

## Kewaunee

# 1Q/2013 Plant Inspection Findings

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## Initiating Events

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## Mitigating Systems

**Significance:** G Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Incorrect Ultimate Heat Sink Water Level**

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

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

Inspection Report# : [2013002](#) (*pdf*)

**Significance:** G Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Risk Assessment For Degraded Equipment**

The inspectors identified a finding of very low safety significance and associated non-cited violation of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Paragraph (a)(4), for the failure to properly assess the risk during scheduled testing of EDG B, on February 25. Specifically, the licensee failed to update the risk model after identifying that the manual bypass switch (MBS) for BRD 109, a risk significant inverter, was not functioning properly. On February 13, 2013, the licensee identified that the MBS for the output of

BRD 109 was broken, and BRD 109 was not powering BRD 115, a non interruptible bus, even though the “Normal” position was selected. The licensee did not include the alternate switch position in the risk model until prompted by the NRC inspectors on February 26. This resulted in the risk from the EDG B testing being incorrectly assessed as green, when it was actually yellow. The licensee entered the issue into the corrective action program (CAP) and assigned an apparent cause evaluation (ACE) to determine the causes for the organizational failures that occurred. The ACE was not yet complete at the end of this inspection period,

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

Inspection Report# : [2013002](#) (pdf)

**Significance:** G Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Provide Fire Detection and Fixed Fire Suppression in a III.G.3 Area**

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

The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Protection Against External Factors (Fire), and adversely affected the Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the lack of area wide detection and suppression systems could increase the response time and complicate fire fighting activities. That could result in a loss of both trains of safe shutdown equipment required for safe shutdown of the plant. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Attachment 0609.04, “Initial Characterization of Findings,” dated July 19, 2012. Using Table 3, “SDP Appendix Router,” the inspectors answered “Yes” to Question E.2.(2), “Does the finding involve fixed fire protection systems or the ability to confine a fire?” because the finding involved failure to provide fire detection and fixed suppression in the control room HVAC room. As a result, the finding was evaluated using IMC 0609, Appendix F, “Fire Protection Significance Determination Process,” dated February 28, 2005. A detailed risk evaluation was performed by a Region III Senior Reactor Analyst (SRA), which concluded that the finding was of very low risk significance (green). The inspectors did not identify a cross-cutting aspect associated with this finding, because this was an original design issue, and the finding was not representative of current performance.

Inspection Report# : [2013002](#) (pdf)

**Significance:** **W** Feb 14, 2013

Identified By: NRC

Item Type: FIN Finding

**Failure to Perform Announced Fire Drills in Accordance With Fire Protection Program Plan**

EA-12-266

The NRC staff identified a preliminary finding of low-to-moderate safety significance for the licensee's failure to implement and maintain in effect all provisions of the approved Fire Protection Program as described in the licensee's Fire Protection Program Plan, and as referenced in the Updated Safety Analysis Report. Specifically, from at least August 2009 through December 2011, the licensee failed to perform required quarterly announced fire drills in that the announced fire drills were instead conducted as training sessions. The licensee documented this issue in the corrective action program as condition report (CR) 0456865 and the licensee continued to perform causal evaluations to determine the cause of the issue and develop long-term corrective actions. In January 2012, as a result of an apparent cause evaluation (ACE), the licensee took remedial corrective actions to ensure fire brigade drills were performed as required. In addition, several other corrective actions were implemented as a result of the ACE conducted in 2012.

The finding was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because the finding was associated with the Mitigating Systems Cornerstone attribute of Protection Against External Factors for Fire and adversely affected the cornerstone objective of ensuring the reliability and capability of the fire brigade to respond to initiating events to prevent undesirable consequences. Specifically, the fire brigade's ability to rapidly suppress fires and protect structures, systems and components, important to safety from potential fires that could prevent safe shutdown. The NRC staff determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012. Because the finding involved the Fire Brigade, Table 3, "SDP Appendix Router," Section E.1, "Fire Protection," directed NRC staff to use IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012. Exhibit 2, "Mitigating Systems Screening Questions," Section D.1.a, "Fire Brigade," was checked yes because the finding involved the Fire Brigade training and qualification requirements. Because none of the other questions in Section D were checked, the NRC staff continued to evaluate the finding using IMC 0609, Appendix M, "The Significance Determination Process Using Qualitative Criteria," dated April 12, 2012. Based on the evaluation of the decision attributes contained in Appendix M, the NRC staff determined this finding to preliminarily have a low to moderate safety significance (White).

