



Home > Nuclear Reactors > Operating Reactors > Reactor Oversight Process > Plant Summaries > Cooper > Quarterly Plant Inspection Findings

Cooper – Quarterly Plant Inspection Findings

3Q/2017 – Plant Inspection Findings

On this page:

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness
- Occupational Radiation Safety
- Public Radiation Safety
- Security

Initiating Events

Significance: TBD Aug 11, 2017

Identified By: NRC

Item Type: AV Apparent Violation

Emergency Transformer Bus Failure due to Inadequate Inspection and Testing Activities

The inspectors identified a preliminary low-to-moderate safety significance (White) finding with two NRC-identified apparent violations of Technical Specification 5.4.1.a, for the licensee's failure to implement and maintain Maintenance Procedure 7.3.41, "Examination and High Pot Testing of Non-Segregated Buses and Associated Equipment," Revision 10, during testing and inspection of the emergency station service transformer 4160 V bus bars. Specifically, the inspectors identified:

1. A violation of Technical Specification 5.4.1.a, for the failure to implement inspection instructions to examine the emergency transformer bus insulation for discoloration and repair the associated components on March 23, 2015; and
2. A violation of Technical Specification 5.4.1.a, for the failure to maintain adequate instructions for performing high potential testing of the emergency transformer bus bars between March 23, 2015, and April 18, 2017.

As a result, the licensee did not properly assess corona-related degradation on the emergency transformer bus, which resulted in an emergency transformer bus fault and a loss of the emergency transformer and the supplemental diesel generator on January 17, 2017. Corrective actions to restore compliance included replacement of the faulted portions of the emergency transformer bus, extent of condition inspection and cleaning of the remainder of the emergency transformer bus bars, long term corrective actions to replace the emergency transformer bus insulation, and revision of high potential testing procedure instructions. The licensee entered these issues into the corrective action program as Condition Reports CR-CNS-2017-00223 and CR-CNS-2017-02164.

The licensee's failure to implement and maintain Maintenance Procedure 7.3.41 to properly assess degradation of the emergency station service transformer bus, in violation of Technical Specification 5.4.1.a, was a performance

deficiency. The performance deficiency was determined to be more than minor, and therefore a finding, because it was associated with the equipment performance attribute of the Initiating Events Cornerstone and 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 finding resulted in an emergency transformer bus fault and a loss of the emergency transformer and the supplemental diesel generator. Using NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the inspectors determined that the finding required a detailed risk evaluation because it involved the partial loss of a support system that contributes to the likelihood of, or causes, an initiating event (loss-of-offsite power), and the finding affected mitigation equipment (supplemental diesel generator).

A senior reactor analyst performed a detailed risk evaluation in accordance with Inspection Manual Chapter 0609, Appendix A, Section 6.0, "Detailed Risk Evaluation." The calculated increase in core damage frequency was dominated by station blackout initiators. The NRC preliminarily determined that the increase in core damage frequency for internal and external initiators was $6.3E-6$ /year, a finding of low-to-moderate risk significance (White).

The performance deficiency had a cross-cutting aspect in the area of problem identification and resolution associated with evaluation, because the licensee failed to thoroughly evaluate emergency transformer electrical bus discoloration and high potential test failures to ensure that resolutions addressed the causes and extent of conditions commensurate with their safety significance.

Inspection Report# : 2017011 (*pdf*)

Significance:  Mar 31, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Loss of Shutdown Cooling due to Relay Maintenance

The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 5.4.1.a, for the licensee's failure to implement Maintenance Procedure 7.3.16, "Low Voltage Relay Removal and Installation," Revision 22, for relay replacement work. Specifically, on October 28, 2016, the licensee failed to evaluate the potential impact of primary containment isolation system relay PCIS-REL-K27 work on shutdown cooling relay PCIS-REL-K30, which was mounted next to K27 and shared a common mounting rail. As a result, the licensee did not identify the potential of losing residual heat removal shutdown cooling, and while installing the K27 relay and snapping it into the mounting rail, workers caused a momentary actuation of relay K30 and a loss of residual heat removal shutdown cooling. Corrective actions to restore compliance included restoration of shutdown cooling, completion of the K27 relay maintenance with shutdown cooling out of service, and an outage risk management procedure change that prohibited work on or near shutdown cooling relays while the system was required to be in service. The licensee entered this deficiency into the corrective action program as Condition Report CR-CNS-2016-07645.

The licensee's failure to implement Maintenance Procedure 7.3.16, in violation of Technical Specification 5.4.1.a, was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the equipment performance attribute of the Initiating Events Cornerstone and affected the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown operations. Using Inspection Manual Chapter 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Process Phase 1 Initial Screening and Characterization of Findings," dated May 9, 2014, the inspectors determined that the finding did not require a quantitative assessment because the event occurred when the refuel canal/cavity was flooded. Therefore, the finding screened as very low safety significance (Green). The finding had a cross-cutting aspect in the area of human performance associated with work management, because the licensee failed to implement a process of planning, controlling, and executing work activities such that nuclear safety was the overriding priority, including the need for coordination with different work groups or job activities. Specifically, the

licensee failed to control, execute, and coordinate safety-related primary containment isolation system relay work activities to ensure residual heat removal shutdown cooling was not adversely impacted.

