

Arkansas Nuclear 1

4Q/2014 Plant Inspection Findings

Initiating Events

Significance: G Jun 29, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Evaluate Reactor Coolant Sample System Pressure Boundary Flaw

The inspector identified a non-cited violation of 10 CFR 50.55a(g)(4) for the licensee's failure to evaluate the acceptability of the Unit 1 reactor coolant system sample cooler E30 for continued service. Specifically, when the licensee determined that the sample cooler E30 had developed leaks, the licensee failed to evaluate the acceptability of the component for continued service as required by the ASME code for a high energy system. The licensee determined that the structural integrity of the sample cooler was maintained and the sample cooler could be remotely isolated. This issue was documented in Condition Report CR-ANO-2014-1801.

The inspector concluded that the licensee's failure to evaluate the acceptability of the sample cooler E30 was a performance deficiency. The performance deficiency was more than minor because it was associated with the human performance attribute of the initiating events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the leakage could result in the inability to sample the reactor coolant for activity which would upset plant stability by causing an unplanned shutdown as required by technical specifications. Using Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," dated June 19, 2012, and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, Exhibit 1, "Initiating Events Screening Questions," the inspectors determined that the finding was of very low safety significance (Green) because the finding did not result in a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of a trip to a stable shutdown condition.

The finding had a cross-cutting aspect in the area of human performance, resources, because the licensee failed to ensure personnel and procedures were adequate to support nuclear safety. Specifically, the licensee failed to ensure personnel and procedures were available and adequate to recognize the regulatory requirement to evaluate components in ASME Code systems that do not comply with Code requirements

Inspection Report# : [2014003](#) (*pdf*)

Significance: G Jun 29, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow Procedures for Through Wall Leaks

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," with two examples. Criterion V, states, in part, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings." Contrary to the above, the licensee failed to accomplish operability and functionality assessments in accordance with Procedure EN-OP-104, Revision 7, "Operability Determination Process."

Example 1. In March of 2013, the licensee identified that the reactor coolant sample cooler E30 was leaking reactor coolant into the nuclear intermediate cooling water system. In the operability/functionality assessment, the licensee stated, in part, that the nuclear intermediate cooling water system was not safety-related and that the system was not part of the reactor coolant system pressure boundary; therefore, this was not within the scope of the operability determination process. No functionality assessment of the reactor coolant system sample system was performed.

Example 2. Two through wall leaks in the reactor coolant system supply line to the reactor coolant sample cooler 2E30 were identified on February 3, 2014. After a visual inspection of the leaks in the reactor coolant sample system, the licensee documented the following information in the operability description of Condition Report CR ANO 2-2014-00268: "For the stated condition, the Reactor Coolant System (RCS) and the Unit 2 Containment Building are OPERABLE. No Degraded or Nonconforming Condition exists per Procedure EN-OP-104, Revision 7 Attachment 9.1, Table 1." The licensee did not perform a functionality assessment of the reactor coolant sample system as required by Procedure EN-OP-104. The sample system was the system directly affected by the degraded condition. When this assessment was challenged by the NRC inspectors and the licensee's ability to meet the Technical Specification Surveillance Requirement 4.4.8.1 for dose equivalent xenon which is required once per seven days, as well as the acceptability of the system for continued service, the licensee recognized that the permanent repairs to the sample system would not be completed by the time the next sample was required.

For the Unit 1 sample system, the licensee performed a functionality assessment and the system remained functional with the current leak rate. For the Unit 2 sample system, the system was isolated and the flaws were repaired. This issue was documented in Condition Report CR-ANO-C-2014-1800.

The inspector determined that the failure to perform functional assessments of the Unit 1 and 2 reactor coolant sampling systems was a performance deficiency. The finding was more than minor because it was associated with the human performance attribute of the initiating events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the leakage could result in the inability to sample the reactor coolant for activity which would upset plant stability by causing an unplanned shutdown as required by technical specifications. Using Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," dated June 19, 2012, and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, Exhibit 1, "Initiating Events Screening Questions," the inspectors determined that the finding was of very low safety significance (Green) because the finding did not result in a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of a trip to a stable shutdown condition.