This finding has a cross-cutting aspect in the area of human performance, work practices, because the licensee failed to ensure supervisory and management oversight of work activities such that nuclear safety is supported (H.4(c)). This cross-cutting aspect coincides with the licensee's conclusions in an apparent cause evaluation that determined that there was inadequate management/oversight of the fire drill program within the licensee's organization, which directly contributed to the issue.

Inspection Report# : [2013007](#) (*pdf*)

Inspection Report# : [2013008](#) (*pdf*)

**Significance:** **N/A** Feb 14, 2013

Identified By: NRC

Item Type: VIO Violation

**Failure to Perform Announced Fire Drills In Accordance With Fire Protection Program Plan**

As discussed in the factual summary in Enclosure 1, the NRC staff identified an Apparent Violation (AV) that is being processed through the traditional enforcement process because it involves willfulness. The technical aspects of the AV were evaluated through the SDP as described in IMC 0612. The apparent violation involves License Condition 2.C. (3), "Fire Protection," which requires, in part, that the licensee shall implement and maintain in effect all provisions of the approved Fire Protection Program as described in the licensee's Fire Protection Program Plan, and as referenced in

the Updated Safety Analysis Report. Specifically, from at least August 2009 through December 2011, the licensee failed to perform the required quarterly announced fire drills in that the announced fire drills were instead conducted as training sessions. Furthermore, the licensee's staff also failed to comply with a procedural requirement to have five members of a brigade team present during an announced drill, conducted as a training session, on four occasions.

Inspection Report# : [2013007](#) (*pdf*)

Inspection Report# : [2013008](#) (*pdf*)

**Significance:** N/A Feb 14, 2013

Identified By: NRC

Item Type: VIO Violation

#### **Inaccurate and Incomplete Information Documented on Fire Drill Evaluation/Critique Forms**

In addition, and also as discussed in Enclosure 1, the NRC staff identified a second Apparent Violation (AV) of Title 10 of the Code of Federal Regulations (10 CFR) 50.9(a), "Completeness and Accuracy of Information," which requires, in part, that information required by license conditions to be maintained by the licensee to be complete and accurate in all material respects. This violation is being processed through traditional enforcement because it involves willfulness and it impacts the regulatory process. There were no technical aspects to this AV. Specifically, from at least August 2009 through December 2011, a member of the licensee's staff completed fire drill evaluation/ critique forms, a quality assurance record, inaccurately. This information was determined to be material to the NRC.

Inspection Report# : [2013007](#) (*pdf*)

Inspection Report# : [2013008](#) (*pdf*)

**Significance:**  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Emergency Diesel Generator Starting Air System Quality Classification Error**

The inspectors identified a finding of very low safety significance and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to assure that appropriate quality standards were specified and included in design documents, and that deviations from such standards were controlled. Specifically, during plant design change (DC) 10 011011, "EDG Ventilation Air Supply Modification (Capital)," the licensee failed to assign appropriate quality classifications to components that were relied upon to maintain a safety related (SR) pressure boundary. As a short term corrective action, the licensee closed an upstream SR valve to restore the SR pressure boundary. The licensee entered the issue into their corrective action program (CAP) and assigned an apparent cause evaluation (ACE) to identify and assess the cause of the incorrect quality classification.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of Design Control, and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee failed to assign the appropriate SR quality classification to components that were relied upon to maintain a SR pressure boundary. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012, and Appendix A, "The Significance Determination Process (SDP) for Findings At Power," Exhibit 2, "Mitigating Systems Screening Questions", dated June 19, 2012. The licensee confirmed that the emergency diesel generator (EDG) starting air system remained operable but non conforming; therefore, the inspectors answered "Yes" to Mitigating Systems Screening question number 1, and screened the finding as having 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 maintain interfaces with offsite organizations, and communicate, coordinate, and cooperate with each other during activities in which interdepartmental coordination is necessary to assure plant and human performance. Specifically, during the licensee's acceptance review of the offsite vendor's work, the licensee questioned the new component qualifications; however, follow-up coordination and communications between the offsite vendor preparer and the licensee reviewer were not adequate to resolve the

incorrect component classification. (H.3(b))