Inspection Report# : 2017001 (*pdf*)

Significance:  Dec 31, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Maintain Main Steam System Operating Procedure

The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 5.4.1.a for the licensee's failure to maintain Station Procedure 2.2.56, "Main Steam System," Revision 49, to prevent a main steam line high flow Group 1 primary containment isolation signal when opening an inboard main steam isolation valve. Specifically, the licensee failed to maintain Station Procedure 2.2.56 with adequate differential pressure limits for reopening closed main steam isolation valves during plant shutdown, which caused the unexpected closure of all the open main steam isolation and drain valves during the plant cooldown process. This resulted in a loss of the main steam line decay heat removal path, which caused reactor coolant system pressure and temperature to increase by approximately 13 psig and 3 degrees Fahrenheit, respectively, during the event. The immediate corrective actions were to reset the Group 1 isolation signal and open the main steam line drain valves to recommence plant cooldown. The licensee entered this deficiency into the corrective action program as Condition Report CR-CNS-2016-05835, and the licensee initiated an apparent cause evaluation to investigate this condition.

The licensee's failure to maintain Station Procedure 2.2.56 to prevent a main steam line high flow Group 1 isolation signal when opening an inboard main steam isolation valve, in violation of Technical Specification 5.4.1.a, was a performance deficiency. The performance deficiency was determined to be more than minor, and therefore a finding, because it was associated with the procedural quality attribute of the Initiating Events Cornerstone and affected the associated cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown. Specifically, the Group 1 isolation signal closed the main steam line drain valves, which resulted in a loss of the main steam line decay heat removal path and caused reactor coolant system pressure and temperature to increase. The inspectors determined Inspection Manual Chapter 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings," dated May 9, 2014, was not applicable because plant temperature and pressure were not within the normal residual heat removal/decay heat removal system operating parameters. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the inspectors determined that the finding screened as having very low safety significance (Green) because it did not cause both 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. A cross-cutting aspect was not assigned to this finding because the performance deficiency occurred in 1988 when the licensee changed the procedural limits for differential pressure across the main steam isolation valves when reopening them, and therefore, was not indicative of current licensee performance.

Inspection Report# : 2016004 (*pdf*)

Mitigating Systems

Significance:  Jun 30, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Assess Operability of Technical Specification System Functions during Surveillance Testing

The inspectors identified a non-cited violation of Technical Specification 5.4.1.a, for the licensee's failure to follow Station Procedure 0.26, "Surveillance Program," Revision 70, and to assess the operability of alternate shutdown reactor pressure instrumentation during surveillance testing. Specifically, the licensee failed to assess the operability of

the high pressure coolant injection turbine steam inlet pressure instrument that provides indications of reactor pressure for the alternate shutdown panel when the instrument was isolated during surveillance testing. As a result, operations personnel failed to recognize that the instrument was inoperable and failed to enter the appropriate technical specification action statements. As immediate corrective actions, the licensee validated that the alternate shutdown reactor pressure function was inoperable and that Technical Specification 3.3.3.2, "Alternate Shutdown System," Condition A, should have been entered, and generated a procedure change request to ensure Technical Specification 3.3.3.2 would be entered during future surveillances. The licensee entered this deficiency into the corrective action program as Condition Report CR-CNS-2017-02280.

The licensee's failure to assess the operability of alternate shutdown reactor pressure instrumentation when the high pressure coolant injection turbine inlet steam pressure instrument was isolated for surveillance testing, in violation of Station Procedure 0.26, was a performance deficiency. The performance deficiency was determined to be more than minor, and therefore a finding, 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. Specifically, the alternate shutdown reactor pressure instrument was inoperable when the high pressure coolant injection turbine inlet pressure instrument was isolated for surveillance testing, and the appropriate technical specification action statement was not entered. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the inspectors determined that the finding had very low safety significance (Green) because it: was not a design deficiency; did not represent a loss of system and/or function; did not represent an actual loss of function; did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time; and did not result in the loss of a high safety-significant nontechnical specification train. The finding had a cross-cutting aspect in the area of human performance associated with work management. Specifically, the licensee failed to implement a process of planning, controlling, and executing work activities such that nuclear safety was the overriding priority, including the identification and management of risk commensurate with the isolation of the high pressure coolant injection turbine inlet pressure instrument during surveillance testing.

Inspection Report# : 2017002 (*pdf*)

Significance:  Jun 29, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Assign Corrective Actions to Prevent Recurrence of High Pressure Coolant Injection Failure

The team identified a non-cited violation of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion XVI, Corrective Action, for the licensee's failure to assign corrective actions to preclude repetition of a significant condition adverse to quality associated with the loss of the high pressure coolant injection system. Specifically, between July 28, 2016, and June 29, 2017, the licensee failed to assign or complete corrective actions to prevent recurrence to address the failure of a relay coil that resulted in a loss of safety function for the single train high pressure coolant injection system. Corrective actions to restore compliance included reevaluation of the corrective actions assigned to the root cause of the condition and the creation of corrective actions to prevent recurrence for the condition. The licensee entered this deficiency into the corrective action program as Condition Report CR 17 03544.