The finding had a cross-cutting aspect in the area of human performance, training, because the licensee failed to provide training and ensure knowledge transfer to maintain a knowledgeable, technically competent work force and instill nuclear safety values. Specifically, the licensee failed to ensure that operators were adequately trained on the use of Procedure EN-OP-104 such that required functionality assessments for degraded and/or non-conforming non-technical specification systems were performed as required
Inspection Report# : [2014003](#) (*pdf*)

Significance: Y Feb 10, 2014

Identified By: NRC

Item Type: VIO Violation

Unit 1 - Failure to Follow the Materials Handling Program during the Unit 1 Generator Stator Move

Unit 1 Apparent Violation. The inspectors reviewed a self-revealing apparent violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings," which states, in part, that "activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures or drawings." The licensee did not follow the

requirements specified in Procedure EN-MA-119, "Material Handling Program," in that, the licensee did not perform an adequate review of the subcontractor's lifting rig design calculation and the licensee failed to conduct a load test of the lifting rig prior to use. The licensee initiated Condition Report CR-ANO-C-2013-00888 to capture this issue in the corrective action program. The licensee's corrective actions included repairing damage to the Unit 1 turbine deck, fire main system, and electrical system. In addition, changes were made to various procedures including Procedure EN-DC-114, "Project Management," to provide guidance on review of calculations, quality requirements, and standards associated with third party reviews.

The inspectors determined that the finding was more than minor because it was associated with the procedural control attribute of the initiating event cornerstone, and adversely affected the cornerstone's objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown, as well as power operations. The stator drop affected offsite power to Unit 1, resulting in a loss of offsite power for approximately 6 days and a loss of the alternate AC diesel generator. The inspectors used Inspection Manual Chapter 0609, Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012, to evaluate the significance of the finding. Since the plant was shutdown, the inspectors were directed to Inspection Manual Chapter 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Operational Checklists for Both PWRs and BWRs," Checklist 4, dated May 25, 2004. Using Appendix G, Attachment 1, Checklist 4, the inspectors concluded that this finding represented a degradation of the licensee's ability to add reactor coolant system inventory when needed since a loss of offsite power occurred and therefore, this finding required a Phase 3 analysis. A shutdown risk model was developed by modifying the at-power Arkansas Nuclear One Unit 1 Standardized Plant Analysis Risk Model, Revision 8.19. The NRC risk analyst assessed the significance of shutdown events by calculating an instantaneous conditional core damage probability. The results were dominated by two sequences. The largest risk contributor (approximately 97 percent) was based on a failure of the emergency diesel generators without recovery. The second largest risk contributor was the failure to recover decay heat removal. The result of the analysis was an instantaneous conditional core damage probability of 3.8E-4; therefore, this finding was preliminarily determined to have high safety significance (Red).

This finding had a cross-cutting aspect in the area of human performance associated with field presence, because the licensee did not ensure adequate supervisory and management oversight of work activities, including contractors and supplemental personnel. Specifically, the licensee did not provide a sufficient level of oversight in that, the requirements in Procedure EN-MA-119, for design approval and load testing of the temporary hoisting assembly, were not followed [H.2].

Issued as preliminary Red AV in IR 05000313,368/2013012 dated March 24, 2014.

Final significance was determined to be Yellow. NOV issued in IR 05000313,368/2014008 dated June 23, 2014.

Inspection Report# : [2014008](#) (pdf)

Inspection Report# : [2013012](#) (pdf)

Mitigating Systems

Significance:  Dec 31, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Flow Protection for Auxiliary Feedwater Pump in Emergency Operating Procedures

Inspectors identified a noncited violation of Unit 1 Technical Specification 5.4, "Procedures," for the licensee's failure to establish adequate emergency operating procedures. Specifically, the licensee's emergency operating procedures

provide minimum flow protection for the Unit 1 auxiliary feedwater pump, which could result in catastrophic failure of the pump. The issue was documented in Condition Report CR ANO 1 2014 00286 and the procedures were revised to correct the condition.