Inspection Report# : [2012005](#) (*pdf*)

**Significance:**  Nov 02, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Correct a Condition Adverse to Quality Associated with the Safety-related 125 Vdc Battery Service Test Procedures**

The inspectors identified a finding of very low safety significance and an associated Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to establish measures to assure that conditions adverse to quality were corrected. Specifically, the licensee failed to correct a previously identified finding concerning the safety-related 125 Volts direct current (Vdc) battery service test procedures, where the procedures failed to include the appropriate acceptance criteria for critical periods of the duty cycle, including the first minute. The licensee entered this finding into their Corrective Action Program as CR491149, "2012 CDBI Identified No Acceptance Criteria in the Battery Surveillance Procedure," dated October 10, 2012.

The performance deficiency was determined to be more than minor because the licensee could not be assured that loads supplied by the 125 Vdc batteries would have adequate voltage to operate during critical periods of the duty cycle. Since the finding did not represent an actual loss of safety function, the finding screened as having very low safety significance (Green). This finding has a cross-cutting aspect in the area of human performance, decision making because the licensee did not formally define the authority and roles for decisions affecting nuclear safety and as a result did not take the necessary steps to resolve an inadequate surveillance procedure in a timely manner. Specifically, the licensee delayed resolving the inadequate surveillance procedures until a major calculation revision was accomplished.

Inspection Report# : [2012009](#) (*pdf*)

**Significance:**  Nov 02, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Ensure Four CC System Manual Valves Were in the Correct Position as Required by ITS, SR 3.7.7.1**

The inspectors identified a finding of very low safety significance and an associated Non-Cited Violation (NCV) of Improved Technical Specifications (ITS), Surveillance Requirement (SR) 3.7.7.1 because the licensee failed to ensure four component cooling (CC) system manual valves in the flow path servicing the safety-related CC system pumps, that were not locked, sealed, or otherwise secured in position, were verified in the correct position (i.e., open) every 31 days. The licensee entered this finding into their Corrective Action Program as CR490316, "2012 CDBI CC Pump Recirc Valves (CC 21A, 22A, 23B, 24B) Are Not Sealed," dated October 4, 2012.

The performance deficiency was determined to be more than minor because it was similar to Inspection Manual Chapter (IMC) 0612, Appendix E, Example 3.c. The finding was considered more than minor because more than one valve was in the required position, but not locked, sealed or otherwise secured in the correct position (i.e., open). Since the finding did not represent an actual loss of safety function, 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, decision-making because the licensee did not use conservative assumptions in implementing ITS, SR 3.7.7.1. Specifically, the licensee failed to perform an effective review of the safety related consequences of their decision to not verify the valve's correct position every 31 days.

Inspection Report# : [2012009](#) (*pdf*)



**Significance:** G Nov 02, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Non-Conservative Voltage Calculations for Motor Operated Valves**

The inspectors identified a finding of very low safety significance and an associated Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to assure that the design basis was correctly translated into specifications and procedures. Specifically, the licensee failed to provide design control measures to account for motor control center (MCC) voltage dips in MOV calculations that occur when large ESF motors are started at the onset of an accident. The licensee entered this finding into their Corrective Action Program as CR494297, "2012 CDBI: Potential MOV Stalls Not Proven by Calc to Not Occur," dated November 1, 2012.

The performance deficiency was determined to be more than minor because the inspectors had reasonable doubt that adequate margin existed to ensure the MOVs required to start at the onset of an accident would have adequate voltage and/or torque. Upon further evaluation by the licensee, the inspectors determined the finding did not represent a loss of operability or functionality, therefore, the finding screened as having very low safety significance (Green). This finding has a cross-cutting aspect in the area of human performance, resources because the licensee did not provide complete, accurate, and up-to-date design documentation, including calculations and procedures to assure nuclear safety. Specifically, the licensee failed to ensure that personnel had adequate procedural guidance to account for MCC voltage dips in MOVs that occur when large ESF motors are started at the onset of an accident.