The licensee's failure to assign corrective actions to preclude repetition of a significant condition adverse to quality, in violation of 10 CFR 50, Appendix B, Criterion XVI, was a performance deficiency. The performance deficiency was evaluated using Inspection Manual Chapter 0612, Appendix B, "Issue Screening," dated September 7, 2012, and was associated with the Mitigating Systems cornerstone. The team determined that the performance deficiency was more than minor, and therefore a finding, because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, the licensee's failure to assign corrective actions to preclude repetition of a significant condition adverse to quality could reasonably result in the condition recurring and creating

more safety-significant equipment failures. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the inspectors determined that the finding had very low safety significance (Green) because it: was not a design deficiency; did not represent a loss of system and/or function; did not represent an actual loss of function; did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time; and did not result in the loss of a high safety-significant non-technical specification train. The finding had a cross-cutting aspect in the area of problem identification and resolution associated with resolution, because the licensee failed to ensure that the organization took effective corrective actions to address issues in a timely manner commensurate with their safety significance.

Inspection Report# : 2017010 (*pdf*)

Significance:  Jun 29, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Perform Timely Operability Determinations

The team identified a Green non-cited violation of Technical Specification 5.4.1.a, for the licensee's multiple failures to immediately evaluate operability of degraded or nonconforming conditions. The team identified multiple examples of these operability determinations not being performed within one shift, as required by procedure. Further, aggregate data indicated routine noncompliance with procedural requirements to document operability "immediately" and "without delay." The licensee entered this violation into its corrective action program as Condition Report CR-CNS-2017-03937, and began evaluating actions to restore compliance.

Multiple failures to perform immediate operability determinations timely as required by station procedures is a performance deficiency. This performance deficiency is 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. Using Inspection Manual Chapter 0609, Appendix A, dated June 19, 2012, the inspectors determined that the finding had very low safety significance (Green) because it did not result in the loss of operability or functionality of any system or train. This finding has a consistent process cross-cutting aspect in the human performance cross-cutting area because operators failed to use a consistent, systematic approach to make decisions regarding operability using the organization's well-defined decision making process.

Inspection Report# : 2017010 (*pdf*)

Significance:  Jun 29, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Programmatic Failure to Identify and Correct Adverse Trends

The team identified a Green non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, for the licensee's programmatic failure to promptly identify adverse trends and enter them into the corrective action program. Often, when adverse trends were identified, they were addressed using informal processes. This was particularly the case for safety culture-related trends such as adverse trends in organizational behaviors. The licensee entered this violation into its corrective action program as Condition Report CR-CNS-2017-03938, and took action to formalize identification processes for potential adverse trends.

The programmatic failure to promptly identify adverse trends as required by station procedures was a performance deficiency. This performance deficiency is more than minor because if left uncorrected, it has the potential to become a more significant safety concern. Specifically, failure to arrest an adverse trend, particularly in organizational behaviors, could lead to increased likelihood of a worker-induced initiating event or a failure to effectively mitigate an accident.

Using Inspection Manual Chapter 0609, Appendix A, dated June 19, 2012, the inspectors determined that the finding had very low safety significance (Green) because it did not result in the loss of operability or functionality of any system or train. This finding has a trending cross-cutting aspect in the problem identification and resolution cross-cutting area because the organization failed to use available information in the aggregate to identify programmatic and common cause issues.

Inspection Report# : 2017010 (*pdf*)

Significance:  Jun 29, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Monitor No. 2 Diesel Generator under 50.65(a)(1) due to Inadequate Maintenance Rule Evaluation

The team identified a non-cited violation of 10 CFR 50.65(a)(1)/(a)(2), for the licensee's failure to perform an a(1) evaluation and establish a(1) goals when the No. 2 diesel generator a(2) preventive maintenance demonstration became invalid. Specifically, on April 28, 2017, the No. 2 diesel generator exceeded its performance criteria when it experienced a second maintenance rule functional failure, but the licensee failed to perform an associated a(1) evaluation. The licensee had failed to appropriately evaluate a February 4, 2017, failure associated with the No. 2 diesel generator jacket water heater failure in the Maintenance Rule Program and, as a result, the site failed to evaluate and monitor the equipment under 10 CFR 50.65(a)(1) as required. Corrective actions taken by the licensee to restore compliance included reevaluation of the February 4, 2017, functional failure and performance of an a(1) evaluation. The issue was entered into the licensee's corrective action program as Condition Report CR-17-03930.

