

North Anna 1 2Q/2015 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Procedure for Maintaining MCR/ESGR Air Handler

A self-revealing NCV of 10 CFR 50 Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was identified for a failure to prescribe maintenance procedures affecting the quality of fan 1-HV-AC-7 appropriate to the circumstances. Specifically, the licensee failed to incorporate vendor guidance for taking bearing clearance measurements into maintenance procedure 0-MCM-0508-01 “Repair Buffalo Forge Centrifugal Fans” as required by administrative procedure VPAP-0502. This issue was entered in the licensee’s corrective action program (CAP) as condition report (CR) 552780.

This finding was determined to be more than minor because it affects the reactor safety barrier integrity cornerstone attribute of control room barrier, and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that are required for the habitability of the control room. Specifically, the finding impacted the availability of 1-HV-AC-7, which affects the availability of the MCR/emergency switchgear room (ESGR) air conditioning system (ACS). The finding was determined to be associated with the barrier integrity cornerstone based on the NRC IMC 0609, “Significance Determination Process” (SDP), dated June 2, 2011, Attachment 4, “Initial Characterization of Findings,” dated June 19, 2012. The inspectors performed a Phase 1 analysis using the IMC 0609, Appendix A, “The Significance Determination Process (SDP) for Findings At-Power”, dated June 19, 2012 and determined that the finding was of very low significance (Green) because the finding did not represent a degradation of the barrier function of the control room against radiation protection, smoke or a toxic atmosphere. The redundant subsystem was able to provide cooling to the MCR/ESGR envelope and it was within the 30-day Technical Specification 3.7.11 LCO. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance, design margins component, because the licensee failed to operate and maintain equipment within design margins where margins are carefully guarded and changed only through a systematic and rigorous process. Specifically, the licensee failed to recognize that the bearing clearance measurement identified in VTM 59-B878-00001 and the “SKF Bearing Maintenance Handbook” was a critical design parameter. [H.6]

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

Barrier Integrity

Significance:  Mar 31, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure To Follow Procedure For RWST Instruments

A self-revealing NCV of 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified for the licensee's failure to follow work management procedures. Specifically, the licensee failed to follow the conduct of maintenance procedure, MM-AA-100, "Conduct of Maintenance," Revision 10, where maintenance personnel should use an assortment of techniques and tools to avoid errors during work execution. Attachment 6 step 1b outlines various human error prevention techniques that should have been used during the work execution including "self checking" and "questioning attitude." This issue was entered into the licensee's corrective action program as CR 567185.

The licensee's failure to follow the conduct of maintenance procedure, MM-AA-100, "Conduct of Maintenance," Revision 10, was a performance deficiency. Specifically, on December 10, 2014, maintenance personnel failed to effectively use human error prevention tools when performing the maintenance on the Refueling Water Storage Tank (RWST) level channels which resulted in a loss of the safety function of the Recirculation Spray (RS) system. The performance deficiency was more than minor because it was associated with the configuration control attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to ensure that the physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events and is therefore a finding. Specifically, the RS system safety function was inadvertently rendered inoperable. The inspectors performed a Phase 1 analysis using the IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power", Exhibit 3 "Barrier Integrity Screening Questions," dated June 19, 2012 and Appendix H, "Containment Integrity Significance Determination Process," dated May 6, 2004, and determined the finding required a detailed risk evaluation because it involved the loss of safety function of the RS system.

A detailed risk evaluation was performed in accordance with NRC Inspection Manual Chapter (IMC) 0609, Appendix A by a regional senior reactor analyst using the latest NRC North Anna SPAR model and Sapphire risk program. The major analysis assumptions included: a thirty-two minute exposure interval, and a non-recoverable loss of both inside recirculation spray pumps and both outside recirculation pumps. The dominant risk sequence was a small break loss of coolant accident initiator, success of the reactor protection system, success of feedwater, success of high pressure injection, success of secondary side cooldown and failure of recirculation spray resulting in loss of core and containment heat removal capability. The risk was mitigated by the short exposure period. The risk evaluation result was an increase in core damage frequency of $<1 \text{ E-6/year}$ and an increase in large early release fraction of $<1 \text{ E-7/year}$, a GREEN finding of very low safety significance.

The finding has a cross-cutting aspect in the area of human performance associated with the work management attribute because the organization failed to implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Furthermore, the licensee work process control includes the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities. Specifically, due to poor communication and coordination between the Control Room and the technicians calibrating the RWST level channels, and amongst the team of technicians calibrating the RWST level transmitters, the RS system was inoperable [H.5] (1R12).

Inspection Report# : [2015001](#) (pdf)

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

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