Byron 2
4Q/2011 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Dec 31, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO IDENTIFY VOIDED SECTIONS OF AF PIPING
The inspectors identified a finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” when licensee personnel failed to identify non-conforming conditions associated with voided piping within the Unit 1 and Unit 2 safety-related diesel driven auxiliary feedwater (AF) systems (i.e., between the AF 006B and 017B valves.) These sections of piping had been historically voided until they were recently re-design to be filled and maintained filled with water to address a NRC identified 10 CFR Part 50, Appendix B, Criterion III, “Design Control” Green non-cited violation (NCV). The licensee entered this issue into their corrective action program as IR 1296819, IR 1292337, and IR 1295760. Corrective actions include instituting a Operations standing order, replacement of the Unit 1 AF drain valve, and a capping the Unit 2 AF drain valve.

The inspectors determined that the failure to identify the voided sections of AF piping prior to and following the inspector’s observations and interactions with licensee staff and management was a performance deficiency. The inspectors determined that the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Attachment 0609.04, “Phase 1 Initial Screening and Characterization of findings,” Table 4a for the Mitigation Systems cornerstone. Specifically, the inspectors answered yes to question 1; design or qualification deficiency confirmed not to result in a loss of operability or functionality. This conclusion was reached after conservatively assuming that both sections of piping were completely voided and after reviewing tests performed by the licensee in response to the previously documented design control violation. This finding was associated with a cross-cutting aspect in the Human Performance, Resources component H.2(c). Specifically, the licensee did not have adequate procedures to ensure that these sections of piping were maintained filled with water. (Section 1R15)

Inspection Report# : 2011005 *(pdf)*

Significance: G Dec 31, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
HIGH ENERGY LINE BREAK OPEERABILITY EVALUATION
The inspectors identified that the licensee did not meet multiple Operability Determination Process standards after identifying a non-conservative condition related to assumed closure times for hazard barrier dampers separating the turbine building from various safety-related rooms within the Auxiliary Building. The wall between these two building that house the dampers are commonly referred to as the “L-wall.” The issues raised by the inspectors during their review of the Operability Evaluation (Revision 1 and Revision 2) resulted in the station: re-evaluating the non-conservative condition against aspects of the current licensing basis not previously considered, including applicable affected extent of condition room areas, and evaluating multiple common mode failures that the station had not previously considered under this review. In addition to the issues with the Operability Evaluation, the inspectors identified that applicable station calculations of record did not assume the correct licensing basis single failure. The licensee entered these issues into the their Corrective Action Program as IR 1184258, IR 1237133, IR 1238611, IR 1240295, IR 1244251, and IR 1276895. Corrective actions included two revisions of the Operability Evaluation, an

assignment to reconstitute the applicable design basis calculation records, and plans to re-design “L-wall” HELB ventilation barriers to restore compliance.
This performance deficiency was determined to be more than minor because it was similar to the “not minor if” aspect of NRC Manual Chapter 0612, Appendix E, “Example of Minor Issues” example “3j” and dissimilar from the “minor because” aspect of this example to reasonably conclude that the finding was associated with the Mitigating Systems Design Control attribute 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 determined that the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Attachment 0609.04, “Phase 1 – Initial Screening and Characterization of Findings,” Table 4a, for the Mitigating Systems Cornerstone. The inspectors answered “No” to all of the Mitigating Systems Cornerstone questions in Table 4a of IMC 0609.04, and, as a result, the finding screened as having very low safety significance (Green). This finding has a cross-cutting aspect in the Corrective Action Program component of the Problem Identification and Resolution cross-cutting area [P.1(c)] since the licensee failed to adequately evaluate a non-conforming condition associated with hazard barrier closure times. As a result, the licensee would not have implemented effective corrective actions to resolve the non-conformance. (Section 1R15)

Inspection Report# : 2011005 *(pdf)*

Significance: G Sep 30, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO IDENTIFY ELEVATED RISK STATUS
The inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR 50.65, “Requirements for Monitoring the Effectiveness of Maintenance at Nuclear power Plants,” when licensee personnel failed to accurately assess plant risk during maintenance activities. The inspectors determined that the licensee failed to identify and take actions required to address an increase in risk when the Unit 2 Component Cooling Water (CC) heat exchanger was removed from service. Specifically, for 0.6 days the Unit 2 CC heat exchanger was removed from service and the plant remained in a Green risk status although the licensee's maintenance risk management procedure prescribed that a Yellow risk status be entered and that certain Risk Management Actions (RMAs) be taken. Upon identification and notification by the NRC inspectors, licensee personnel revised the plant risk status from Green to Yellow and took the appropriate RMAs. The issue was entered into the licensee’s corrective action program as Issue Report (IR) 1262639.