The licensee's failure to monitor the No. 2 diesel generator in accordance with the requirements of 10 CFR 50.65(a)(1), due to incorrectly evaluating one maintenance rule functional failure, in violation of 10 CFR 50.65(a)(1)/(a)(2), was a performance deficiency. The inspectors screened the performance deficiency using Inspection Manual Chapter 0612, Appendix B, "Issue Screening," dated September 7, 2012, and determined that the issue was more than minor, and therefore a finding, because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the inspectors determined that the finding had very low safety significance (Green) because it: was not a design deficiency; did not represent a loss of system and/or function; did not represent an actual loss of function; did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time; and did not result in the loss of a high safety-significant nontechnical specification train. The finding had a cross-cutting aspect in the area of problem identification and resolution associated with evaluation, because the licensee failed to ensure that the organization thoroughly evaluated the No. 2 diesel generator issues to ensure that resolutions addressed causes and extent of conditions commensurate with their safety significance.

Inspection Report# : 2017010 (*pdf*)

Significance:  Mar 31, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Maintain Alternate Shutdown Emergency Procedure

The inspectors identified a non-cited violation of Technical Specification 5.4.1.a for the licensee's failure to maintain Emergency Procedure 5.1ASD, "Alternate Shutdown," Revision 17, for establishing reactor equipment cooling system flow to the high pressure coolant injection system fan coil unit. Specifically, the licensee failed to maintain Emergency Procedure 5.1ASD with adequate instructions to place the reactor equipment cooling system north or south critical loop

in service and verify reactor equipment system flow to the high pressure cooling injection system fan coil unit during some control room evacuation scenarios. The immediate corrective actions were to assess operability of the high pressure coolant injection system during control room evacuations that are not related to fire scenarios, and to revise Emergency Procedure 5.1ASD with instructions to open the critical loop supply valves (REC-MOV-711 or REC-MOV-714) in the control room or locally, and verify reactor equipment system flow to the high pressure coolant injection fan coil unit. The licensee entered this deficiency into the corrective action program as Condition Report CR-CNS-2017-01403.

The licensee's failure to maintain Emergency Procedure 5.1ASD to establish reactor equipment cooling system flow to the high pressure coolant injection fan coil unit during some control room evacuation scenarios, in violation of Technical Specification 5.4.1.a, was a performance deficiency. The performance deficiency was determined to be more than minor, and therefore a finding, because it was associated with the procedural quality attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events. Specifically, the licensee did not provide instructions to establish reactor equipment cooling system flow to the high pressure coolant injection system fan coil unit, which would have complicated operator response during a control room evacuation. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the inspectors determined that the finding had very low safety significance (Green) because it: was not a design deficiency; did not represent a loss of system and/or function; did not represent an actual loss of function; did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time; and did not result in the loss of a high safety-significant nontechnical specification train. The finding had a cross-cutting aspect in the area of problem identification and resolution associated with identification. Specifically, the licensee failed to implement a corrective action program with a low threshold for identifying issues during the required annual review of emergency procedures.

Inspection Report# : 2017001 (*pdf*)

Significance:  Mar 31, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Identify a Condition Adverse to Quality Associated with the 250 Vdc Electrical System

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with the licensee's failure to identify a condition adverse to quality associated with Station Procedure 2.2.24.1, "250 Vdc Electrical System (Div 1)," Revision 14, in accordance with Station Procedure 0-CNS-LI-102, "Corrective Action Process," Revision 6. Specifically, the licensee failed to identify that Station Procedure 2.2.24.1 contained inadequate instructions to ensure the oncoming charger 1C output voltage was matched with the bus 1A voltage when transferring bus 1A from charger 1A to charger 1C, so that technical specification bus voltage requirements would remain met. This resulted in an unexpected and initially unrecognized decline in voltage on the bus to below the required minimum of 260.4 Vdc. This condition required the licensee to declare the Division 1 250 Vdc electrical system and Division 1 residual heat removal low pressure coolant injection system inoperable. The immediate corrective action was to adjust the charger 1C float voltage greater than 260.4 Vdc to restore operability of the Division 1 250 Vdc electrical and residual heat removal low pressure coolant injection systems. The licensee entered this deficiency into the corrective action program as Condition Reports CR-CNS-2016-08658 and CR-CNS-2017-00750.

The licensee's failure to identify a condition adverse to quality associated with Station Procedure 2.2.24.1, to ensure technical specification bus voltage requirements were met, in violation of Station Procedure 0-CNS-LI-102, was a performance deficiency. The performance deficiency was determined to be more than minor, and therefore a finding, because it was associated with the procedural quality attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating

events. Specifically, charger 1C, when in service, did not maintain battery 1A terminal voltage within the requirements of Surveillance Requirement 3.8.4.1, which required the licensee to declare the Division 1 250 Vdc electrical system and the Division 1 residual heat removal low pressure coolant injection system inoperable. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the inspectors determined that the finding had very low safety significance (Green) because it: was not a design deficiency; did not represent a loss of system and/or function; did not represent an actual loss of function; did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time; and did not result in the loss of a high safety-significant, nontechnical specification train. The finding had a cross-cutting aspect in the area of problem identification and resolution associated with evaluation. Specifically, the licensee failed to thoroughly evaluate the charger 1C float voltage issue to ensure that the resolution addressed the cause and extent of condition commensurate with the safety significance.

