

## North Anna 1 3Q/2014 Plant Inspection Findings

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### Initiating Events

**Significance:** G Dec 31, 2013

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Failure to Follow Work Instructions for the Replacement of Protective Relays Causes a Unit 1 Reactor Trip Due to Loss of Station Service Bus Transformer After Start of 1C Condensate Pump**

A Green, self-revealing finding was identified for failure to follow procedure for the replacement of protective relays that resulted in a Unit 1 trip. Specifically, the instructions in work order (WO) 59102618778 stated to “Have Control Ops install shorting screws for CT circuit,” and “Have Control Ops remove shorting screws for CT circuit.”

Maintenance personnel failed to remove the current transformer terminal block shorting screws installed inside the 1C switchgear breaker 15C2 cubicle and caused the turbine to trip and the reactor to trip from the loss of the 1C station service transformer after the start of the ‘C’ condensate pump. This was entered into the licensee’s CAP as CR528984.

The inspectors determined that the licensee’s failure to follow work instructions in WO59102618778 which stated to “Have Control Ops install shorting screws for CT circuit,” and “Have Control Ops remove shorting screws for CT circuit” for the replacement of protective relays was a performance deficiency. The performance deficiency was more than minor because it was associated with the Initiating Events cornerstone attribute of equipment performance and adversely affected the associated cornerstone objective in that maintenance personnel left the current transformer terminal block shorting screws installed inside the 1C switchgear breaker cubicle which caused the turbine trip and subsequent reactor trip from the loss of the 1C station service transformer after the start of the ‘C’ condensate pump. Using Inspection Manual Chapter 0609, Attachment 4, Initial Characterization of Findings, issued June 19, 2012, the finding was determined to be of very low safety significance (Green) because it was a transient initiator, but did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. In addition, this finding involved the cross cutting area of human performance, the component of resources, and the aspect of complete, accurate, and an up-to-date work instructions, H.2(c), because the work order job steps did not contain adequate means for documenting the installation and removal of shorting screws, which resulted in a loss of configuration control for the 1C switchgear 15C2 breaker cubicle. (Section 4OA2.4)

Inspection Report# : [2013005](#) (*pdf*)

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### Mitigating Systems

**Significance:** G Sep 30, 2014

Identified By: NRC

Item Type: NCV NonCited 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*)

**Significance:**  Jun 30, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to Maintain the Diesel Driven Fire Pump**

A self-revealing NCV was identified for the licensee’s failure to meet the requirements of NAPS Renewed Operating License Conditions 2.D, and the approved FPP for NAPS, Units 1 and 2. Specifically, the licensee failed to maintain the diesel driven fire pump water pump with established procedures that incorporated the equipment manufacturer’s recommended maintenance.

Failure to maintain the diesel-driven fire pump water pump with established procedures that incorporated the equipment manufacturer’s recommended maintenance is a performance deficiency. This finding was determined to be more than minor because it was associated with the reactor safety mitigating systems cornerstone attribute of protection against external events (i.e. fire), and it 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 finding impacted the availability of the diesel driven fire pump which adversely impacted the fire protection programs defense-in-depth in the event of a fire. The finding was screened in accordance with NRC Inspection Manual Chapter (IMC) 0609, “Significance Determination Process” (SDP), dated June 2, 2011, Attachment 4, “Initial Characterization of Findings,” dated June 19, 2012, which determined that an IMC 0609 Appendix F, “Fire Protection Significance Determination Process,” dated September 20, 2013, review was required as the finding affected fire water supply. The inspectors evaluated this finding using the guidance in IMC 0609, Appendix F. The pump failed on November 8, 2013, and the last successful test was performed on November 7, 2013. The review determined that the unaffected motor driven fire pump was available to provide at least 50 percent of the required fire water capacity (flow at required pressure) and therefore the finding screened as very low safety significance (Green). The inspectors determined that there was no cross-cutting aspect associated with this finding because it was not reflective of current licensee performance. The violation was entered into the licensee’s corrective action program (CAP) as CR532383. (Section 1R05)

Inspection Report# : [2014003](#) (pdf)

**Significance:**  Mar 31, 2014

Identified By: Self-Revealing

Item Type: FIN Finding

**Failure to mark a foreign material exclusion closure device results in non-functionality of the alternate AC diesel**

A self-revealing finding was identified for the licensee's failure to mark a foreign material exclusion (FME) closure device, as required by licensee procedure MA-AA-102, "Foreign Material Exclusion," Revision 14. This resulted in the non-functionality of the alternate AC (AAC) diesel.

The inspectors reviewed the issue of concern in accordance with IMC 0612, Appendix B, "Issue Screening." The inspectors determined that the licensee's failure to mark the #4 lifter side cover as an FME closure device as required by licensee procedure MA-AA-102 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 equipment performance. Specifically, the resultant improper installation of the #4 lifter side cover caused the non-functionality of the AAC diesel. The inspectors evaluated the finding using IMC 0609, Appendix A, "The Significance Determination Process For Findings At-Power", issued June 19, 2012, and determined that Exhibit 2, "Mitigating Systems Screening Question" was applicable since the AAC diesel is a mitigating system component. The inspectors determined that a Detailed Risk Evaluation was required because the finding represented an actual loss of function of one or more non-Technical Specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hrs. A detailed risk evaluation of the PD was performed by a regional senior reactor analyst (SRA) using the guidance of NRC Inspection Manual Chapter (IMC) 0609 Appendix A, and the latest NRC North Anna SPAR model. The resultant increase in core damage frequency from the PD was  $<1E-6$ /year, a GREEN finding of very low safety significance. In addition, this finding involved the cross-cutting area of Human Performance and the aspect of Avoid Complacency, H.12, because the licensee failed to recognize and plan for the possibility of mistakes caused by not labeling the FME closure device during the AAC diesel maintenance. (Section 1R19)

Inspection Report# : [2014002](#) (pdf)

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## Barrier Integrity

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## Emergency Preparedness

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## Occupational Radiation Safety

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## 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.

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## Miscellaneous

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