North Anna 2
3Q/2012 Plant Inspection Findings

Initiating Events

Significance: G Dec 31, 2011
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Follow Procedure to Ensure Proper Calibration of RHR Valve Control Circuit
A self-revealing Green NCV of Technical Specification 5.4.1.a was identified for the licensee's failure to implement procedures as required by Regulatory Guide 1.33, Appendix A, Section 8, Procedures for Control of Measuring and Test equipment and for Surveillance Tests, Procedures, and Calibrations, specifically calibration procedures for a control circuit associated with a residual heat removal (RHR) suction valve.

The licensee's incorrect calibration of a comparator card in the permissive control circuit for RHR Loop A Hot Leg to RH Pumps Isolation Valve, 02-RH-MOV-2700, was a performance deficiency (PD). The inspectors reviewed Inspection Manual Chapter (IMC) 0612, Appendix E, and determined the finding was similar to example 4.c. The performance deficiency was more than minor because it is associated with the Initiating Events Cornerstone attribute of Equipment Performance, and adversely affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown. Specifically, the calibration error caused the open permissive trip setpoint to be lower than required which prevented the generation of the permissive signal to allow 02-RH-MOV-2700 to operate in the open direction and would inhibit their ability to diagnose and prevent loss of residual heat removal (RHR) scenario. In accordance with NRC Inspection Manual Chapter (IMC) 0609, Appendix G, "Shutdown Operations Significance Determination Process," Attachment 1, Checklist 4, the inspectors conducted a Phase 1 SDP screening and determined the finding required a Phase 2 analysis because the calibration error degraded the licensee's ability to recover DHR once it was lost. A phase 2 SDP evaluation was performed by a regional SRA in accordance with NRC IMC 0609 Appendix G, Attachment 2, Phase 2 SDP Template for PWR during Shutdown. The exposure time was < 1 day from when RHR was secured and the valve closed until the licensee restored normal function for the valve. The significant assumptions and influential factors affecting the risk included: (1) The PD only affected opening from the main control room, local manual operation was not affected, (2) Closing of the valve and valve position indication were not affected, (3) Procedural guidance existed for local manual operation, (4) RCS pressure remained low (380psig) during the exposure period, and (5) the plant had been shutdown since August 23, 2011, and decay heat was very low. Large Early Release Fraction (LERF) risk was not significant due to the exposure period existing long after shutdown. The result of the risk analysis was an increase in core damage frequency of < 1E-6 per year, a GREEN finding of very low safety significance. The cause of this finding involved the cross-cutting area of human performance, the component of work practices, and the aspect of human error prevention, H.4(a) because the licensee failed to utilize the human performance tool of self-checking when completing the calibration of PC-2402 C1-245. (Section 1R22)

Inspection Report# : 2011005 *(pdf)*

Significance: SL-IV Dec 31, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Adverse Changes to the Fire Protection Program Involving Inadequate Control of Transient Combustibles
The inspectors identified a Severity Level IV Non-cited Violation (NCV) of the North Anna Power Station, Unit 1

and Unit 2 Renewed Facility Operating Licenses, NPF-4 and NPF-7, Condition 2.D, Fire Protection Program (FPP) leading to inadequate controls of transient combustibles. The licensee initiated condition reports CR342754, "Failed to submit request for transient fire loading in U-2 safeguards," Cr 397441, "Appendix R fire wrap in Unit 2 Containment," and CR 396368, "Appendix R fie wrap in Unit 1 Containment."