Inspection Report# : [2012009](#) (*pdf*)

**Significance:** G Nov 02, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Failed to Consider Multiple Failures in ES 1.3, "Transfer to Containment Sump Recirculation" as Required by ITS, Section 5.4.1b)**

The inspectors identified a finding of very low safety significance and an associated Non-Cited Violation (NCV) of Improved Technical Specification (ITS), Section 5.4.1b because Procedure EOP ES-1.3, "Transfer to Containment Sump Recirculation," Revision 36 did not establish the necessary actions as required. Specifically, the licensee failed to ensure Procedure EOP ES-1.3 contained the necessary actions for establishing containment sump recirculation for a large loss of coolant accident (LLOCA) with a concurrent failure of safety injection (SI) Pump A and the inability to establish containment sump recirculation using residual heat removal (RHR) Train B. The licensee entered this finding into their Corrective Action Program as CR491773, "2012 CDBI Identified Issue with EOP ES-1.3," dated October 15, 2012. In addition, the licensee initiated a procedure change to ES-1.3 to revise the procedure to allow transfer to containment sump recirculation without SI flow interruption to the RCS for a LLOCA with a failure of SI Pump A and with RHR Train B unable to be aligned for containment sump recirculation.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone's attribute of procedure quality and affected the cornerstone's objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to ensure the procedure for establishing containment sump recirculation for a LLOCA contained the necessary actions for potential equipment failures. Since the finding resulted in the potential for a loss of the containment sump recirculation function during a LLOCA for certain equipment failures, the inspectors determined a Detailed Risk Evaluation was required. Based on the Detailed Risk Evaluation, the Senior Reactor Analysts determined that the delta core damage frequency for the finding was 1.0E 10/yr and was of very low safety significance (Green). The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not representative of current performance.

Inspection Report# : [2012009](#) (*pdf*)

**Significance:** G Nov 02, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Ensure Correct Criterion Used for Time Critical Operator Actions to Prevent a Steam Generator Overfill**

The inspectors identified a finding of very low safety significance and an associated Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to ensure consistent criterion was used in OP KW ORT MISC 014, "Validation of Time Critical Operator Actions," Revision 2 (i.e., the Operations' procedure) to validate the time-critical operator actions for "Break Flow Termination." Specifically, the licensee failed to ensure the "Break Flow Termination" criterion (i.e., the time frame when the primary-to-secondary flow in the ruptured steam generator (SG) is required to be stopped) was consistent with the criterion contained in "CN-CRA-03-16, "Kewaunee Power Station Supplemental Steam Generator Tube Rupture Margin to Overfill Analysis," Revision 0 (i.e., the calculation). The licensee entered this finding into their Corrective Action Program as CR492485, "2012 CDBI TCA Validation Criteria Does Not Agree with Engineering Basis Document," dated October 19, 2012.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone's attribute of procedure quality and affected the cornerstone's objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, during the performance of the steam generator tube rupture (SGTR) design basis event scenario on the licensee's simulator, the inspectors noted the operators did not terminate the primary-to-secondary break flow within the time frame assumed in design calculation. Therefore, the inspectors concluded there was reasonable doubt that adequate margin existed to ensure SG overfill would have been prevented during an actual SGTR design basis event. The inspectors determined the finding could be evaluated using the Mitigating Systems Screening questions in Exhibit 2 of IMC 0609 and concluded the finding screened as having very low safety significance (Green). The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not representative of current performance

Inspection Report# : [2012009 \(pdf\)](#)

**Significance:** G Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Risk Assessment During Heavy Lift Over Service Water System**

