DC	Direct Current
DG	Diesel Generator
DSC	Dry Shielded Canister
EDG	Emergency Diesel Generator
FP	Fire Protection
HSM	Horizontal Storage Module
ICS	Internal Containment Spray
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection Report
ISFSI	Independent Spent Fuel Storage Installation
IST	Inservice Testing
KPS	Kewaunee Power Station
KV	KiloVolts
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LTC	Load Tap Changer
MCCB	Molded Case Circuit Breaker
NAD	Nuclear Administrative Directive
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NFPA	National Fire Protection Association
NRC	U.S. Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
OE	Operating Experience
OSP	Offsite Power
PI	Performance Indicator
PM	Preventive Maintenance
PMT	Post-Maintenance Testing
RAT	Reserve Auxiliary Transformer
RCS	Reactor Coolant System
RFO	Refueling Outage
ROP	Reactor Oversight Process
RS	Reactor Safety
RST	Reserve Auxiliary Transformer Supply Transformer
SDP	Significance Determination Process
SI	Safety Injection
SL	Severity Level
SPAR	Standard Plant Analysis Risk

SR	Safety-Related
SR	Surveillance Requirement
SRA	Senior Reactor Analyst
SSC	Structure, System, And Component
SW	Service Water
TDAFW	Turbine-Driven Auxiliary Feedwater
TS	Technical Specification
TSAC	Technical Specification Action Condition
TSC	Technical Support Center
TSO	Transmission System Operator
URI	Unresolved Item
USAR	Updated Safety Analysis Report

D. Heacock

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Sincerely,

**/RA/**

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

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Letter to D. Heacock from M. Kunowski dated November 9, 2011

SUBJECT: KEWAUNEE POWER STATION INTEGRATED INSPECTION REPORT  
05000305/2011003

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