The performance deficiency was determined to be more than minor because it was associated with the Human Performance attribute of the Mitigating Systems Cornerstone and 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 performance deficiency was also determined to be more than minor because the finding was similar to IMC 0609, Appendix E, Example 7.e, and resulted in actual plant risk being in a higher risk category established by the licensee than had been previously declared. The Byron Standardized Plant Analysis Risk (SPAR) model Version 8.18 and SAPHIRE model Version 8.0.7.17 was used to calculate an Incremental Core Damage Probability Deficit (ICDPD) for the condition of the Unit 2 CC heat exchanger being unavailable for 0.6 days. The result was an ICDPD of less than 5E-7. Based on the analysis, the finding was determined to be of very low safety significance (Green). This finding had a cross-cutting aspect in the Work Control component of the Human Performance cross-cutting area [H.3.(a)] because the licensee failed to appropriately incorporate risk insights when the Unit 2 CC heat exchanger was removed from service. (Section 1R13)
Inspection Report# : 2011004 *(pdf)*

Significance: SL-IV Sep 30, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
MODIFICATION OF THE AUXILIARY FEEDWATER SYSTEM WITHOUT PRIOR NRC APPROVAL
The inspectors identified a Severity Level IV NCV of 10 CFR 50.59,“Changes, Tests, and Experiments,” when licensee personnel failed to obtain a license amendment prior to implementing a proposed change to the plant that resulted in a more than minimal increase in the likelihood of occurrence of a malfunction of a structure, system or component important to safety previously evaluated in the Updated Final Safety Analysis Report (UFSAR). Specifically, the licensee performed a modification to the facility that permitted the Unit 1 and Unit 2 “A” Auxiliary

Feedwater (AF) trains to be shared between units and the 10 CFR 50.59 evaluation that was performed reached the erroneous conclusion that prior NRC approval was not required. The licensee issued a Standing Order to modify the Emergency Operating Procedure which governed the use of the modification and planned to submit a License Amendment Request (LAR) to the NRC for this design change. The issue was entered into the licensee's corrective action program as IR 1257908.

The violation was determined to be more than minor because the inspectors determined that the change required prior NRC approval. Violations of 10 CFR 50.59 are dispositioned using the traditional enforcement process because they are considered to be violations that potentially impede or impact the regulatory process. In accordance with Section 6.1.d.2 of the NRC Enforcement Policy, this violation is categorized as Severity Level IV because the resulting changes were evaluated by the SDP as having very low safety significance. (Section 4OA2.3)

The associated performance deficiency is tracked as item 2011-004-03.
Inspection Report# : 2011004 *(pdf)*

Significance: G Sep 30, 2011
Identified By: NRC
Item Type: FIN Finding
MODIFICATION OF THE AUXILIARY FEEDWATER SYSTEM WITHOUT PRIOR NRC APPROVAL
The inspectors identified a finding of very low safety significance (Green) when licensee personnel failed to obtain a license amendment prior to implementing a proposed change to the plant that resulted in a more than minimal increase in the likelihood of occurrence of a malfunction of a structure, system or component important to safety previously evaluated in the Updated Final Safety Analysis Report (UFSAR). Specifically, the licensee performed a modification to the facility that permitted the Unit 1 and Unit 2 "A" Auxiliary Feedwater (AF) trains to be shared between units and the 10 CFR 50.59 evaluation that was performed reached the erroneous conclusion that prior NRC approval was not required. The licensee issued a Standing Order to modify the Emergency Operating Procedure which governed the use of the modification and planned to submit a License Amendment Request (LAR) to the NRC for this design change. The issue was entered into the licensee's corrective action program as IR 1257908.

