North Anna 1
2Q/2016 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Jun 30, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Inadequate Translation of Design Calculations into Compensatory Measures when Removing Missile Barriers Could Result in EDGs and SBO Diesel Inoperable (Section 1R13)
Green. The NRC identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the inadequate translation of design calculations into compensatory measures when removing missile barriers. The inadequate translation of design calculations into compensatory measures when removing required passive missile shields is a performance deficiency (PD). The PD was more than minor because it was associated with the human performance 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 (i.e. core damage). Specifically, the inadequate compensatory measure resulted in the licensee having to make required changes to the compensatory measures in order to resolve missile protection concerns. The inspectors performed the initial significance determination for the finding using NRC Inspection Manual Chapter 0609, Appendix A, Exhibit 4, “External Events Screening Questions,” dated July 1, 2012. The finding required a detailed risk evaluation because the safety function of the onsite emergency diesel generators (EDGs) and the function of the station blackout (SBO) diesel were assumed to be completely failed due to inadequate compensatory missile protection measures for a high wind event. The finding has a cross-cutting aspect in the area of human performance associated with the conservative bias attribute because individuals use decision making-practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather that unsafe in order to stop [H.14]. The licensee entered this issue into the corrective action program (CAP) as Condition Report (CR)1034958. (Section 1R13)
Inspection Report# : 2016002 *(pdf)*

Significance: G Dec 31, 2015
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Failure to Follow Foreign Material Exclusion Procedure (Section 1R12)
A self-revealing, Green NCV of TS 5.4.1.a, "Procedures," as required by Regulatory Guide 1.33, Revision 2, Appendix A, Section 9a, “Procedures for Performing Maintenance,” was identified for inadequate implementation of licensee procedure MA-AA-102, Attachment 4, "Foreign Material Exclusion," Part ‘D’ “Closeout Inspections” Revision 15, which resulted in foreign material intrusion into the ‘B’ SW return header The licensee has entered this issue into their corrective action program as CR1010424.

The inspectors identified a performance deficiency (PD) for the failure to adequately implement the foreign material exclusion maintenance procedure MA-AA-102, Attachment 4, "Foreign Material Exclusion," Part ‘D’ “Closeout

Inspections" Revision 15. The inspectors determined that the PD 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 of systems that respond to initiating events to prevent undesirable consequences, (i.e., core damage). Specifically, the inadequate FME closeout led to foreign material intrusion into the 'B' SW return header when maintenance materials, such as plastic bags and mop heads, were not removed and made their way into the 'B' SW return header. The inspectors used Manual Chapter (IMC) 0609, Attachment 4, Initial Characterization of Findings, dated June 19, 2012, and determined that the finding was of very low safety significance or Green because the 'B' SW return header did not have an actual loss of safety function for greater than its allowed outage time (7 days). The finding had a cross-cutting aspect in the area of Human Performance, Work Management component, because licensee personnel did not follow procedure requirements of MA-AA-102, Attachment 4, "Foreign Material Exclusion," Part 'D' "Closeout Inspections" Revision 15 during the return to service portion of the work activity for the 'B' SW return header. [H.5]
Inspection Report# : 2015004 *(pdf)*

Significance: G Nov 06, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Inadequate Procedural Guidance for Implementing Alternative Shutdown for a Fire in the Unit 2 Quench Spray Pump House
The inspectors identified a Green non-cited violation (NCV) of Technical Specification 5.4.1.a, for the licensee's failure to provide adequate procedural guidance for implementation of the alternative shutdown capability in the event of a fire in the quench spray pump house. In particular, the fire safe shutdown procedure did not include actions to locally fail open the Unit 2 turbine-driven auxiliary feedwater (TDAFW) pump steam admission valves to allow operation of the TDAFW pump in the event the motor driven auxiliary feedwater pumps (MDAFW) were adversely affected by fire damage. The licensee entered this issue in their corrective action program as CR 1017083 and established compensatory actions until the Unit 1 and 2 procedures were revised.