The failure to provide minimum flow protection for the Unit 1 auxiliary feedwater pump in emergency and abnormal operating procedures in accordance with the emergency operating procedure writer's guide was a performance deficiency. The performance deficiency was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and was therefore a finding. Specifically, inadequate emergency and abnormal operating procedures could have resulted in failure of the auxiliary feedwater pump, a mitigating system for a loss of main and emergency feedwater. Using Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," June 19, 2012, and Appendix A, "The Significance Determination Process (SDP) for Findings at Power," June 19, 2012, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined that the finding required a detailed risk evaluation because the finding represented a loss of system. A Region IV senior reactor analyst performed the detailed risk evaluation and determined that the change to the core damage frequency was less than 4E-7/year (Green). The dominant core damage sequences included losses of one of the safety related 4160 volt electrical buses, steam generator tube ruptures, and plant transients. The equipment that helped mitigate the risk included the high pressure injection system (for feed and bleed) and the main and emergency feedwater systems.

This finding did not have a cross-cutting aspect associated with it because the most significant contributor was not indicative of present performance. Specifically, the emergency and abnormal operating procedures for operating auxiliary feedwater had not changed for at least 20 years.

Inspection Report# : [2014005](#) (*pdf*)

Significance:  Sep 30, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Improper Maintenance on Circuit Breaker Caused Loss of Unit 1 Decay Heat Removal Pump

Inspectors documented a Green self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to ensure activities affecting quality were accomplished in accordance with documented instructions. Specifically, the licensee failed to follow Job Order JO-00968863 for replacement of a prop spring in circuit breaker MA137. As a result, the wrong prop spring was replaced, reducing the reliability of the Unit 1 train B decay heat removal pump P-34B and ultimately causing a failure of the pump to start. The licensee corrected the condition by replacing the breaker and returning the pump to service. The issue was documented in Condition Report CR ANO 1 2013-00701.

The inspectors determined that the failure to follow Job Order JO-00968863 in 1998 for replacement of a prop spring in circuit breaker MA137 was a performance deficiency. The performance deficiency was more than minor because it was associated with the human performance attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and was therefore a finding. Specifically, the failure to replace the appropriate prop spring in 1998 adversely affected the availability and reliability of Unit 1 decay heat removal pump P-34B and caused a failure to start in 2013. In accordance with Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings," Exhibit 3, "Mitigating Systems Screening Questions," the inspectors determined the finding to be of very low safety significance (Green) because the finding did not represent a loss of system safety function and did not represent an actual loss of safety function of at least one train for greater than its technical specification allowed outage time.

The inspectors determined that there was no cross-cutting aspect associated with this finding because the cause of the performance deficiency occurred more than three years ago, and was not representative of current licensee performance.

Inspection Report# : [2014004](#) (*pdf*)

Significance: Y Aug 01, 2014

Identified By: NRC

Item Type: VIO Violation

Inadequate Flood Protection for Auxiliary and Emergency Diesel Fuel Storage Buildings

The inspectors identified a finding of preliminary substantial safety significance (Yellow) for the failure to design, construct, and maintain the Units 1 and 2 auxiliary and emergency diesel fuel storage buildings in accordance with the safety analysis reports' description of internal and external flood barriers so that they could protect safety-related equipment from flooding. Two apparent violations were associated with this finding:

- a. Contrary to 10 CFR Part 50, Appendix B, Criterion III, "Design Control," the licensee failed to assure that regulatory requirements and the design basis were correctly translated into specifications, drawings, procedures, and instructions, and that design changes were subjected to design control measures commensurate with those applied to the original design.
- b. Contrary to 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," the licensee failed to prescribe documented instructions for activities affecting quality and accomplish activities affecting quality in accordance with drawings.

The licensee entered these issues into the corrective action program as Condition Reports CR-ANO-C-2013-01304 and CR-ANO-C-2014-00259. The licensee resolved the safety concern by replacing the degraded seals or parts, installing penetration seals, implementing compensatory measures, and/or incorporating instructions into procedures.