Inspection Report# : 2017001 (*pdf*)

Significance: G Mar 31, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Identify a Condition Adverse to Quality

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with the licensee's failure to identify a condition adverse to quality for Division 1 residual heat removal service water booster pump A, in accordance with Station Procedure 0-CNS-LI-102, "Corrective Action Process," Revision 6. Specifically, on January 5, 2017, the inspectors identified an oil level lower than normally expected, oil on the pump skid, and an oil droplet formed on the Division 1 residual heat removal service water booster pump A inboard bearing sight glass. The inspectors informed the control room of this condition, and the licensee determined the oil leakage from the pump's sight glass would have prevented the pump from operating for the required 30 days during a design basis accident. The immediate corrective action was to repair the Division 1 residual heat removal service water booster pump A inboard bearing sight glass, restoring operability of the pump. The licensee entered this deficiency into the corrective action program as Condition Report CR-CNS-2017-00054.

The licensee's failure to identify a condition adverse to quality for Division 1 residual heat removal service water booster pump A, in violation of Station Procedure 0-CNS-LI-102, was a performance deficiency. The performance deficiency was determined to be more than minor, and therefore a finding, because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events. Specifically, the oil leakage from the service water booster pump A inboard bearing sight glass would have prevented the pump from operating for its required 30-day mission time during a design basis accident and resulted in the pump being declared inoperable. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the inspectors determined that the finding had very low safety significance (Green) because it: was not a design deficiency; did not represent a loss of system and/or function; did not represent an actual loss of function; did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time; and did not result in the loss of a high safety-significant nontechnical specification train. The finding had a cross-cutting aspect in the area of human performance associated with challenge the unknown because the licensee failed to stop when faced with uncertain conditions and failed to ensure that risks are evaluated and managed before proceeding. Specifically, the licensee did not maintain a questioning attitude during job-site reviews to identify and resolve unexpected conditions, including lower than the expected oil level in the service water booster pump A inboard bearing sight glass, oil on the pump skid, and an oil droplet formed on the bottom of the sight glass.

Inspection Report# : 2017001 (*pdf*)

Significance:  Mar 31, 2017

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Address Nonconforming Pipe Thinning in Accordance with the ASME Code

The inspectors identified a non-cited violation of 10 CFR 50.55a(g)(4) for the licensee's failure to use an approved method to disposition an American Society of Mechanical Engineers Code nonconforming condition in the residual heat removal service water system. Specifically, the licensee identified multiple locations with localized pipe thinning below the American Society of Mechanical Engineers Code B31.1 design minimum pipe-wall thickness during an ultrasonic examination but failed to use an approved method to calculate a new acceptable pipe-wall thickness. As a corrective action to restore compliance, the licensee replaced this section of piping on November 1, 2016, during Refueling Outage 29. The licensee entered this issue into the corrective action program as Condition Reports CR-CNS-2016-05558 and CR-CNS-2016-05963.

The licensee's failure to use an approved method to calculate a new minimum allowable pipe-wall thickness, in violation of 10 CFR 50.55a(g)(4), was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the design control attribute of the Mitigating System Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, calculating an allowable minimum pipe-wall thickness value that is below the American Society of Mechanical Engineers code design minimum value reduces the piping's structural integrity, potentially leading to the failure of the piping. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, inspectors determined the finding screened as having very low safety significance (Green) because it: was not a design deficiency; did not represent a loss of system and/or function; did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time; and did not result in the loss of a high safety-significant nontechnical specification train. This finding had a cross-cutting aspect in the area of human performance associated with design margins because the licensee failed to operate and maintain the residual heat removal service water system within the American Society of Mechanical Engineers code minimum pipe-wall thickness. Specifically, having identified that the affected pipe location was below the allowable pipe-wall thickness, the licensee opted to calculate and accept a new minimum pipe-wall thickness value that was not consistent with code requirements instead of repairing the affected piping at the time of discovery.

Inspection Report# : 2017001 (*pdf*)

Significance:  Mar 31, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Install Correct Mechanical Stop and Verify Proper Operation

The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 3.0.4 for the licensee's failure to install the correct reactor core isolation cooling pressure control valve, RCIC-AOV-PCV23, mechanical stop and verify proper operation of the system prior to entering a mode of applicability for Technical Specification 3.5.3. This condition resulted in RCIC-AOV-PCV23 going fully open during surveillance testing following Refueling Outage 29, causing a pressure transient. This transient caused a failure of the reactor core isolation cooling turbine lube oil cooler gasket, lifting of a pressure relief valve, and a water leak. The licensee immediately shut down the reactor core isolation cooling system and declared it inoperable. The immediate corrective actions were to restore RCIC-AOV-PCV23 from the closed mechanical stop to the required open mechanical stop and to replace the turbine lube oil cooler gasket to restore operability of the system. The licensee entered this deficiency into the corrective action program as Condition Report CR-CNS-2016-08122 and initiated a root cause evaluation to investigate this condition.

