

North Anna 1

4Q/2009 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate Procedure Results in Excess Letdown Heat Exchanger Leakage

A Green, self-revealing, non-cited violation of TS 5.4.1a was identified for the failure to adequately establish procedural requirements for component cooling (CC) water flow through the Unit 1 excess letdown heat exchanger (Hx) which resulted in a cracked Hx tube and excessive reactor coolant system (RCS) leakage when placing the Hx in service. The licensee entered this problem into their corrective action program as condition report 354523.

This finding had a credible impact on safety due to continuous, excessive CC flow through the excess letdown Hx which caused a tube crack that allowed excessive intersystem leakage from the reactor coolant system (RCS) at approximately 60 gallons per minute for the 4 minutes in which the excess letdown heat exchanger was in service. The finding was more than minor because if left uncorrected it would have the potential to result in a more significant event involving multiple tube cracks with consequent leakage exceeding the capacity of a charging pump. In accordance with NRC inspection manual chapter (IMC) 0609, "Significant Determination Process," the inspectors performed a phase 1 analysis and determined the finding required a phase 2 analysis by a regional senior reactor analyst (SRA) due to the finding resulting in RCS leakage that exceeded TS limits. The finding resulted in an intersystem leak from the RCS system into the CC system when the excess letdown Hx was placed into service; however, an intersystem LOCA was not addressed in the pre-solved risk table, therefore a phase 3 analysis was performed by the SRA in accordance with the guidance of NRC IMC 0609, Appendix A. The SDP phase 3 risk evaluation resulted in a risk increase for the finding of less than 1E-6 for core damage frequency and less than 1E-7 for large early release frequency. The dominant sequence was an RCS leak into the CC system due to tube leakage in the excess letdown Hx when excess letdown was initiated, coupled with a failure of the charging function and a failure to isolate the leakage. Therefore, the finding was characterized as of very low safety significance (Green). The risk was low due to the magnitude of the leakage, which was less than the makeup capability of 1 charging pump, the availability of charging pumps to mitigate the leakage, and the high probability of accomplishing letdown isolation given the multiple operator cues and time availability. The finding had no cross-cutting aspects due to its legacy nature (not indicative of current licensee performance).

Inspection Report# : [2009005](#) (*pdf*)

Mitigating Systems

Significance:  Nov 12, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure for Powering Credited Components for Fire in Cable Vault & Tunnel.

The inspectors identified a Green non-cited violation (NCV) of Technical Specification 5.4.1, Procedures, in that the Unit 1 post-fire safe shutdown (SSD) procedure 1-FCA-3, "Cable Vault and Tunnel Fire", Revision 20, was not consistent with the safe shutdown analysis (SSA) for FA 3-1. Specifically, 1-FCA-3 directed operators to plug a ventilation fan into a receptacle that is powered from an electrical bus that had been previously de-energized in a prior step of the procedure. In another example, 1-FCA-3 did not give operators guidance for swapping the power supply of the auxiliary monitoring panel in the Fuel Handling Building. The licensee entered this issue into their corrective action program, and issued a new revision of 1-FCA-3.

This finding is more than minor because it is associated with the procedure quality attribute of the Mitigating Systems cornerstone, and it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors assessed the finding using Inspection Manual Chapter (IMC) 0609, Appendix F, "Fire Protection Significance Determination Process." The finding was assigned a low degradation rating in Phase 1 because it was determined to be a procedural deficiency that is compensated by operator experience and/or familiarity.

The inspectors reviewed guidance contained in IMC 0305 to determine if any cross-cutting aspects existed. This finding has a cross-cutting aspect in the resources component of the human performance area [H.2(c)] because the procedure was not complete and up to date in accordance with the SSA.

Inspection Report# : [2009008](#) (*pdf*)

Significance:  Oct 15, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Preconditioning of the Low Head Safety Injection Motor Operated Valves

A NRC-identified non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," was identified for preconditioning of low head safety injection (LHSI) motor operated valves (MOV_s). A preventative maintenance (PM) work order specified that licensee personnel lubricate valve components and manually stroke the MOV_s prior to performing documented stroke time testing required by Technical Specifications. The licensee entered this problem in their corrective action program as condition report 344052.

This finding is more than minor because if left uncorrected the finding has the potential to lead to a more significant safety concern in that other safety-related valve performance deficiencies could have been masked. The inspectors evaluated the finding using the significance determination process and determined the finding was of very low safety significance (Green) because the finding did not result in a loss of safety function. This finding involved the cross-cutting area of human performance, the component of resources and the aspect of training of personnel (H.2.b), because the licensee had previously performed procedure enhancements but failed to ensure their employees were adequately trained.