The inspectors determined that the finding was more than minor because it was associated with the protection against external factors attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the performance deficiency resulted in the vulnerability to flooding of safety-related equipment necessary to maintain core cooling in the auxiliary and emergency diesel fuel storage buildings. The inspectors used Inspection Manual Chapter 0609, Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012, and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, to evaluate the significance of the finding. In accordance with Appendix A, Exhibit 4, the inspectors determined that a detailed risk evaluation was necessary because, if the flood barriers were assumed to be completely failed, two or more trains of a multi-train system would be degraded during an external flood.

The NRC risk analysts determined that the finding should be evaluated in accordance with NRC Inspection Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," April 12, 2012. Appropriate quantitative significance determination process tools did not exist to provide a reasonable estimate of the significance because a plant-specific flood hazard analysis did not exist and was not expected to be available until sometime in 2015. The risk analysts used NRC Inspection Manual Chapter 0609, Appendix M, Table 4.1, "Qualitative Decision-Making Attributes for NRC Management Review," to determine the preliminary safety significance of the finding. The following were the dominant considerations in reaching a preliminary risk determination conclusion:

1. With respect to the auxiliary and emergency diesel fuel storage buildings, there were more than 100 unknown ingress pathways for a flooding event, therefore if an external flood above grade level were to occur, the buildings

would flood.

2. The unexpected rate of flooding would likely be beyond the licensee's capability to prevent or mitigate as equipment and connections associated with alternative mitigating strategies, could be submerged.
3. All reactor core cooling and makeup could fail due to significant flooding of the auxiliary and emergency diesel fuel storage buildings.
4. The change in core damage frequency was quantitatively bounded below 2×10^{-3} and qualitatively determined to likely be less than 1×10^{-4} . The bounding and qualitative results are based on the frequency of the probable maximum flood event and a loss of all equipment needed for core cooling and makeup.

This finding was preliminarily determined to be of substantial safety significance (Yellow) for Unit 1 and Unit 2, as determined by a Significance and Enforcement Review Panel.

This finding had a cross-cutting aspect in the area of human performance related to maintaining design margins. Specifically, the licensee did not design, construct, and/or maintain over 100 flood barriers to ensure design margins were sustained.

The finding was determined to be Yellow (substantial safety significance) for both Units. Final significance determination and NOV issued January 22, 2015 (IR 05000313;638/2014010) (ML15023A076).

Inspection Report# : [2014009](#) (*pdf*)

Inspection Report# : [2014010](#) (*pdf*)

Significance:  Jun 29, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Filling and Venting of High Pressure Injection Pump

The inspectors identified a Green non-cited violation of Unit 1 Technical Specification 5.4, "Procedures," for the licensee's failure to establish adequate instructions for filling and venting the emergency core cooling system. Specifically, an inadequate fill and vent could have allowed gas voids to enter the suction of an operable high pressure injection pump. As immediate corrective actions, the licensee revised the filling and venting instructions. The issue was documented in Condition Report CR ANO 1-2014-00295.

The failure to establish adequate filling and venting instructions for a drained high pressure injection pump was a performance deficiency. The performance deficiency was more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and was therefore a finding. Specifically, the inadequate fill and vent instructions caused a high pressure injection pump to become inoperable for the standby emergency core cooling function. Using Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," June 19, 2012, and Appendix A, "The Significance Determination Process (SDP) for Findings at Power," June 19, 2012, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined this finding was of very low safety significance (Green) because the degraded condition was not a design or qualification deficiency; did not represent an actual loss of function or a system; did not represent an actual loss of function of a single train or two separate trains for greater than its technical specification allowed outage time; did not represent an actual loss of function of one or more non technical specification trains of equipment designated as high safety significant; and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event.

The finding was determined to have a cross-cutting aspect in the area of problem identification and resolution for the

licensee's failure to effectively evaluate and implement external operating experience. Specifically, the licensee failed to effectively evaluate and implement gas voiding operating experience when establishing filling and venting instructions

Inspection Report# : [2014003](#) (*pdf*)

Significance:  Mar 31, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Maintain Alternate ac Diesel Generator Governor

The inspectors documented a self-revealing non-cited violation of 10 CFR 50.63, "Loss of all alternating current power," for the licensee's failure to maintain the alternate ac diesel generator so that a power source would be available to withstand and recover from a station blackout. Specifically, the licensee failed to perform adequate preventive maintenance on the governor of the diesel in accordance with the recommended vendor maintenance, which resulted in an overspeed trip of the engine during testing. The licensee repaired the governor and documented the issue in Condition Report CR-ANO-C-2013-00331.