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

The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of protection against external factors, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The licensee did not maintain a shutdown probabilistic risk analysis model, so an incremental core damage probability could not be estimated for the specific plant conditions. For this reason, the inspectors determined that IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," could not be used. The inspectors used IMC 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," dated April 12, 2012, which directs inspectors to perform a bounding analysis. The inspectors

conservatively assumed that EDG B was actually lost and used Appendix G, “Shutdown Operations Significance Determination Process,” Attachment 1, “Phase 1 Operational Checklists for Both PWRs [Pressurized Water Reactors] and BWRs [Boiling Water Reactors],” dated May 25, 2004, to determine the risk. Specifically, the inspectors selected Checklist 4, “PWR Refueling Operation,” and found, for the power availability function, the licensee met the checklist objective to comply with technical specifications because only one EDG was required to be operable, and EDG A remained operable and protected. Therefore, the inspectors determined that the finding was determined to have very low safety significance (Green). This finding has a cross-cutting aspect in the area of human performance, work control, because the licensee did not plan and coordinate work activities consistent with nuclear safety. Specifically, the licensee failed to incorporate risk insights and plant systems, structures, and components into their evaluation (H.3 (a)).

Inspection Report# : [2012004](#) (pdf)

**Significance:** G Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Degradation Evaluation Of Leaking Refueling Water Storage Tank**

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

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

Inspection Report# : [2012004](#) (pdf)

**Significance:** N/A Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Commercial Grade Dedication Leads to Premature Bearing Failure (Section 1R18)**

The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion VII, “Control of Purchased Material, Equipment, and Services,” because the licensee failed to adequately



dedicate a commercial-grade item for use in a safety-related (SR) application. Specifically, the licensee failed to properly dedicate two motors for use in SR fan coil units (FCUs). The finding was entered into the licensee's CAP as CR 487269. The licensee assigned an ACE to determine the organizational failures that led to the violation.

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

Inspection Report# : [2012004](#) (*pdf*)

**Significance:**  Sep 28, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Battery Rack Configuration Not In Accordance With Design Basis**

The inspectors identified a finding of very low safety significance (Green) and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," because the licensee failed to ensure that the configuration of the safeguards battery racks was in accordance with the design basis Seismic Category I qualification. Specifically, the Seismic Category I qualification specified that the battery rack end rails be snug against the battery. The inspectors found gaps greater than 1/8 inch and up to approximately 3/8 inch. The vendor instructions directed that the rails should be within 1/8 inch. The licensee entered this into the Corrective Action Program as CR489958 and CR487875 and took short term corrective actions to adjust the battery rack end gaps to within 1/8 inch, and assigned an apparent cause evaluation, which was not complete at the end of the inspection period.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of protection against external factors and affected the cornerstone objective to ensure the availability, reliability, and Corrective Action Programability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee failed to ensure that the batteries were constrained from sliding along the rack to avoid over stressing the battery terminals, battery casing, or rack ends. The inspectors determined the finding could be evaluated using the Significance Determination Process in accordance with Inspection Manual Chapter 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012, and Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19, 2012, Exhibit 2, Mitigating Systems Screening Questions. The inspectors answered "Yes" to question 1, and screened the finding as having very low safety significance (Green). The inspectors did not assign a cross-cutting aspect because the installation of the battery racks occurred in 2008, and was not representative of current performance.

Inspection Report# : [2012008](#) (*pdf*)

**Significance:** G Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure To Utilize Work Order For Temporary Weld Repair On ASME Code, Class 2 Piping**

A finding of very low safety significance and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed for the failure to accomplish Temporary Modification (TMOD) 2012-11 in accordance with Work Order (WO) KW100894696 and the associated weld data sheet and map. Specifically, licensee personnel failed to utilize the WO instructions, weld data sheet and weld map when welding a temporary NRC-approved clamp on American Society of Mechanical Engineers (ASME) Code Class 2 residual heat removal (RHR) piping. The failure to use the required documentation to perform the work resulted in the worker creating a second through wall leak on the ASME Code, Class 2 RHR piping upstream of valve RHR 600. The licensee entered the issue into its corrective action program (CAP) as condition report (CR) 472915 and permanently corrected both through wall leaks on the RHR system piping following the approval of a second proposed alternative, without incident on May 5, 2012. At the end of the inspection period, the licensee continued to perform an apparent cause evaluation (ACE) to determine the causes for the organizational failures that occurred.