The finding was determined to be more than minor because the inspectors determined that the change required prior NRC approval. The underlying technical issue evaluated through the SDP 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. Specifically, the inspectors answered "Yes" to Question 1 of the Mitigating Systems Cornerstone column of the Phase 1 worksheet because the inspectors concluded that this was a change confirmed not to result in the loss of operability. Based upon this Phase 1 screening, the inspectors concluded that the issue was of very low safety significance (Green). This finding had a cross-cutting aspect in the Operating Experience component of the Problem Identification and Resolution (PI&R) cross-cutting area [P.2.(b)] because the licensee failed to make adequate use of known industry operating experience in the screening of a modification prior to installation. (Section 4OA2.3)

The associated traditional enforcement item is tracked as item 2011-004-02.
Inspection Report# : 2011004 *(pdf)*

Significance: G Sep 30, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
DESIGN OF AUXILIARY FEEDWATER SYSTEM INCLUDED VOIDS IN SAFETY RELATED ALTERNATE SUCTION FLOWPATHS
The inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," when licensee personnel failed to properly analyze the configuration of the Essential Service Water (SX) connections to the AF pumps. Specifically, a section of the piping was intentionally maintained empty (voided), but was not previously analyzed. This condition existed since initial plant construction. The issue was entered into the licensee's corrective action program as IR 1172938.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems

Cornerstone attribute of Design Control and 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 unverified configuration might have rendered each of the AF pumps 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. Specifically, the inspectors answered “Yes” to Question 1 of the Mitigating Systems Cornerstone column of the Phase 1 worksheet because the inspectors concluded that this finding was confirmed not to result in a loss of operability. This conclusion was reached after reviewing tests performed by the licensee. The tests demonstrated there was reasonable assurance that the AF system would perform its safety function in the installed configuration. Additionally, the licensee filled the voided sections of pipe, restoring compliance with the licensed design basis. The inspectors did not identify a cross-cutting aspect associated with this finding because it was not indicative of current licensee performance. (Section 4OA5)
Inspection Report# : 2011004 *(pdf)*

Significance: G Sep 02, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
UNTIMELY CORRECTIVE ACTION FOR PREVIOUSLY IDENTIFIED NON-CITED VIOLATIONS (sECTION 40a2.1.B.3.I)
The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action,” when licensee personnel failed to implement timely corrective actions to address two previously issued NCVs. The two NCVs were related to the lack of design analysis documentation associated with the Recycle Holdup Tank (RHUT); and tornado missile and seismic protection for the Diesel Oil Storage Tank (DOST) vent lines. Specifically, the licensee had not completed required design analyses for these issues at the conclusion of this inspection, although the violation associated with the RHUT was initially identified by NRC inspectors in June 2007 and the violation associated with the DOST vent lines was initially identified by NRC inspectors in February 2009. The licensee entered this issue into their CAP as IR 1269928 and planned to complete the required analyses by April 2012.

This finding was of more than minor significance because the issue was associated with the Mitigating Systems Cornerstone attribute of Equipment Performance 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 determined the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Attachment 4, “Phase I Initial Screening and Characterization of Findings,” Table 4a for the Mitigating Systems Cornerstone and answered “No” to all the Mitigating Systems Cornerstone questions. Specifically, the issue did not result in the actual loss of the operability or functionality of a safety system. Therefore, the finding screened as having very low safety significance (Green). This finding had a cross-cutting aspect in the Resources component of the Human Performance cross-cutting area (H.2(a)) because the licensee failed to maintain long-term plant safety through minimization of long-standing equipment issues. (Section 4OA2.1.b.3.i)
Inspection Report# : 2011008 *(pdf)*

Significance: G Sep 02, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO INITIATE ISSUE REPORTS
The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” when licensee personnel failed to initiate IRs during the review of OPEX in accordance with licensee procedures to ensure that immediate actions, operability determinations, and reportability concerns were addressed by shift management within 24 hours. The licensee entered this issue into the CAP as IR 1257548 and completed the required shift management review.