The licensee's failure to install the correct reactor core isolation cooling pressure control valve, RCIC-AOV-PCV23, mechanical stop and verify proper operation of the system prior to entering a mode of applicability for Technical Specification 3.5.3, in violation of Technical Specification 3.0.4, was a performance deficiency. The performance deficiency was determined to be more than minor, and therefore a finding, because it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events. Specifically, the licensee installed RCIC-AOV-PCV23 with the incorrect mechanical stop, and proper valve operation was not verified after installation during Refueling Outage 29, which caused the reactor core isolation cooling system to lose function during surveillance testing. This transient caused a failure of the reactor core isolation cooling turbine lube oil cooler gasket and an associated water leak. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the inspectors determined that the finding required a detailed risk evaluation because it represented a loss of system and/or function. In the detailed risk evaluation, the analyst assumed the reactor core isolation cooling system was unavailable for 50 hours. The analyst used the Test/Limited Use Version COOPER-DEESE-HCI03 of the Cooper SPAR model run on SAPHIRE, Version 8.1.5. The analyst updated the initiating event frequencies for transients, losses of condenser heat sink, losses of main feed water, grid related losses of offsite power, and switchyard centered losses of offsite power to the more recent values from the 2014 update to the industry data found in INL/EXT-14-31428, "Initiating Event Rates at U.S. Nuclear Power Plants, 1998-2013," Revision 1. From this, the finding was determined to have an increase in core damage frequency of $8.4E-8$ /year and to be of very low safety significance (Green). Transients, losses of condenser heat sink, and losses of main feed water were the dominant core damage sequences. The automatic depressurization system and the reactor protection system remained to mitigate these sequences. The finding had a cross-cutting aspect in the area of human performance associated with documentation because the licensee failed to create and maintain complete, accurate, and up-to-date documentation associated with RCIC-AOV-PCV23 design drawings and the maintenance procedure for setting and testing the mechanical stop.

Inspection Report# : 2017001 (*pdf*)

Significance:  Mar 17, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Exceeding the Technical Specification Allowed Out of Service Time of the Division I RHR System

The team reviewed a self-revealed, non-cited violation of Technical Specification 3.5.1, "Emergency Core Cooling Systems - Operating," for the licensee's failure to restore the Division I residual heat removal system (RHR) during clearance restoration, which resulted in exceeding the applicable technical specification action completion time. Specifically, from October 7, 2016, to February 5, 2017, the licensee failed to restore Division I RHR minimum flow isolation valves for RHR pumps A and C to the open position prior to reinstalling the valve sealing devices following maintenance performed during Refueling Outage 29. The licensee's immediate corrective action was to restore the Division I RHR subsystem to operable status by sealing open the minimum flow isolation valves for RHR pumps A and C. The licensee entered this issue into their corrective action program as Condition Report CR-CNS-2017-00553.

The licensee's failure to properly restore the Division I RHR system during clearance restoration resulted in exceeding the applicable technical specification action completion time, in violation of Technical Specification 3.5.1, which was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the human performance attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to follow technical specification requirements to ensure the availability, reliability, and capability of the Division I RHR subsystem directly affected the cornerstone objective. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the inspectors determined that the finding required a detailed risk evaluation because it

involved an actual loss of function of at least a single train for greater than its technical specification allowed outage time. A detailed risk evaluation (Attachment 2) calculated an increase in core damage frequency of $4.7E-7$ for the 89 days, 12 hours, and 49 minutes exposure period. Therefore, this violation was of very low safety significance (Green). The team determined the finding had a cross-cutting aspect within the human performance area, challenge the unknown, because individuals failed to perform adequate job-site reviews to identify and resolve unexpected conditions. Specifically, operations personnel restoring the Division I RHR subsystem did not ensure that the minimum flow isolation valves were repositioned to the correct position of sealed open.

Inspection Report# : 2017009 (*pdf*)

Significance:  Mar 17, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Implement an Adequate Procedure for Equipment Control

The team reviewed a self-revealed, non-cited violation of Technical Specification 5.4.1.a, "Procedures," for the licensee's failure to maintain Station Procedure 2.0.2, "Conduct of Operations Procedure, Operator Logs and Reports," Revision 106, for conducting sealed valve audits. Specifically, this procedure only checked that the seals were installed, and did not check that the valves were in the correct position. This resulted in an extended period of time that the Division I residual heat removal (RHR) system was unknowingly inoperable. The licensee's immediate corrective action was to revise Station Procedure 2.0.2 to include directions to check the position of sealed valves in addition to checking that the valve sealing devices were installed. The licensee entered this issue into their corrective action program as Condition Report CR-CNS-2017-00553.