The inspectors determined that the adverse changes to the FPP involving the control of transient combustibles was a violation involving traditional enforcement because it impacted the NRC's ability to perform its regulatory function. The finding was determined to be more than minor because the relaxation of transient combustible controls described in the revisions to VPAP-2401, constituted a change which adversely affected the ability to adequately control and evaluate transient combustibles would present potential fire scenarios involving significant, non-liquid transient combustibles that would adversely affect safety-related and safe shutdown components to achieve and maintain safe shutdown in the event of a fire. This violation is characterized at Severity Level (SL) IV in Supplement I of the NRC Enforcement Policy, in that actual fire did not occur, and the potential consequences were limited given that defense in depth was maintained with the existence of auto fire detection and suppression capability and the availability of fire response teams. Although the licensee failed to meet regulatory requirements that have more than minor safety or environmental significance, the inspectors were unable to confirm the introduction of excessive transient combustibles into the plant other than the problem identified on July 27, 2009, which was determined to have very low safety significance. This lack of information was due to the licensee FPP changes that did not require a permit for evaluation and documentation. Because the issue is in the licensee's corrective action program as CR382725, this violation is being treated as an NCV, consistent with the NRC Enforcement Policy. This violation was not screened for associated cross-cutting aspects because it dealt with traditional enforcement. (Section 4OA5.4)

Inspection Report# : 2011005 *(pdf)*

Mitigating Systems

Significance: G Sep 30, 2012
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Promptly Identify and Correct a Condition Adverse to Quality Involving Inadequate Tornado MissileProtection for a Pipe Penetration in the SWP
The inspectors identified a non-cited violation of 10CFR 50, Appendix B, Criterion XVI, "Corrective Action", for the failure to promptly identify and correct a condition adverse to quality associated with inadequate tornado missile protection for a vent line penetration into the service water pump house (SWPH). The licensee initiated condition report CR479566, "SWPH Tornado Missile Protection Vulnerability," installed a temporary missile shield, and initiated design change NA-12-00056 to implement long-term corrective action.

The inspectors reviewed the issue of concern in accordance with IMC 0612, Appendix B, "Issue Screening." The inspectors determined that the failure to identify and correct a condition adverse to quality associated with inadequate tornado missile protection for pipe penetrations into the SWPH was a performance deficiency (PD). The PD is more than minor, and therefore a finding, because it adversely affected the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and the related attribute of protection against external events. . Specifically, a tornado could potentially affect the operation of one train of the safety-related SWPH ventilation system due to inadequate tornado missile protection for pipe penetrations. The inspectors evaluated the finding using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," because the affected system, service water, supports long term heat removal. The inspectors determined that the finding was of very low safety significance, Green, because it

did not represent an actual loss of function of one or more non-technical specification required trains of equipment designated as high safety-significant in accordance with the licensee?s maintenance rule program for greater than 24 hrs. In addition, this finding involved the cross-cutting area of problem identification and resolution, the component of the corrective action program, and the aspect of, evaluation of identified problems, P.1(c), because the licensee failed to identify inadequatetornado missile protection for a pipe penetration into the SWPH during multiple extent of condition evaluations. (Section 1R01.2)
Inspection Report# : 2012004 *(pdf)*

Significance: G Aug 01, 2012
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Develop an Adequate Procedure toTest the Quench Spray and Outside Recirculation Spray Pump Discharge Check Valves
The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings” for the licensee’s failure to develop an adequate test procedure which demonstrated that the quench spray and outside recirculation spray pumps’ discharge check valves were capable of performing their design basis function. The licensee entered this issue into their corrective action program as condition report 479661.

The licensee’s failure to develop an adequate test procedure which demonstrated that the quench spray and outside recirculation spray pumps’ discharge check valves were capable of performing their design bases functions was a performance deficiency. This performance deficiency was more than minor because it was associated with the procedure quality attribute of the mitigating system cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems to respond to initiating events to prevent undesirable consequences. Specifically, the failure to measure the torque required to cycle the check valves and compare these with established limits could result in the failure to detect degraded valve performance and prevent it from performing as designed. In accordance with Nuclear Regulatory Commission Inspection Manual Chapter 0609.04, “Initial Screening and Characterization of Findings”, the team conducted a Phase 1 Significance Determination Process screening and determined the finding to be of very low safety significance (Green) because it was not a design deficiency, did not represent the loss of a system safety function, did not result in exceeding a Technical Specification allowed outage time, and did not screen as potentially risk-significant due to a seismic, flooding, or severe weather initiating event. The team identified a cross-cutting aspect in the decision making component of the human performance area [H.1(b)]
Inspection Report# : 2012007 *(pdf)*