The finding was of more than minor significance because, if left uncorrected, the issue would have the potential to lead to a more significant safety concern. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, “Significance Determination Process,” Attachment 4, “Phase I Initial Screening and

Characterization of Findings," Table 4a for the Mitigating Systems Cornerstone and answered "No" to all the Mitigating Systems Cornerstone questions. Specifically, the issue did not result in the actual loss of the operability or functionality of a safety system. Therefore, the finding screened as having very low safety significance (Green). This finding had a cross-cutting aspect in the Operating Experience (OPEX) component of the Problem Identification and Resolution (PI&R) cross-cutting area (P.2(a)) because the licensee's procedures and guidance for OPEX did not ensure the systematic collection, evaluation, and communication to affected internal stakeholders, in a timely manner, of relevant internal and external OPEX. (Section 4OA2.2.c)
Inspection Report# : 2011008 *(pdf)*

Significance: G Aug 26, 2011
Identified By: NRC
Item Type: FIN Finding
Inadequate Extent of Cause for 2A EDG Lube Oil Leak
The inspector identified a finding of very low safety significance when licensee personnel failed to perform an adequate extent of cause review in the root cause evaluation for the 2A EDG lube oil cooler leak. Specifically, the root cause evaluation identified that the root cause for the White finding was the absence of a formal, structured process to ensure that EPRI documents were reviewed to capture good work practices. However, the extent of cause review performed by the licensee was narrow in scope and did not include other potentially vulnerable programs other than that which affected the EDG lube oil cooler (i.e. the leakage reduction series publications). The licensee entered this issue into their corrective action program in an effort to define an appropriate scope for a supplemental extent of cause evaluation effort.

The inspector concluded the finding was more than minor because if left uncorrected it could become a more significant safety concern. Specifically, the licensee's stated root cause of not having a formal process in place to incorporate EPRI documents from the Sealing Technology and Plant Leakage Reduction Series, which led to an inoperable EDG, could also impact other programs or processes. However, the potential impact of the identified root cause on other programs or processes were not reviewed as part of the licensee's extent of cause review effort. The inspector determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Phase I Initial Screening and Characterization of Findings," Table 4a for the Mitigating Systems Cornerstone and answered "No" to the Mitigating Systems Cornerstone questions. Therefore, the finding screened as having very low safety significance (Green). The finding had an associated cross-cutting aspect in the Self and Independent Assessments component of the Problem Identification and Resolution cross-cutting area, because the licensee's assessment on the readiness for the NRC Supplemental Inspection failed to recognize the weakness in the extent of cause discussion (P.3(a)).
Inspection Report# : 2011016 *(pdf)*

Significance: G Jun 30, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO ENSURE THAT THE DESIGN OF THE AF SUCTION PIPING WAS ADEQUATE TO PREVENT AIR ENTRAINMENT FOLLOWING A SEISMIC OR TORNADO EVENT
The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," when licensee personnel failed to analyze whether the design of the auxiliary feedwater system ensured that air entrained into the system following a postulated seismic or tornado event did not prevent the system from performing its safety function. Specifically, licensee personnel failed to evaluate the failure of non-seismically qualified condensate storage tank suction piping during an earthquake or tornado that would cause the operating auxiliary feedwater pumps to draw air from the break location, potentially air-binding the pumps. The licensee entered this issue into their corrective action program to determine the required changes to the design of the system and performed an operability evaluation.

The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Protection Against External Events and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as having very low safety significance because it was a design deficiency confirmed not to result in a loss of operability or functionality. The inspectors determined that there was no cross-cutting aspect associated with this

finding because it was not confirmed to reflect current performance due to the age of the performance deficiency.
Inspection Report# : 2011003 *(pdf)*