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 human error (pre-event) and adversely affected the cornerstone objective to ensure the reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The inspectors determined that the finding could be evaluated in accordance with IMC 0609, Appendix G, "Shutdown Operations SDP," dated February 28, 2005. The inspectors used Checklist 1, "PWR Hot Shutdown Operation: Time to Core Boiling <2 Hours," contained in Attachment 1 and determined that the finding affected core heat removal guidelines I.B(1), "Procedures," and I.C(2), "Equipment." The inspectors screened the finding as very low safety significance (Green) because it did not degrade the licensee's ability to establish an alternate core cooling path if decay heat removal could not be re established and, therefore, did not require a phase 2 or phase 3 analysis. This finding has a cross-cutting aspect in the area of human performance, resources, because the licensee did not ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety was supported. Specifically, the inspectors identified that the pre-job brief conducted by supervision and management for this work did not include a review of the WO, weld sheet, or weld map and did not convey accurate information regarding the significance of the activity, the type of weld to be performed and the system conditions where the weld was performed. (Section 1R18)

Inspection Report# : [2012003 \(pdf\)](#)

**Significance:** G Jun 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure To Provide Adequate Suppression In Cable Spreading Area**

The inspectors identified a finding of very low safety significance (Green) and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix R, Section III.G.3, for the licensee's failure to provide adequate fire suppression coverage for fire zone AX-32. Specifically, the licensee failed to provide required fire suppression coverage for safe shutdown functions of source range monitoring, isolation of a steam generator (SG) blowdown line, and pressurizer level instrumentation in the cable spreading area. The licensee entered the issue into the CAP, designated manual backup from hose stations, and implemented an hourly fire watch for the radiation protection office (RP) in fire zone AX-32.

The inspectors determined that the finding was more than minor because the failure to provide suppression for redundant trains of safe shutdown equipment increased the likelihood that alternative shutdown methods would have to be used in the event of a fire. The finding was of very low safety significance based on a Phase 3 significance

determination analysis. The finding has a cross-cutting aspect in the area of problem identification, corrective action program, because the licensee did not take appropriate corrective actions to address the inadequate suppression system in fire zone AX 32. (Section 40A2.4)

Inspection Report# : [2012003](#) (*pdf*)

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## Barrier Integrity

**Significance:**  Dec 31, 2012

Identified By: NRC

Item Type: FIN Finding

### **Removal of Refueling Procedure Requirement for Spent Fuel Pool cooling Without Prior NRC Approval**

Inspection Report# : [2012005](#) (*pdf*)

**Significance:**  Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Loose Cable Clamp Caused Loaded Spent Fuel Upender To Unintentionally Lower**

A finding of very low safety significance (Green) and associated non-cited violation (NCV) of Technical Specification (TS) 5.4.1, "Procedures," was self-revealed because procedure MCM-FH-001, "Repair of the Fuel Transfer System," was inadequate. Specifically, the procedure did not contain torque specifications for tightening the upender frame cable clamps and, on April 23, the cable for the spent fuel pool (SFP) upender slipped through the cable clamps and allowed the upender containing a fuel assembly to descend approximately 12 inches. The licensee confirmed that no damage occurred to the fuel assembly and placed procedure MCM-FH-001 on administrative hold to prevent its use until it could be updated with the appropriate torque specifications. At the end of this inspection period, the licensee was performing an ACE to determine the causes of the event, and develop corrective actions.

The finding was determined to be more than minor because, if left uncorrected, the finding had the potential to lead to a more significant safety concern. Specifically, the upender containing the fuel assembly could have fallen from the near full vertical position to the horizontal position. The inspectors evaluated the finding by applying the SFP questions in the Fuel Barrier column of Table 4a, located in IMC 0609, Attachment 4, dated January 10, 2008. The inspectors answered "No" to all three questions and determined that the finding was of very low safety significance (Green). The finding has a cross-cutting aspect in the areas of problem identification and resolution, operating experience (OE), because the licensee failed to communicate to affected internal stakeholders in a timely manner relevant external OE. Specifically, the licensee failed to discuss available and relevant OE related to the failure to appropriately torque cable clamps on an SFP upender. (Section 1R20)