Significance: G Aug 01, 2012
Identified By: NRC
Item Type: NCV NonCited Violation
Failure To Implement Design Control Measures For The Service Water Air System
The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to implement design control measures involving two examples. In the first example, the licensee

failed to translate the updated final safety analyses report single failure design bases criteria into the service water (SW) air system specifications. In the second example, the licensee failed to verify the SW air system receiver capacity was adequate to support its design basis function. The licensee entered these issues into their corrective action program as condition reports 477213, 478531, 478957, and 478137.

The licensee's failure to establish design control measures to translate the updated final safety analyses report single failure design basis criteria into SW air system specifications and failure to verify or check the adequacy of the SW air receiver capacity was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with 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, if the screen wash system was required to mitigate the effects of a severe weather initiating event, the performance deficiency could have resulted in a common mode failure of the SW system. In accordance with NRC IMC 0609.04, "Initial Screening and Characterization of Findings," the team conducted a Phase 1 Significance Determination Process screening and determined that a Phase 3 assessment was required because the finding screened as potentially risk-significant due to a severe weather initiating event which could plug the SW traveling screens requiring the screen wash function. A bounding Significance Determination Process Phase 3 analysis was performed by a regional senior risk analyst which determined the performance deficiency was a Green finding of very low safety significance. The finding was reviewed for cross-cutting aspects and none were identified since the performance deficiency was not indicative of current licensee performance.
Inspection Report# : 2012007 *(pdf)*

Significance: G Aug 01, 2012
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate Design Control Measures for Thermal Overload Relays
The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to verify the adequacy of thermal overload relay settings for motor operated valves and continuous duty motors. The licensee entered this issue into their corrective action program as condition reports 479217, 479281, 479535, 479552, and 480755.

The licensee's failure to verify or check the adequacy of thermal overload relay settings for motor operated valves and continuous duty motors was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with 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, there was reasonable doubt as to whether safety related motors would continue to operate without tripping during design basis conditions. In accordance with Nuclear Regulatory Commission Inspection Manual Chapter 0609.04, "Initial Screening

and Characterization of Findings", the team conducted a Phase 1 Significance Determination Process screening and determined the finding to be of very low safety significance (Green) because it was a design deficiency confirmed not to have resulted in the loss of operability or functionality. The team identified a crosscutting aspect in the corrective action program component of the problem identification and resolution area [P.1(c)].
Inspection Report# : 2012007 *(pdf)*

Significance: G Aug 01, 2012
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate Procedures and Procedure Compliance For Thermal Overload Relay Testing
The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," involving two examples. In the first example, the licensee failed to ensure that appropriate acceptance criteria was included in procedures for testing motor control center thermal overload relays. In the second example, the licensee failed to ensure that testing was accomplished in accordance with the procedures. The licensee entered these issues into their corrective action program as condition reports 479217, 479281, 479535, 479552, and 480755.

The licensee's failure to ensure that appropriate criteria was included in procedures for testing motor control center thermal overload relays, and the failure to ensure that testing was accomplished in accordance with the procedures was a performance deficiency. The performance deficiency was determined to be 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. Specifically, there was reasonable doubt as to whether safety related motors would continue to operate without tripping during design basis conditions. In accordance with Nuclear Regulatory Commission Inspection Manual Chapter 0609.04, "Initial Screening and Characterization of Findings," the team conducted a Phase 1 Significance Determination Process screening and determined the finding to be of very low safety significance (Green) because it was not a design deficiency, did not represent the loss of a system safety function, did not result in exceeding a TS allowed outage time, and did not screen as potentially risksignificant due to a seismic, flooding, or severe weather initiating event. The team identified a crosscutting aspect in the work practices component of the human performance area [H.4(b)].
Inspection Report# : 2012007 *(pdf)*