The inspectors determined that the failure to perform adequate preventive maintenance on the governor of the alternate ac diesel generator in accordance with the recommended vendor maintenance was a performance deficiency. This performance deficiency was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and was therefore a finding. Specifically, the reliability of the alternate ac diesel generator was adversely affected by the lack of governor maintenance so that the diesel was unavailable to respond to a postulated station blackout. Using Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," June 19, 2012, and Appendix A, "The Significance Determination Process (SDP) for Findings at Power," June 19, 2012, Exhibit 2, "Mitigating System Screening Questions," the inspectors determined that the finding required a detailed risk evaluation because it was an actual loss of function of a non-technical specification train of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours. The Region IV senior reactor analyst performed a detailed risk evaluation in accordance with Appendix A, Section 6.0, "Detailed Risk Evaluation." The risk was dominated by internal loss of offsite power initiators and fire-induced loss of offsite power scenarios. The calculated change in core damage frequency was 8.9×10^{-7} for Unit 1 and 5.6×10^{-7} for Unit 2. The analyst also determined that the finding would not involve a significant increase in the risk of a large, early release of radiation. This finding has been determined to be of very low safety significance (Green).

Although the performance deficiency initially occurred over three years ago, the licensee documented in Condition Report CR-ANO-C-2014-00166 that the alternate ac diesel generator was not maintained commensurate with its risk significance and that a contributing cause was that management had not implemented a comprehensive maintenance strategy in accordance with the risk significance of the diesel. Therefore, inspectors concluded that the cause of the performance deficiency was reflective of present performance. Specifically, the licensee failed to implement a comprehensive preventative maintenance strategy on the alternate ac diesel generator governor commensurate with its risk significance [H.13]

Inspection Report# : [2014002](#) (*pdf*)

Significance:  Feb 10, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Adequately Develop and Implement Adequate Procedural Controls to Remediate the Anticipated Effects of Internal Flooding for Either Unit

The inspectors reviewed a self-revealing, non-cited violation of Unit 1 Technical Specification 5.4.1.a and Unit 2 Technical Specification 6.4.1.a, involving the licensee's failure to develop and implement procedural controls for response to internal flooding. Specifically, the licensee did not incorporate any instructions for the operation of the permanently installed temporary fire pump into procedures, which resulted in flooding due to the ruptured fire main header and not securing the temporary fire pump for approximately 50 minutes. The licensee's corrective actions included changing Checklist 1104.032, "Fire Protection Systems," Revision 76, to include guidance for securing the temporary fire pump in the event of a leak or rupture in the fire main header and provided personnel training on this change. This issue was entered into the corrective action program as Condition Reports CR-ANO-C-2013-01072 and CR ANO-C-2013-01962.

The inspectors determined that the licensee's failure to develop and implement adequate procedural controls for the permanently installed temporary fire pump was a performance deficiency. The performance deficiency was more than minor because it was associated with the procedural quality attribute of the mitigating systems cornerstone and affected the cornerstone's objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, if the necessary flood prevention/mitigation actions cannot be completed in the time required, much of the station's accident mitigation equipment could be adversely impacted.

Unit 1 Analysis:

Inspection Manual Chapter 0609, Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012, Table 3, Section A, directs the user to Appendix G. The inspectors used Inspection Manual Chapter 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Operational Checklists for Both PWRs and BWRs," dated May 25, 2004, Checklist 4, to evaluate the significance of the finding. The inspectors determined that the finding was of very low safety significance (Green) because the finding did not: (1) increase the likelihood of a loss of reactor coolant system inventory, (2) degrade the licensee's ability to terminate a leak path or add reactor coolant system inventory when needed, or (3) degrade the licensee's ability to recover decay heat removal once it is lost.