Inspection Report# : [2012003](#) (*pdf*)

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## Emergency Preparedness

**Significance:**  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**EAL Table Utilizes 1955 IGLD for Emergency Event Classification**

The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR 50.54(q), "Emergency Plans," for failing to follow and maintain the effectiveness of an emergency plan that met the requirements of emergency planning standard 10 CFR 50.47(b)(4). Specifically, the licensee failed to maintain emergency action levels (EALs), EAL bases, and abnormal operating procedures (AOPs) that ensured a declaration was made when Lake Michigan Levels reached low levels. Plant elevations for the Kewaunee Power Station (KPS) were based on Lake Michigan Levels in reference to the 1955 International Great Lakes Datum (IGLD). While the EALs, EAL bases, and AOPs listed the correct lake elevation in reference to the 1955 IGLD, all current alternate source information utilized by the KPS staff to declare an EAL was based on the 1985 IGLD Lake Michigan Level, a difference of 0.7 feet higher than the 1955 IGLD. Neither the EAL, EAL bases, nor AOP directed KPS staff to subtract 0.7 feet from the alternate source information used to declare an EAL; therefore, KPS staff would not have classified an emergency condition. The licensee entered this performance deficiency into their CAP as CR500145, and put in place interim corrective actions to ensure the correct value was obtained.

The inspectors determined that from August 2001, to December 14, 2012, the licensee's failure to ensure that EALs HU1 and HA1 were properly declared during an actual event was a performance deficiency. This finding was determined to be more than minor because it was associated with the emergency response organization (ERO) performance attribute of the Emergency Preparedness Cornerstone, and adversely affected the cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. This finding was evaluated in accordance with IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," using Figure 5.4-1, "Significance Determination for Ineffective EALs and Overclassification," dated February 24, 2012, and resulted in a Green finding as an Unusual Event and Alert event would not have been declared. The inspectors concluded there was no cross-cutting aspect with this finding because the failure occurred in 2001, and was not representative of current performance.

Inspection Report# : [2012005](#) (*pdf*)

**Significance:**  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**CO2 Detection instrumentation Unavailable For Emergency Event Classification**

The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR 50.54(q) "Emergency Plans," for failing to follow and maintain an emergency plan that met the requirements of emergency planning standard 10 CFR 50.47(b)(4). Specifically, the licensee failed to maintain onsite atmospheric monitoring equipment capable of measuring carbon dioxide concentrations Immediately Dangerous to Life and Health (IDLH). The IDLH concentrations within specified plant areas are utilized to classify emergency conditions per the KPS Emergency Plan. The licensee entered this performance deficiency into their CAP as CR481430.

The inspectors determined that the issue was a performance deficiency as it was within the licensee's ability to foresee and correct. This finding was determined to be more than minor because it was associated with the ERO performance attribute of the Emergency Preparedness Cornerstone, and adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. This finding was evaluated in accordance with IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," using Figure 5.4-1, "Significance Determination for Ineffective EALs and Overclassification", and resulted in a Green finding as an Alert event would not have been declared. A cross-cutting aspect was identified in the area of human performance, decision making. The licensee's risk significant decision concerning this EAL related equipment change did not use a systematic process to ensure that safety was maintained. A lack of formally defined authority and roles for decisions and communications precluded the appropriate interdisciplinary input and review of this equipment change. (H.1(a))

Inspection Report# : [2012005](#) (*pdf*)