Significance: G May 04, 2012
Identified By: NRC
Item Type: FIN Finding
Failure to Provide Required Power for the Seismic Instrumentation Annunciators
An NRC-identified, Green, finding (FIN) was identified by the inspectors for the licensee's failure to provide continuous standby power and sufficient power for a minimum 25 minutes of system operation for seismic instruments as required by a licensee self-imposed standard documented in the licensee's Updated Final Safety Analysis Report (UFSAR) which resulted in required seismic alarms and indications not being received in the main control room. Specifically, the licensee failed to provide the required power for both a triaxial response-spectrum recorder capable of providing signals for immediate control room indication and for the control room annunciator for the seismic switch. The licensee entered this issue into their corrective action program as CR468442. Immediately following the August 23, 2011 seismic event the licensee completed a temporary modification to connect an uninterruptible power supply to the seismic monitoring panel. In addition, the licensee is executing a design change to upgrade the site seismic monitoring equipment.

The inspectors reviewed IMC 0612, Appendix B and determined that the performance deficiency was more than minor because it adversely impacted the Design Control attribute of the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors reviewed IMC0609, Attachment 4 and determined that the finding was of very low safety significance, Green, because it did not screen as potentially risk significant using the seismic screening criteria contained in Attachment 4. The cause of this finding did not involve a cross-cutting aspect as it is not indicative of current licensee performance. (Section 4OA3)
Inspection Report# : 2012002 *(pdf)*

Significance: W Dec 31, 2011
Identified By: NRC
Item Type: VIO Violation
Failure to Provide Adequate Guidance for Installation of 2H EDG Jacket Water Cooling Inlet Jumper
A self-revealing Apparent Violation of Technical Specifications 5.4.1.a was identified for the licensee's failure to establish and maintain emergency diesel generator (EDG) maintenance procedures as required by Regulatory Guide 1.33, Appendix A, Section 9, Procedures for Performing Maintenance. The licensee initiated condition report CR439091, "02-EE-EG-2H Emergency Diesel Generator manually secured," and subsequently completed root cause evaluation (RCE) 001062.

The inspectors determined that the failure to adequately establish and maintain procedure 0-MCM-0701-27 was a performance deficiency. The inspectors reviewed IMC 0609, Appendix B, and determined that the finding was more than minor because it adversely affected the procedure quality attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically the failure to establish and maintain EDG maintenance procedures led to the inability of the 2H EDG to perform its safety function. The inspectors reviewed IMC 0609, Attachment 4, and determined that since the finding represented an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time, a phase 2 analysis was required. A phase 2 analysis was performed by a resident inspector and resulted in a potentially greater than green significance. Therefore, a phase 3 analysis is required to be performed by a regional SRA in accordance with the guidance of IMC 0609 Appendix A. The cause of this finding involved the cross-cutting area of problem identification and resolution, the component of operating experience, and the aspect of implementing operating experience, P.2(b), because the licensee failed to properly incorporate operating experience into station procedures. (Section 4OA5.3)

Choice Letter Inspection Report 05000338, 339/2012008 (ML12082A045) associated with Greater than Finding for both units was issued on 3/21. A Regulatory Conference was scheduled for 4/20.

Final SDP letter Inspection Report 05000338, 339/2012010 with White finding and Notice of Violation for both units was issued on May 10, 2012.
Inspection Report# : 2011005 *(pdf)*

Barrier Integrity

Emergency Preparedness

Significance: G Sep 30, 2012
Identified By: NRC
Item Type: FIN Finding
Challenges to Personnel Accountability Following Declared Alert
The inspectors identified a self-revealing Green finding for the licensee?s failure to follow posted manual personnel accountability instructions, which resulted in delays in completing the accounting process. Specifically, the licensee failed to perform manual accountability as expected which required locating a large number of individuals reported as missing thereby causing delays in completing the personnel accounting process. The licensee's Emergency Plan Implementing Procedure (EPIP) 1.03, “Response to Alert,” instructed the Station Emergency Manager to verify all personnel are accounted for in accordance with EPIP 5.03, “Personnel Accountability,” which instructed Security personnel to maintain continuous protected area accountability until event termination. Accountability system card-readers normally used to establish and maintain continuous personnel accountability were unavailable, and some assembly area leaders were not familiar with instructions posted in assembly areas for manual accountability of personnel. The degraded manual personnel accounting process resulted in expending over four hours to locate a large number of individuals reported as missing. The licensee entered the issue into their corrective action program as condition report, CR-439343.