Significance: G Jun 16, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Specify and Perform Required Independent Quality Verification Hold Point Inspections.
The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion X, "Inspection," for the failure to ensure that independent quality verification (QV) inspection hold points (HPs) were specified in work orders (WOs) used during Raychem splicing activities on a safety-related instrumentation cable, in the containment. Specifically, during replacement of the failed RCS Loop 1B Wide-Range, Hot-Leg (resistance temperature detector) RTD 1TE-RC023A in 2006 and in 2008, the licensee used electrical Raychem splices to connect the RTD leads to its cable without including the required QV inspection HPs in the associated WO instructions. Consequently, the QV independent inspections were not performed as required by Exelon corporate Nuclear Oversight (NO) and Maintenance procedures and by the Quality Assurance Topical Report (QATR). Subsequently, the licensee initiated corrective actions to rework the Raychem splice at the next window of opportunity and to communicate and reinforce the importance of inclusion of QV HP inspections, when required. This issue was entered into the licensee's corrective action program (CAP) under Issue Reports (IRs) 01226961, 01214766, 01217502 and 01218406.

The failure to ensure that independent QV HP inspections were included in WO instructions as required by Exelon Corporate procedures and the QATR was a performance deficiency. This performance deficiency was more than minor because, if left uncorrected, it would lead to a more significant safety concern in that the failure to independently verify quality attributes in safety-related equipment could involve an adverse impact to plant equipment. The inspectors concluded that this finding was associated with the Mitigating Systems Cornerstone. This performance deficiency was determined to have very low safety significance in Phase I of the SDP, since it was confirmed to involve a lack of required QV HPs for this Raychem splicing activity that did not result in a loss of operability or functionality. The inspectors determined that the underlying finding had a cross-cutting aspect in the area of Human Performance, Decision Making, because the licensee did not have an effective systematic process for obtaining interdisciplinary reviews of proposed maintenance work instructions to determine whether independent QV HP inspections were appropriately specified and implemented to assure plant safety. [H.1(a)] (Section 1R17.2.b)
Inspection Report# : 2011009 *(pdf)*

Significance: G Jun 16, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Follow Procedure Requirements for Temporary Scaffolds that Remain in Place for Over 90 Days.
The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," related to inadequate control of installed temporary scaffolds. Specifically, licensee's procedure for the installation, modification, and removal of scaffolds was not followed, on a routine basis, for temporary scaffolds that remained in the plant for greater than 90 days. This could impact the operability or availability of plant system. The licensee entered this issue into the CAP as IR 01212656. Corrective actions for this issue included an investigation as to why procedure adherence issues with regard to scaffolds continue to occur and an extent of condition review of similar plant programs.

The inspectors determined that this issue was more than minor in accordance with IMC 0612, Appendix E, "Examples of Minor Issues." Specifically, the inspectors concluded that this issue was similar to the more than minor criteria established in Example 4.a, "Insignificant Procedural Errors," since the licensee failed to perform the required engineering evaluation for the temporary installed scaffolding that remained in the plant for more than 90 days. Therefore, this performance deficiency also impacted the Mitigating Systems Cornerstone objective of protection against external events (seismic events). The finding was of very low safety significance because there was not a confirmed loss of operability of any mitigating system component. The inspectors determined that the underlying finding had a cross-cutting aspect in the area of Human Performance, Decision-Making, because the licensee did not make the appropriate safety or risk significant decisions by failing to utilize the systematic scaffolding construction process to ensure adequate quality and, therefore, adequate safety was maintained when scaffolds remained installed

for greater than 90 days. [H.1(a)]. (Section 4OA2.b.(1))
Inspection Report# : 2011009 *(pdf)*

Significance: G Jun 16, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
EDG Usable Fuel Calculations Failed to Consider Appropriate EDG Frequency Variations.
The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to correctly translate applicable design basis (calculations) into specifications. Specifically, the licensee failed to take into account fuel oil consumption at an increased frequency of 61.2 Hz in their EDG loading calculations which resulted in non-conservative Technical Specifications. The licensee entered this finding into their corrective action program as IR 01226844 and implemented actions to evaluate incorporation of the EDG frequency administrative limits into applicable site operating procedures to ensure an adequate supply of fuel was available.