**Significance:** **W** Dec 17, 2012

Identified By: NRC

Item Type: VIO Violation

### **Emergency Preparedness Degraded Emergency Action Level Scheme**

A finding having a significance of White with a violation of 10 CFR 50.54(q)(2) associated with risk-significant planning standard 10 CFR 50.47(b)(4) was identified by the NRC for the licensee's failure to follow and maintain the effectiveness of its emergency plan. Specifically, from February 28, 2011, until March 30, 2011, KPS's unidentified loss of System Particulate, Iodine, and Noble Gas (SPING) indication on the Plant Process Computer System (PPCS) and Radserv stations precluded action to restore the capability to classify Emergency Action Levels (EALs) RG1.1, General Emergency, and RS1.1, Site Area Emergency. The NRC believes that the KPS staff had the opportunity to identify this condition at the time of the failures. On March 30, 2011, the system engineer identified the failure during a system walk down in CR 419976, and the server and computer point were subsequently restored to service. This finding was determined to be more than minor because it was associated with the Emergency Response Organization performance attribute of the Reactor Safety – Emergency Preparedness Cornerstone. This finding adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. This finding was evaluated in accordance with IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process." As Appendix B was revised in February 2012, the finding was evaluated using both the version in effect at the time of the violation and the current version. Under both versions, other than changing the names of the involved Section and Sheet/Attachment, there was no effect on the final outcome. The issue was determined to be a Failure to Comply. The risk was evaluated using Section 4.0 of IMC 0609 and Sheet 1, "Failure to Comply," in the previous revision, and Section 5.0 and Attachment 2, "Failure to Comply Significance Logic," in the current revision, along with their associated narratives. With EALs, RG1.1 and RS1.1, ineffective, the inspectors considered mitigating factors, such as alternative EALs, within the same initiating condition and determined the alternative EALs were such that an accurate declaration of the initiating condition would have been made. Therefore, the inspectors determined that no loss of Risk-Significant Planning Standard (RSPS) function existed. However, the alternative EAL classifications would have been delayed, and, therefore, the event would have been declared in a degraded manner. The finding was preliminarily determined to be of low to moderate safety significance (White) in that ineffective EALs, RG1.1, and RS1.1 existed, degraded an RSPS function, and affected the ability of the licensee to properly classify events involving a radiological release.

Inspection Report# : [2012503](#) (*pdf*)

Inspection Report# : [2013504](#) (*pdf*)

## **Occupational Radiation Safety**

**Significance:** **G** Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Effective Dose Equivalent Determination (Section 2RS4)**

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

The inspectors reviewed the guidance in IMC 0612, and determined that the finding was more than minor because it



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

Inspection Report# : [2012004](#) (pdf)

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## Public Radiation Safety

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## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## Miscellaneous

**Significance:** N/A Jun 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Incorrect Leakage Requirement Submitted For A Proposed Temporary Pipe Clamp**

A Severity Level (SL) IV NCV of 10 CFR Part 50.9(a), "Completeness and Accuracy of Information," was identified by the inspectors for the failure of the licensee to provide complete and accurate information in all material respects to the Commission in licensee Request RR 2 3, dated April 29, 2012 (ADAMS Accession No. ML12122A138). As part of a license amendment for a proposed temporary deviation from the requirements of 10 CFR 50.55a and ASME Code, Section XI, the licensee incorrectly stated the allowable leakage from the temporary clamp in transition from Mode 5 to 4 was governed by TS 5.5.2, "Primary Coolant Sources Outside Containment," and proposed an allowable leakage value of 5.5 gallons per hour (gph). After licensee Request No. RR 2 3 was verbally approved by the NRC on April 30, 2012, the inspectors and NRC staff determined that the governing leakage requirement was no leakage in Mode 4 for the clamp as required by TS 3.4.13, "Reactor Coolant System Operational Leakage."

The performance deficiency was determined to be more than minor in accordance with the NRC Enforcement Policy and Enforcement Manual because the NRC identified the performance deficiency, the NRC relied on the information provided in a licensing decision, and the misinformation was identified after the NRC relied on the information in its

licensing decision. Because violations of 10 CFR 50.9 are considered to be violations that potentially impact the regulatory process, they are dispositioned using the traditional enforcement process instead of the ROP SDP. Because the performance deficiency, specifically a failure to submit complete and accurate information, was not an ROP finding per IMC 0612, Appendix B, "Issue Screening," a cross-cutting aspect was not assigned to this violation. The severity of the violation was mitigated because of the facts surrounding the licensee's implementation of Request No. RR-2 3. (Section 4OA3.1)

Inspection Report# : [2012003](#) (*pdf*)

Last modified : June 04, 2013