Unit 2 Analysis:

Inspection Manual Chapter 0609, Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012, Table 3, Section E, Step 2, directs the user to Appendix F, "Fire, Protection Significance Determination Process," dated September 20, 2013. The inspectors used Appendix F, to evaluate the significance of the finding. The finding involved a fixed fire protection system and the fire water supply (temporary fire pump). The finding was screened against the qualitative screening question in Appendix F, Task 1.3.1 and the inspectors determined it was of very low safety significance (Green), because the reactor was able to reach and maintain safe shutdown.

The finding had a cross-cutting aspect in area of the human performance associated with documentation, because the licensee failed to create and maintain complete, accurate, and up-to-date documentation for the use of the temporary fire pump

Inspection Report# : [2013012](#) (*pdf*)

Significance:  Feb 10, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Scope Required Components in the Station's Maintenance Rule Monitoring Program

The NRC identified a non-cited violation of 10 CFR 50.65(b)(2)(i) for the licensee's failure to monitor non-safety-related structures, systems, or components that are relied upon to mitigate accidents or transients. Specifically, the Unit 1 decay heat removal pump room level switches, which were credited for mitigating the effects of internal

flooding, were not being monitored as part of the maintenance rule. The licensee's corrective actions included developing a preventative maintenance task to test the operation of the level switches. This issue was entered into the corrective action program as Condition Report CR-ANO-1-2013-03168.

The inspectors determined that the failure to effectively monitor the performance of both Unit 1 decay heat removal room level switches in accordance with 10 CFR 50.65(a)(1) was a performance deficiency. The performance deficiency was determined to be more than minor because it affected the equipment performance attribute of the mitigating systems cornerstone and directly affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences, in that it called into question the reliability of flood mitigation equipment. The inspectors used Inspection Manual Chapter 0609, Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012, and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, to evaluate the significance of the finding. The inspectors determined the finding was of very low safety significance (Green) because the finding did not: (1) result in an actual loss of operability or functionality, (2) represent a loss of system and/or function, (3) represent an actual loss of function of a single train for greater than its technical specification allowed outage time, (4) represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant for greater than 24 hours, and (5) involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding, or severe weather event. This finding did not have a cross-cutting aspect since the switches were installed and evaluated in 2003, and therefore it is not indicative of current performance. Inspection Report#: [2013012](#) (*pdf*)

Barrier Integrity

Significance:  Jun 29, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Evaluate a Spent Fuel Pool Pressure Boundary Flaw.

The inspector identified a non-cited violation of 10 CFR 50.55a(g)(4) for the licensee's failure to evaluate an ASME code class piping leak in the Unit 1 spent fuel pool piping, or perform evaluation prior to returning the system to service. A through wall leak in the piping of the spent fuel pool cooling system downstream of valve SFP 23, spent fuel pool to the cask loading pit isolation valve, was identified in August 2009. The licensee closed Condition Report CR-ANO-1-2009-1521, and Work Order WO 03771, after completing clean-up of the boric acid crystals. As of May 23, 2014, the exact location, size, and geometry of the flaw were still unknown. The section of piping containing the flaw was isolated and tagged out of service. This issue was documented in Condition Report CR-ANO-C-2014-1801.

The inspector determined that the licensee's failure to follow the ASME Code requirements for evaluating the leak in the Unit 1 spent fuel pool cooling system was a performance deficiency. The finding was more than minor in accordance with Inspection Manual Chapter 0612, Appendix B, "Issue Screening," because it was associated with the barrier integrity cornerstone attribute of design control and adversely affected the structural integrity of the spent fuel pooling cooling system. Specifically, the licensee failed to appropriately evaluate a through wall flaw in the piping in the spent fuel pool cooling system in accordance with the requirements of ASME Code, Section XI, to ensure structural integrity of the piping. The inspectors evaluated the finding using Inspection Manual Chapter 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," Tables 2 and 3, dated June 19, 2012, and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 3, Part D, for the spent fuel pool, dated June 19, 2012. The inspector determined the finding to be of very low safety significance (Green) because the finding did not cause the pool temperature to exceed the maximum analyzed temperature limit; it did not cause mechanical damage to fuel clad and a detectable release of radionuclides; it did not

result in a loss of spent fuel pool water inventory below the minimum analyzed level limit; and it did not affect the spent fuel pool neutron absorber, fuel bundle misplacement or soluble boron concentration.