The inspectors determined that the licensee?s failure to follow posted manual personnel accountability instructions was a performance deficiency. The performance deficiency was determined to be more than minor because it adversely impacted the Emergency Preparedness Cornerstone attribute of Emergency Response Organization Performance. The finding impacted the cornerstone objective because it is associated with actual event response. The finding was assessed for significance in accordance with NRC Inspection Manual Chapter (IMC) 0609, using the Phase I SDP worksheets for emergency preparedness and IMC 0609 Appendix “B” and was determined to be of very low safety significance (Green) because the finding was not associated with an emergency preparedness planning standard. The cause of this finding involved the cross-cutting area of human performance, the component of resources, and the aspect of training of personnel [H.2(b)]. (Section 4OA2.2)
Inspection Report# : 2012004 *(pdf)*

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

Significance: N/A Nov 29, 2011
Identified By: NRC
Item Type: FIN Finding
Startup Monitoring Inspection
The team concluded that your processes ensured that the plant licensing bases had not been degraded and the structures, systems, and components (SSC) of the North Anna Power Station could perform their safety functions following the earthquake event on August 23, 2011, and would support a return to safe power operation without undue risk to the health and safety of the public. The inspection team completed this verification through observation of control room activities and direct inspection of startup activities; including, mode changes, heatup, reactor startup, and power ascension from Mode 5 to rated thermal power. It also included direct inspection of surveillance testing, operability determinations, maintenance risk assessment, emergent work control, modifications, post-maintenance testing, review of corrective action program documents, partial system walkdowns of selected SSC's, including secondary systems, and other activities as applicable.
Inspection Report# : 2011013 *(pdf)*

Significance: N/A Nov 07, 2011
Identified By: NRC
Item Type: FIN Finding
Restart Readiness Inspection
The team concluded that your staff adequately inspected plant structures, systems and components (SSCs) to ensure that any damage from the August 23, 2011, seismic event was identified and, if found, would have been properly evaluated and corrected prior to initiating restart activities. As a result of the inspections performed by Dominion, industry and NRC personnel, no significant seismically-induced damage was identified which could affect the operability or functionality of plant SSCs. However, during the inspection, some examples of minor problems were identified, including: issues that had not been entered into the corrective action or work control programs as required; opportunities to enhance the root cause evaluations conducted following the seismic event; committed actions that were not being processed in accordance with program requirements; and areas which had not been inspected or evaluated before the Restart Readiness Inspection Team engaged your staff. One non-seismic issue associated with a penetration that was found to not be sealed as required is discussed in this report and will be dispositioned in the resident inspector's quarterly inspection report following further review by NRC staff.
Inspection Report# : 2011012 *(pdf)*

Significance: N/A Oct 03, 2011
Identified By: NRC
Item Type: FIN Finding
AIT
An Augmented Inspection Team (AIT) was dispatched to the site on August 30, 2011, to assess the facts and circumstances surrounding an earthquake event, dual unit trip, and loss of offsite power that occurred on August 23, 2011. The AIT was established in accordance with NRC Management Directive 8.3, "NRC Incident Investigation Program," and implemented using Inspection Procedure 93800, "Augmented Inspection Team."

The inspection was conducted by a team of inspectors from the NRC's Region II office, senior resident inspectors from North Anna and Construction Projects Branch 4, one Seismologist from the NRC Office of Nuclear Reactor Regulation (NRR), and two Structural Engineers from the NRC Office of New Reactors (NRO.) The team identified 7 issues that will require additional NRC inspection. These issues are tracked as unresolved items in this report
Inspection Report# : 2011011 *(pdf)*

Last modified : November 30, 2012