Failure to maintain Station Procedure 2.0.2 for conducting sealed valve audits, in violation of Technical Specification 5.4.1.a, was a performance deficiency. This performance deficiency is more than minor, and therefore a finding, because it affected the configuration control attribute of the Mitigating Systems Cornerstone and adversely impacted the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to correctly identify and correct out of position Division I RHR minimum flow isolation valves resulted in unnecessarily and unknowingly extending the inoperability time of the Division I RHR subsystem by 39-45 days. Using Inspection Manual Chapter 0609, Attachment 04, "Initial Characterization of Findings," and Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that the violation required a detailed risk evaluation because the finding represented a loss of safety function for greater than its technical specification allowed outage time. A senior reactor analyst performed the risk evaluation and determined that the violation was of very low safety significance (Green). The team determined the finding had a cross-cutting aspect within the human performance area, resources, because leaders did not ensure that personnel, equipment, procedures, and other resources were available and adequate to support nuclear safety. Specifically, the licensee had approved Station Procedure 2.0.2, "Conduct of Operations Procedure, Operator Logs and Reports," Revision 106, for conducting sealed valve audits without including the fundamental direction to ensure that the sealed valves were in the correct position.

Inspection Report# : 2017009 (*pdf*)

Barrier Integrity

Significance:  Jun 30, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Loss of Control Room Ventilation Due to Ineffective Preventive Maintenance Strategy

The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 5.4.1.a, for the licensee's failure to maintain work order instructions for control room supply fan maintenance resulting in the loss of the control room

emergency filtration system. Specifically, prior to October 23, 2016, work order instructions for periodic preventive maintenance on the SF-C-1A supply fan failed to include industry recommended checks to ensure that the bearings were adequately engaged with the fan shaft, and failed to include proper work sequencing to ensure vibration data trending was meaningful. The ineffective preventive maintenance strategy resulted in the failure of the control room supply fan inboard bearing during operation and a loss of the control room emergency filtration system function. Corrective actions to restore compliance included repair of the supply fan and changes to improve the effectiveness of the fan's preventive maintenance strategy. The licensee entered this deficiency into the corrective action program as Condition Report CR-CNS-2016-07426.

The licensee's failure to maintain work order instructions for control room supply fan maintenance, in violation of Technical Specification 5.4.1.a, was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the structure, system, and component (SSC) and barrier performance attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (control room envelope) protect the public from radionuclide releases caused by accidents or events. Using Inspection Manual Chapter 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Process Phase 1 Initial Screening and Characterization of Findings," dated May 9, 2014, the inspectors determined that the finding had very low safety significance (Green) because the inspectors answered "no" to all of the Barrier Integrity screening questions. The finding had a cross-cutting aspect in the area of human performance associated with resources, because the licensee failed to ensure that personnel, equipment, procedures, and other resources were available and adequate to support nuclear safety.

Inspection Report# : 2017002 (*pdf*)

Significance:  Jun 30, 2017

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Loss of Control Room Ventilation Due to Improper Switch Manipulation

The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 5.4.1.a, for the licensee's failure to implement System Operating Procedure 2.2.38, "HVAC Control Building," Revision 43, during control building ventilation testing. Specifically, on December 7, 2016, when directed to turn off control building ventilation recirculation fan, RF-C-1A, operations personnel instead inadvertently turned off the operating control room emergency filtration system supply fan, 1-SF-C-1A, resulting in the loss of the control room emergency filtration system function. Corrective actions to restore compliance included restoration of the control room emergency filtration supply fan and procedure changes to require peer checks for this surveillance test and similar activities. The licensee entered this deficiency into the corrective action program as Condition Report CR-CNS-2016-08744.

The licensee's failure to implement System Operating Procedure 2.2.38, in violation of Technical Specification 5.4.1.a, was a performance deficiency. The performance deficiency was determined to be more than minor, and therefore a finding, because it was associated with the human performance attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (control room envelope) protect the public from radionuclide releases caused by accidents or events. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the inspectors determined that the finding had very low safety significance (Green) because it did not represent a degradation of the barrier function of the control room against smoke or a toxic atmosphere. The finding had a cross-cutting aspect in the area of human performance associated with challenge the unknown, because the licensee did not stop when faced with uncertain conditions, and did not ensure that risks were evaluated and managed before proceeding. Specifically, despite noting several abnormalities with the switch being manipulated, operations personnel did not stop to evaluate the uncertain conditions nor did they evaluate the risks associated with proceeding.

Inspection Report# : 2017002 (*pdf*)

Significance: G Dec 31, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Maintain Service Water Pump Maintenance Procedure

The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 3.6.4.2, "Secondary Containment Isolation Valves," for the licensee's failure to maintain secondary containment isolation valve HV-AOV-265 operable as a result of erecting scaffolding that interfered with valve operation. Specifically, between June 29, 2016, and September 14, 2016, the licensee erected scaffolding in close proximity of valve HV-AOV-265, such that, during valve stroking, the scaffolding would pinch the actuator air line and prevent the valve from closing, rendering the valve inoperable for approximately 10 weeks. This resulted in the licensee's need to reduce power to approximately 50 percent in order to comply with technical specifications upon discovery. Immediate corrective actions included removal of the scaffolding, replacement of the pinched air line, and restoration of the valve to operable status. The licensee entered this deficiency into the corrective action program as Condition Report CR-CNS-2016-05608 and initiated a root cause evaluation to investigate this condition.