The inspectors determined that this finding was more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of design control and 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 failed to account for the increased fuel oil consumption resulting from operation at a higher EDG frequency variation of 61.2 Hz as allowed by TS 3.8.1 and room temperature of up to 120°F in their EDG loading calculations. Therefore, the licensee did not ensure that the minimum fuel oil level in the storage tanks, as required per TS 3.8.3, was adequate to support the EDGs' 7-day mission time. This finding had a cross-cutting aspect in the area of Problem Identification and Resolution Corrective Action Program because the licensee did not thoroughly evaluate the EDG fuel oil consumption when considering EDG frequency variation. Specifically, the licensee failed to translate applicable design bases into specifications, which resulted in non-conservative TS. [P.1(c)] (Section 4OA2.b.(2))
Inspection Report# : 2011009 *(pdf)*

Significance: G May 04, 2011
Identified By: NRC
Item Type: FIN Finding
Failure to Adequately Document and Justify Continued Operability of the Auxiliary Feedwater System.
A finding of very low safety significance was identified at the Braidwood and Byron Stations by the inspectors when licensee personnel failed to adequately document and justify continued operability of the auxiliary feedwater (AF) system. Specifically, licensee evaluations of known voids in the AF alternate source suction piping did not provide an adequate technical basis to support operability of the AF pumps during a suction swap-over scenario. Subsequently, the licensee filled the voids and a Root Cause Evaluation (RCE) was initiated under Issue Report (IR) 1194196 (Braidwood) and IR 1194324 (Byron). The RCE was initiated to determine why prior opportunities for discovery of the inadequate void acceptance basis were missed and to develop associated corrective actions.

The inspectors determined the finding was more than minor because, if left uncorrected, the failure to recognize conditions that could render equipment inoperable had the potential to lead to a more significant safety concern. Because the finding was not a design deficiency, did not result in a loss of safety function, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event, the inspectors concluded that the finding was of very low safety significance (Green). This finding was associated with a cross-cutting aspect in the Decision-Making component of the Human Performance cross-cutting area because the licensee did not use conservative assumptions and did not verify the validity of underlying assumptions in their evaluations of the AF suction piping voids. (H.1(b)) (Section 4OA5.1.7.b)
Inspection Report# : 2011015 *(pdf)*

Significance: G Mar 31, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
INADEQUATE INSTRUCTIONS FOR MEASURING ECCS VOIDS

An NRC-identified finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was identified by the inspectors when licensee personnel failed to establish instructions for measuring pipe voids detected during surveillances of the emergency core cooling systems for gas accumulation. Specifically, instructions to measure the size of gas voids detected during venting at each safety injection and residual heat removal system vent location were not provided so that the effect of the void on system operability could be evaluated. The licensee entered this issue into their corrective action program and initiated procedure revisions to provide additional guidance for recording data to size voids identified during venting operations.
The performance deficiency was determined to be more than minor because if left uncorrected it would have the potential to lead to a more significant safety concern. The finding screened as having very low safety significance because it did not result in a loss of operability or functionality. Specifically, a qualitative assessment of the voids detected by venting since the implementation of the licensee’s resolution of Generic Letter 2008 01 established reasonable assurance that these voids did not result in a loss of operability. The inspectors did not identify a cross-cutting aspect that represented the underlying cause of this performance deficiency. Therefore, no cross-cutting aspect was assigned to this finding.

Inspection Report# : 2011002 *(pdf)*

Significance: W Feb 07, 2011
Identified By: NRC
Item Type: VIO Violation
Self-Revealing Failure of the 2A Diesel Generator Upper Lube Oil Cooler
A finding of low to moderate safety significance (White) and a violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was self-revealed when the 2A Diesel Generator (D/G) was required to be shutdown during routine monthly surveillance testing on November 17, 2010, when a flange connection on a spool piece connected to the upper lube oil cooler failed, resulting in a significant oil leak. The cause of the failure was that Work Order 1206254, “Clean Tube Side of Lube Oil Coolers,” did not contain appropriate acceptance criteria to ensure proper reassembly of the spool piece for the upper lube oil cooler following maintenance on January 17, 2010. Specifically, the work order package did not contain a final torque verification to ensure that the spool piece flange bolts were torqued to required values, which resulted in the leak. The licensee entered this issue into the correction action program as Issue Report (IR) 1141591, properly re-installed the spool piece, and returned the 2A D/G to service on November 21, 2010.