The finding had a cross-cutting aspect in the area of human performance, resources, because the licensee failed to ensure personnel and procedures were adequate to support nuclear safety. Specifically, the licensee failed to ensure personnel and procedures were available and adequate to recognize the regulatory requirement to evaluate components in ASME Code systems that do not comply with Code requirements

Inspection Report# : [2014003](#) (*pdf*)

Significance:  Jun 29, 2014

Identified By: NRC

Item Type: FIN Finding

Failure to Correct Through Wall Flaw in Spent Fuel Pool Piping

The inspectors identified a finding for failure to follow Procedure EN-LI-102, "Corrective Action Process," Revision 23. A through wall leak in the piping of the spent fuel pool cooling (SFP) system downstream of valve SFP 23 was identified in August 2009. The licensee failed to evaluate or correct the through wall flaw in the spent fuel pool piping in a timely manner. The section of piping containing the flaw was isolated and tagged out of service. This issue was documented in Condition Report CR ANO-C-2014-1801.

The inspector determined that the licensee's failure to evaluate or correct the leak in the Unit 1 spent fuel pool cooling system was a performance deficiency. The finding was more than minor in accordance with Inspection Manual Chapter 0612, Appendix B, "Issue Screening," because it was associated with the barrier integrity cornerstone attribute of design control and adversely affected the structural integrity of the spent fuel pooling cooling system. Specifically, from August 2009 to present, the licensee failed to appropriately evaluate or correct a through wall flaw in the piping in the spent fuel pool cooling system to ensure structural integrity of the piping. The inspectors evaluated the finding using Inspection Manual Chapter 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," Tables 2 and 3, dated June 19, 2012, and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 3, Part D, for the spent fuel pool, dated June 19, 2012. The inspector determined the finding to be of very low safety significance (Green) because the finding did not cause the pool temperature to exceed the maximum analyzed temperature limit; it did not cause mechanical damage to fuel clad and a detectable release of radionuclides; it did not result in a loss of spent fuel pool water inventory below the minimum analyzed level limit; and it did not affect the spent fuel pool neutron absorber, fuel bundle misplacement, or soluble boron concentration.

The finding had a cross-cutting aspect in the area of human performance, conservative bias, because the licensee failed to use decision-making practices that emphasize prudent choices over those that are simply allowable. Specifically, the licensee failed to make conservative decisions regarding a through wall flaw in the spent fuel pool cooling system, an ASME Code Class 3 moderate energy component, to ensure that the resolution addressed the condition commensurate with its safety significance

Inspection Report# : [2014003](#) (*pdf*)

Significance:  Mar 13, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Reassess the Effects of Aging

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for failure to follow procedures related to review of indications that could affect the structural integrity of

the Unit 2 reactor building. Specifically, the licensee failed to perform a subsequent visual inspection of concrete cracks that exceeded acceptable criteria in the previous 5 year inspection as specified in Procedure CEP-CII-004, "General and Detailed Visual Examinations of Concrete Containments," Revision 306. The corrective actions included verifying that the indications did not structurally affect the reactor building in these instances, initiating Condition Report C 2014-00597, and scheduling the affected areas for review during the upcoming 5-year inspection. The team determined that the failure to assess previous indications of concrete degradation, as specified in plant procedures, was a performance deficiency. The team considered the finding more than minor because, if left uncorrected, the finding would have the potential to lead to a more significant safety concern. Specifically, failure to track the growth of existing cracks on the reactor building could allow degradation to continue to the point of affecting the structural integrity. In accordance with Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, Exhibit 3, "Barrier Integrity Screening Questions," the issue screened as having very low safety significance (Green) because it did not involve an actual open pathway in the physical integrity of the containment, loss of containment isolation, or reduction in heat removal capability and it did not affect hydrogen igniters. The team determined that this finding had a human performance cross cutting aspect in the area of work management. The licensee did not implement a process of planning, controlling, and executing work activities such that nuclear safety was the overriding priority [H.5
Inspection Report# : [2014007](#) (*pdf*)