The licensee's failure to implement Procedure 7.0.7, "Scaffolding Construction and Control," Revision 34, to ensure scaffolding did not adversely affect plant equipment, in violation of Technical Specification 3.6.4.2, was a performance deficiency. The performance deficiency was determined to be more than minor, and therefore a finding, because it was associated with the structure, system, and component and barrier performance attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (secondary containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the improperly erected scaffolding prevented the operation of a secondary containment isolation valve, rendering it inoperable for approximately 10 weeks. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the inspectors determined that the finding had very low safety significance (Green) because it only represented a degradation of the radiological barrier function provided for the control room, reactor building, spent fuel pool building, or standby gas treatment system. The finding had a cross-cutting aspect in the area of human performance associated with resources. Specifically, the licensee failed to ensure that personnel, equipment, procedures, and other resources were available and adequate to support nuclear safety.

Inspection Report# : 2016004 (*pdf*)

Emergency Preparedness

Significance: G Dec 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure of an Analysis to Demonstrate that Changes Did Not Reduce the Effectiveness of the Emergency Plan

The inspectors identified a non-cited violation of 10 CFR 50.54(q)(3) for the licensee's failure to perform an analysis demonstrating that proposed emergency plan implementing procedure changes did not reduce the effectiveness of the emergency plan. Specifically, the licensee's 50.54(q) evaluation failed to demonstrate that Emergency Plan Implementing Procedure 5.7.1, "Emergency Classification," Revision 54, changes, associated with Emergency Action Level SG2.1 and the fission product barrier matrix, did not result in a reduction in effectiveness. The corrective action was to revise 10 CFR 50.54(q) Evaluation 2016-011 to provide additional information about the ability of emergency coordinators in the Technical Support Center and Emergency Operations Facility to classify using the revised emergency action levels. The licensee entered this deficiency into the corrective action program as Condition Report CR-CNS-2016-05697.

The licensee's failure to perform an analysis demonstrating that proposed changes to Emergency Plan Implementing

Procedure 5.7.1 did not reduce the effectiveness of the emergency plan, in violation of 10 CFR 50.54(q)(3), was a performance deficiency. The finding was more than minor, and therefore a finding, because it was associated with the procedure quality attribute (emergency action level changes) of the Emergency Preparedness Cornerstone and adversely affected the cornerstone objective to ensure 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. Specifically, the licensee's ability to ensure that adequate measures are taken to protect the health and safety of the public is degraded if the licensee performs inadequate analyses of the effects of changes to the emergency plan. Using Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process," Attachment 2, dated September 22, 2015, the inspectors determined that the finding was of very low safety significance (Green) because it was not associated with a risk-significant planning standard function or a planning standard function. This finding had a cross-cutting aspect in the area of human performance, associated with change management, because the licensee failed to use a systematic process for evaluating and implementing changes so that nuclear safety remains the overriding priority. Specifically, the licensee did not have an adequate understanding of the licensing basis for making changes to emergency action levels.

Inspection Report# : 2016004 (*pdf*)

Occupational Radiation Safety

Significance: G Dec 31, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Maintain Reactor Vessel Assembly Procedure to Ensure Adequate Moisture Separator Shielding

The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 5.4.1.a for the licensee's failure to ensure sufficient radiological work controls were in place when the reactor pressure vessel moisture separator was installed during vessel reassembly. Specifically, the licensee failed to maintain sufficient detail in Station Procedure 7.4Reassembly, "Reactor Vessel Reassembly," Revision 13, to ensure that the moisture separator had adequate water shielding during lifts, such that radiation fields were appropriately controlled. The licensee took immediate corrective action to ensure re-submergence of the radiologically significant sections of the moisture separator and restore the requisite water shielding, thereby restoring ambient refuel floor radiological conditions. The licensee entered this deficiency into the corrective action program as Condition Report CR-CNS-2016-07552.

The licensee's failure to ensure sufficient radiological work controls were in place when the reactor pressure vessel moisture separator was lifted during vessel reassembly, in violation of Technical Specification 5.4.1.a, was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it was associated with the program and process attribute of the Occupational Radiation Safety Cornerstone and adversely affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Specifically, the failure to have sufficient procedural guidance to maintain adequate water shielding on the moisture separator resulted in unanticipated elevated dose rates on the refuel floor and unplanned radiological exposures to workers in the immediate work area. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, the inspectors determined that the violation had very low safety significance (Green) because: (1) it was not an as low as reasonably achievable (ALARA) finding; (2) there was no overexposure; (3) there was no substantial potential for an overexposure; and (4) the ability to assess dose was not compromised. The inspectors determined that the finding had a cross-cutting aspect in the area of human performance associated with avoiding complacency. Specifically, the licensee failed to recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes and failed to implement appropriate error reduction tools.

Inspection Report# : 2016004 (*pdf*)

Public Radiation Safety

Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

Miscellaneous

Current data as of : November 29, 2017

Page Last Reviewed/Updated Monday, November 06, 2017