Inspection Report# : [2009004](#) (*pdf*)

Significance:  Oct 15, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Adequately Design and Install Oil Collection Devices for Reactor Coolant Pump Motor Stator Air Coolers

The inspectors identified a non-cited violation of the North Anna Power Plant Facility Renewed Operating Licensee NPF-4 & 7, Condition D, Fire Protection Program, which involved a failure to ensure an adequate design of the Units 1 and 2 reactor coolant pumps (RCP) oil collection system associated with the motor stator air coolers. The licensee entered the problem into their corrective action program as condition report 325879.

The finding was more than minor because it impacted 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 factors such as fire. This finding has a credible impact on safety because the inadequate design of the oil collection system presented a degradation of a fire confinement component which has a fire prevention function of not allowing an oil leak to reach hot surfaces. The finding was of very low safety significance or Green because of the low degradation rating of the fire confinement category related to the as found condition of oil accumulation at the motor stator air coolers, the extremely low frequency of RCP oil leaks, minor actual RCP oil leaks during the past operating cycle, and other area fire protection defense-in-depth features such as automatic fire detection, manual suppression capability (fire brigade), and safe shutdown capability from the main control room. There was no cross-cutting aspect due to the legacy aspect related to both examples (not indicative of current licensee performance).

Inspection Report# : [2009004](#) (*pdf*)

Significance: **G** Jun 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Repair or Rework Nonconforming Parts in Accordance with Documented Procedures

A self-revealing, Green, non-cited violation of 10 CFR 50, Appendix B, Criterion XV, Nonconforming Materials, Parts, or Components was identified for failure to repair or rework nonconforming parts in accordance with documented procedures which resulted in the failure of a Unit 1 pressurizer power operated relief valve (PORV). The licensee entered this problem into their corrective action program as condition report 328709 to review extent of condition and determine additional corrective actions.

The inspectors reviewed IMC 0612, Appendix B, and determined the finding was more than minor because if left uncorrected the performance deficiency would have the potential to lead to a more significant safety concern. The inspectors reviewed IMC 0609, Appendix G because the plant was shut down at the time, and determined that the finding did not require a quantitative assessment and thus screened as Green. The cause of this finding involved the cross-cutting area of human performance, the component of work practices, and the aspect of procedural compliance, H.4(b), because the licensee failed to follow procedural requirements that precluded work orders from containing instructions that alter plant/SSC design unless authorized by approved design documents or plant procedures.

Inspection Report# : [2009003](#) (pdf)

Significance: **G** Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Identify and Correct a Condition Adverse to Quality Involving Inadequate Tornado Missile Protection for the EDG Day Tank Vents

A Green, non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified by the NRC for failure to promptly identify and correct a condition adverse to quality associated with inadequate tornado missile protection for the emergency diesel generator (EDG) fuel oil day tank vents on each train for Units 1 and 2. The licensee entered this problem into their corrective action program as condition report 335031.

The inspectors reviewed IMC 0612, Appendix B, and determined the finding was more than minor because it impacted 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 design control for the initial structure, system, component design. The inspectors evaluated the finding using the significance determination process and determined that the finding was of very low significance because the design deficiency did not result in the loss of functionality and the finding did not screen as potentially risk significant due to a severe weather initiating event. This finding involved the cross-cutting area of problem identification and resolution, the component of the corrective action program, and the aspect of thorough evaluation of problems such that resolutions address extent of condition, P.1(c), because the licensee failed to identify inadequate tornado missile protection for the EDG day tank vents during an extent of condition evaluation and review.

Inspection Report# : [2009003](#) (pdf)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

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

Miscellaneous

Significance: N/A Feb 06, 2009

Identified By: NRC

Item Type: FIN Finding

North Anna PI&R Summary

The team concluded that, in general, problems were identified, evaluated, prioritized, and corrected. The licensee was effective at identifying problems and entering them into the corrective action program (CAP) for resolution, as evidenced by the relatively few deficiencies identified by external organizations (including the NRC) that had not been previously identified by the licensee, during the review period. Generally, prioritization and evaluation of issues were adequate, formal root cause evaluations for significant problems were adequate, and corrective actions specified for problems were acceptable. However, the team identified examples where the priority of condition reports was lowered without a documented basis. Overall, corrective actions developed and implemented for issues were generally effective and implemented in a timely manner.

The team determined that overall, audits and self-assessments were adequate in identifying deficiencies and areas for improvement in the CAP, and appropriate corrective actions were developed to address the issues identified. Operating experience usage was found to be generally acceptable and integrated into the licensee's processes for performing and managing work, and plant operations. However, the team found examples where operating experience was not adequately utilized to prevent problems.

Based on discussions and interviews conducted with plant employees from various departments, the inspectors determined that personnel at the site felt free to raise safety concerns to management and use the CAP to resolve those concerns.

Inspection Report# : [2009006](#) (*pdf*)

Last modified : March 01, 2010