The inspectors determined that this finding was more than minor, because it was associated with the Human Performance attribute of the Mitigating Systems cornerstone and impacted the cornerstone objective of ensuring the availability of systems that respond to initiating events to prevent undesirable consequences. The NRC assessed this finding through a Phase 3 Risk Evaluation of the Significance Determination Process and made a preliminary determination that it was an issue of low to moderate safety significance (White). The cause of this finding was related to the Work Practices component of the Human Performance cross-cutting area since licensee personnel proceeded in the face of uncertainty or unexpected circumstances during the upper lube oil cooler maintenance activity (H.4(a)). (Section 1R12)

Final Significance Determination issued in report 2011-012 on March 14, 2011.
Inspection Report# : 2011016 *(pdf)*
Inspection Report# : 2011011 *(pdf)*
Inspection Report# : 2011012 *(pdf)*

Barrier Integrity

Significance: G Mar 31, 2011
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
SELF-REVEALED LOW FLOW TO REACTOR CONTAINMENT FAN COOLER

A self-revealed finding of very low safety significance was identified on January 21, 2011, when licensee personnel failed to ensure that surveillance procedures for measuring essential service water flow through reactor containment fan coolers was adequate. As a result, during routine surveillance testing, measured essential service water flow through the reactor containment fan coolers was less than technical specification requirements.
The inspectors concluded that the finding was more than minor because it was associated with the Configuration Control attribute of the Barrier Integrity Cornerstone and affected the cornerstone objective of providing reasonable assurance that physical barriers, including the containment, protect the public from radionuclide releases caused by accidents and events. Specifically, the finding was determined to adversely impact the required technical specification required flow rate of essential service water through the reactor containment fan coolers. The inspectors evaluated the finding using IMC 0609.04, “Phase 1 – Initial Screening and Characterization of Findings,” and based on a “No” answer to all of the questions in the Barrier Integrity column of Table 4a, determined the finding to be of very low safety significance. This finding had a cross-cutting aspect in the area of Human Performance, Resources (H.2(c)) because the licensee had repeatedly modified the surveillance procedure without ensuring adequate operational margin to the technical specification limit. The licensee entered this issue into the corrective action program and initiated actions to revise the surveillance procedure to raise the as-left essential service water system flow rate.

Inspection Report# : 2011002 *(pdf)*

Significance: G Mar 31, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO EVALUATE THE EFFECTS OF DYNAMIC LOADS AT THE CS DISCHARGE PIPING
An NRC-identified finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” was identified by the inspectors when licensee personnel failed to evaluate the effects of dynamic loads at the containment spray discharge piping. The inspectors were concerned because portions of the containment spray discharge piping were normally voided by design and neither the structural design nor operation of the system addressed the dynamic loads that would result when the voided piping was rapidly filled following system initiation. The licensee entered this issue into the corrective action program and, at the time of the inspection, planned to include an evaluation of dynamic loads into the design basis of containment spray.
The performance deficiency was determined to be more than minor because it was associated with the Structures, Systems, Components, and Barrier Performance attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding screened as having very low safety significance because it did not affect either core damage frequency or large early release frequency. The inspectors determined that this finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Operating Experience, because the licensee did not thoroughly evaluate external operating experience.

Inspection Report# : 2011002 *(pdf)*

Emergency Preparedness

Significance: SL-IV Jun 22, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Changes to EAL Basis Decreased the Effectiveness of the Plan without Prior NRC Approval
The inspector identified a violation of very low safety significance involving a Severity Level IV NCV of 10 CFR 50.54(q) for failing to obtain prior approval for an emergency plan change which decreased the effectiveness of the plan. Specifically, the licensee modified the Emergency Action Level (EAL) Basis in EAL HU6, Revision 22, which indefinitely extended the start of the 15 minute emergency classification clock beyond a credible notification that a fire is occurring or indication of a valid fire detection system alarm. This change decreased the effectiveness of the emergency plan by reducing the capability to perform a risk significant planning function in a timely manner. The violation affected the NRC’s ability to perform its regulatory function because it involved implementing a change that decreased the effectiveness of the emergency plan without NRC approval. Therefore, this issue was evaluated using Traditional Enforcement. The NRC determined that a Severity Level IV violation was appropriate due to the reduction

of the capability to perform a risk significant planning standard function in a timely manner. The licensee entered this issue into its corrective action program and revised the EAL basis to restore compliance. (Section 1EP4)