The site's failure to maintain adequate procedural guidance to operate the Unit 2 TDAFW pump for a fire in the quench spray pump house was determined to be a performance deficiency. This performance deficiency was more than minor because it was associated with the procedure quality attribute of the reactor safety mitigating systems cornerstone and it affected the cornerstone objective of protection against external events (i.e., fire). The inadequate procedural guidance affected the fire protection defense-in-depth element involving safe shutdown of the reactor. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the inspectors determined that the finding was of very low safety significance (Green) at Task 1.3.1, Question A, based upon observations that there were no credible fire scenarios which would likely result in simultaneous fire damage to the cables for the Unit 2 TDAFW pump and both Unit 2 MDAFW pumps. No cross-cutting aspect was identified because the issue was determined to not reflect current licensee performance. [1R.05.05.b]
Inspection Report# : 2015008 *(pdf)*

Significance: G Nov 06, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation

Failure to Ensure that the Turbine-driven Auxiliary Feed Water Pump had the Capability to Provide Sufficient Flow Such that Residual Heat Removal Entry Conditions Could Be Achieved during Fire Event
The inspectors identified a Green non-cited violation (NCV) of North Anna Power Station, Units No.1 and No. 2, Renewed Facility Operating License, Conditions 2.D, "Fire Protection," for the licensee's failure to ensure that the turbinedriven auxiliary feed water (AFW) pump had the capability to provide sufficient flow such that residual heat removal (RHR) entry conditions could be achieved during fire events. The licensee entered this issue in their corrective action program as CR 1017291 with an action to re-evaluate the capability of the TDAFW pumps to achieve RHR entry conditions.

The site's failure to provide reasonable assurance that the turbine-driven AFW pump had the capability to provide sufficient flow such that RHR entry conditions could be met was a performance deficiency. This performance deficiency was more than minor because it was associated with the design control attribute of the reactor safety mitigating systems cornerstone and it affected the cornerstone objective of protection against external events (i.e., fire). The performance deficiency adversely affected the site's capability to achieve cold shutdown conditions in 72 hours for a fire event. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the inspectors determined that the finding was of very low safety significance (Green) at Task 1.3.1, Question A because the issue was associated with achieving cold shutdown conditions. The inspectors determined that the performance deficiency had a cross-cutting aspect of Teamwork in the Human Performance area (H.4). [1R.05.09]
Inspection Report# : 2015008 *(pdf)*

Significance: G Sep 30, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Consider Potential Water Hammer Impact Loading on AFW piping
The team identified a non-cited violation (NCV) of 10 Code of Federal Regulations (CFR) Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to control deviations from their piping design code of record for the auxiliary feedwater (AFW) system discharge lines. The licensee failed to consider the impact forces from a potential water hammer event as required by USA Standard (USAS) B31.1.0. The licensee entered this issue into their corrective action program as CR1003896. The licensee measured the discharge line temperatures of the AFW system to verify that current seat leakage past the check valves did not support steam void formation based on the recorded temperature and pressure in the discharge line such that water hammer was avoided. Additionally, the licensee implemented weekly temperature monitoring for continued operability of the AFW discharge lines in CA3003072.

This performance deficiency was more than minor because it was associated with the mitigating systems cornerstone attribute of design control and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee did not ensure the capability of the AFW piping because they did not consider that an undiscovered steam pocket in any of the AFW pumps discharge lines could lead to a water hammer in the line when AFW is initiated during an event. The team used IMC 0609, Att. 4, "Initial Characterization of Findings," issued June 19, 2012, for Mitigating Systems, and IMC 0609, App. A, "The Significance Determination

Process (SDP) for Findings At-Power," issued June 19, 2012, and determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design of a mitigating structure, system, or component (SSC), and the SSC maintained its operability or functionality (as shown through review of documentation related to prior identified leakage). The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance. (Section 1R21.3)
Inspection Report# : 2015007 *(pdf)*

Significance: G Sep 30, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Adequacy of Class 1E 120VAC Vital Bus Design (Section1R21)
• Green. The NRC identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to verify the adequacy of design for the protection devices at the 120VAC vital instrumentation buses. Specifically, the licensee's failure to verify that the protective devices at the Unit 1 and Unit 2 120VAC vital instrumentation buses would isolate failed equipment when supplied by the voltage regulating transformer in accordance with IEEE 308-1971 was a PD. The licensee entered this issue into their CAP as CRs 1006865 and 1013278. At the time of the inspection, the licensee was evaluating the issue to determine appropriate corrective actions. This does not present an immediate safety concern because the performance deficiency is related to a non-conformance with a design standard upon which only one train would be affected by a postulated single failure and the
other train would remain available and capable to respond to the design basis accident. The performance deficiency was determined to be more than minor because it adversely affected the Design Control 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, failing to isolate failed equipment could lead to tripping the associated 120VAC vital bus, causing unnecessary loss of other safety related equipment connected to the bus. The finding was determined to be of very low safety significance (Green), because it was a deficiency affecting the design or qualification of a structure, system, or component (SSC) and the SSC maintained its operability. This finding was not assigned a cross-cutting aspect because the issue did not reflect current licensee performance. (Section 1R21)

Inspection Report# : 2016002 *(pdf)*

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

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 : August 29, 2016