Emergency Preparedness

Significance:  Dec 31, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Correct Weaknesses During an Evaluated Exercise

The inspectors identified a non-cited violation of 10 CFR Part 50.47(b)(14) for the failure to correct a deficiency identified in a 2013 simulator drill. Specifically, control room operators did not implement the procedure that describes how the site will maintain continuous communication with threat notification sources during a drill conducted August 7, 2013, and also during the September 16, 2014, biennial exercise. The inspectors determined that the licensee's corrective actions for this issue were incomplete and did not address the extent of condition.

The failure to correct weaknesses occurring in drills and exercises is a performance deficiency within the licensee's ability to foresee and correct. The performance deficiency is more than minor because it is associated with the emergency response organization performance attribute of the Emergency Preparedness cornerstone and it adversely impacted the cornerstone objective. The licensee's ability to implement adequate measures to protect the health and safety of the public in the event of hostile action and a radiological emergency is degraded when it fails to correct performance that precludes the effective implementation of the emergency plan. This finding was evaluated using Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process (SDP)," Attachment 2, dated February 24, 2012, and was determined to be of very low safety significance (Green) because it was a failure to comply with NRC requirements, was not associated with a risk-significant planning standard, and was not a loss of planning standard function. The finding was not a loss of function because the deficiency that was identified was not associated with classification, notifications to state and local agencies, or the development of protective action recommendations. The licensee has entered the issue into the corrective action program in corrective action documents WT-WTANO-2014-00189 and Condition Report CR-ANO-C-2014-02478.

The finding was assigned a cross-cutting aspect in the area of problem identification and resolution, associated with the resolution of issues because the licensee failed to evaluate the initial performance issues to ensure that resolutions adequately addressed the extent of condition commensurate with their safety significance. The licensee failed to

recognize in August 2013 that continuous communications with threat notification sources is required by regulation and that performance issues with the implementing procedure should be communicated to the entire control room staff population

Inspection Report# : [2014005](#) (*pdf*)

Occupational Radiation Safety

Public Radiation Safety

Significance:  Jun 29, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Establish, Implement, and Maintain Appropriate Changes to the Offsite Dose Calculation Manual For Airborne Sampling

The inspectors identified two examples of a non-cited violation of Unit 1, Technical Specification 5.5.1, "Offsite Dose Calculation Manual (ODCM)," and Unit 2, Technical Specification 6.5.1, "Offsite Dose Calculation Manual." When changes were made to the Offsite Dose Calculation Manual in 1999, the licensee failed to (1) perform analyses or evaluations to justify changes to airborne radionuclide and/or particulate sampling requirements related to particulate air sampling collection frequency and (2) establish an airborne sampling location for a community in the highest deposition factor wind sector for the site. As immediate corrective actions, the licensee evaluated their offsite dose calculation manual and developed a plan to meet the environmental sampling requirements. The issue was documented in Condition Report CR-ANO-C-2014-01380.

The failure to follow the requirements of Unit 1 Technical Specification 5.5.1 and Unit 2 Technical Specification 6.5.1 was a performance deficiency. The performance deficiency was more than minor because it adversely affected the cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the environment and public domain. Specifically, the failure to maintain the Offsite Dose Calculation Manual with appropriate airborne radionuclide sampling requirements adversely impacts the licensee's ability to validate offsite radiation dose assessments for members of the public under certain effluent release conditions. Using Inspection Manual Chapter 0609, Appendix D, dated February 12, 2008, "Public Radiation Safety Significance Determination Process," the inspectors determined that the violation has very low safety significance because it involves the environmental monitoring program. The finding had a cross-cutting aspect in the area of human performance, associated with procedure adherence, because licensee personnel failed to follow procedures when they established the sampling frequency and locations for the updated Radiological Environmental Monitoring Program

Inspection Report# : [2014003](#) (*pdf*)

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.

Miscellaneous

Last modified : February 26, 2015