The related performance deficiency is tracked as item 200-502-02.
Inspection Report# : 2010502 *(pdf)*

Significance: G Jun 22, 2011
Identified By: NRC
Item Type: FIN Finding
Changes to EAL Basis Decreased the Effectiveness of the Plan without Prior NRC Approval
The inspector identified a finding of very low safety significance involving a Severity Level IV NCV of 10 CFR 50.54 (q) for failing to obtain prior approval for an emergency plan change which decreased the effectiveness of the plan. Specifically, the licensee modified the Emergency Action Level (EAL) Basis in EAL HU6, Revision 22, which indefinitely extended the start of the 15 minute emergency classification clock beyond a credible notification that a fire is occurring or indication of a valid fire detection system alarm. This change decreased the effectiveness of the emergency plan by reducing the capability to perform a risk significant planning function in a timely manner.

The finding was more than minor using IMC 0612, because it is associated with the emergency preparedness cornerstone attribute of procedure quality for EAL and emergency plan changes, and it 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. Therefore, the performance deficiency was a finding. Using IMC 0609, Appendix B, the inspector determined that the finding had a very low safety significance because the finding is a failure to comply with 10 CFR 50.54(q) involving the risk significant planning standard 50.47(b)(4), which, in this case, met the example of a Green finding because it involved one Unusual Event classification (EAL HU6).

Due to the age of this issue, it was not determined to be reflective of current licensee performance and therefore a cross-cutting aspect was not assigned to this finding. (Section 1EP4)

The associated traditional enforcement item is tracked as item 2011-50X-01.

Inspection Report# : 2010502 *(pdf)*

Occupational Radiation Safety

Significance: G Mar 31, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
OUT-OF-DATE/EXPIRED RESPIRATOR CARTRIDGES
An NRC-identified finding of very low safety significance and an associated NCV of TS 5.4.1 was identified by the inspectors when out of date respirator cartridges were found available for use. Radiation protection procedures that cover respiratory protection program did not require cartridges to be replaced after the manufacturer specified shelf-life had expired. The manufacturer of the respirator canister recognized that it was possible that chemical cartridges, which were more than a year old, might lose some of their efficiency in their ability to absorb contaminants. The manufacturer prescribed an expiration date of 3 years from the date of the canister manufacture and this date was stamped on to the canister label.
The regulatory authority for respiratory protection is the Occupational Safety and Health Administration (OSHA). The regulations are defined in 29 CFR 1910.134 titled “Respiratory Protection.” Title 29 CFR 1910.134(d)(3)(iii) provides requirements for the protection against gases and vapors. These requirements include that air purifying respirators be equipped with an End-of-Service Life Indicator (ESLI) or the employer implements a change schedule for canisters and cartridges that is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life. The employer shall describe in the respirator program the information and data relied upon and the basis for the canister and cartridge change schedule and the basis for reliance on the data.

The inspectors reviewed the guidance in IMC 0612, Appendix E, Examples of Minor Issues, but did not identify any examples similar to the performance deficiency. However, in accordance with IMC 0612, the inspectors determined that the finding was more than minor because if left uncorrected the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, cartridges that were beyond the recommended shelf-life could lose some of their efficiency in their ability to absorb contaminants and result in additional radiation doses to the users. The finding was assessed using the Occupational Radiation SDP and was determined to be of very low safety significance because these problems were not as-low-as-is-reasonably-achievable (ALARA) planning issues, there were no overexposures, nor substantial potential for overexposures and the licensee's ability to assess dose was not compromised. Corrective actions planned by the licensee included replacing the expired cartridges and adding guidance to procedures for checking expiration dates during routine inventories. The inspectors determined that the cause of this incident involved a cross-cutting component in the human performance area for inadequate resources. Specifically, the licensee did not have complete, accurate and up-to-date procedures.

Inspection Report# : 2011002 *(pdf)*

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the cover letters to security inspection reports may be viewed.

Miscellaneous

Last modified : March 02, 2012