

North Anna 2

4Q/2005 Plant Inspection Findings

Initiating Events

G**Significance:** Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify Locations of Boric Acid Leakage

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures and Drawings. Licensee activities affecting quality were not accomplished in accordance with site procedures NASES-6.23 and DNAP-1004, in that the licensee failed to identify multiple boric acid leaks. These procedures require plant personnel to identify and document all evidence of boric acid leakage and complete a formal engineering evaluation for boric acid leaks that meet a defined severity threshold. The licensee immediately entered the leaks into their corrective action system, and conducted an initial operability review prior to unit restart.

This finding is greater than minor because it affected the equipment performance attribute of the Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. This finding is similar to non-minor example 4.a of IMC 0609 Appendix E, in that the licensee routinely failed to follow procedures by not identifying locations of boric acid leakage. This finding was determined to be of very low safety significance based on the IMC 0609, Appendix A, Phase 1 SDP worksheet. The finding screened as Green because leakage of boric acid is characterized as a Loss of Coolant Accident (LOCA) initiator, but the identified leakage did not contribute to the increased likelihood of a primary or secondary LOCA, and the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The cause of the finding is related to the cross-cutting area of human performance.

Inspection Report# : [2005005\(pdf\)](#)**G****Significance:** Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform a Risk Assessment Related to Scaffold-Arc Event

The inspectors identified a non-cited violation of 10 CFR 50.65 (a)(4) which requires that the licensee assess and manage the increase in risk that may result from the proposed maintenance activities. During the removal of scaffolding beneath conductors associated with 'C' Reserve Station Service Transformer a section of scaffolding contacted a lightning arrestor connected to the 'B' phase conductor. The resultant arc and impending relay actuation increased the risk for a loss of normal power to a 4160V safety-related bus on each unit. The licensee entered this problem into their corrective action program following the inspectors review of the licensee's root cause evaluation which failed to address the risk assessment aspects of this event.

This finding is more than minor because the licensee risk assessment failed to consider maintenance activities that could increase the likelihood of initiating events. The inspectors determined that the finding is of very low safety significance, Green, since the incremental core damage probability deficit was less than 1E-6 and a loss of normal power to a safety-related bus did not occur. This finding impacts the cross-cutting area of human performance.

Inspection Report# : [2005005\(pdf\)](#)**G****Significance:** Sep 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Procedures During Solid State Protection System Testing

On July 22, 2005, a self-revealing non-cited violation of Technical Specification 5.4.1.a was identified for a failure to follow a surveillance procedure which resulted in placing an incorrect bistable in a trip condition on Unit 2. Only unexpected control room alarms occurred as a result of the performance deficiency since no other logic channel's bistables were in trip.

The inspectors determined that the finding is more than minor because it could reasonably be viewed as a precursor to a more significant event. If another channel in the logic had already been tripped, the plant would have been adversely affected. The finding is of very low safety significance (Green) because it did not involve any loss of coolant accident initiators, did not contribute to both a reactor trip or mitigating system unavailability, nor increase the likelihood of a fire. This finding contains aspects relating to the cross-cutting area of human performance.

Inspection Report# : [2005004\(pdf\)](#)

G**Significance:** Sep 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Identify and Correct Deficiencies in Instrumentation Results In Reactor Trip

A self-revealing non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, was identified regarding a failure to promptly identify and correct deficiencies which caused anomalies in the Unit 2 channel 1 over-temperature delta-temperature (OTDT) instrumentation. The anomalies occurred during a lightning storm on July 29, 2003 and the licensee took no corrective actions to correct the condition. As a result, it was not until a Unit 2 automatic reactor trip from an OTDT signal on August 5, 2005, during a lightning storm, that the licensee identified an installation deficiency associated with a 1989 modification. A similar Unit 2 automatic reactor trip from an OTDT signal occurred during a lightning storm on September 17, 1998.

The finding had an impact on safety based on the deficiencies resulting in two reactor trips and a third documented "near miss" event. The finding was more than minor because it affected the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and the cornerstone attribute of design control. The finding is of very low safety significance because it did not contribute to the likelihood of a primary or secondary system loss of coolant accident, a loss of mitigation equipment functions or the likelihood of a fire or flood event. This finding contains aspects relating to the cross-cutting area of problem identification and resolution.

Inspection Report# : [2005004\(pdf\)](#)

Mitigating Systems

G**Significance:** Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Assess the Increase in Risk for Work Associated With Spent Fueling Pool (SFP) Cooling Support Systems During a Defueled Plant Condition

The inspectors identified a non-cited violation of 10 CFR 50.65 (a)(4) which requires that the licensee assess and manage the increase in risk that may result from the proposed maintenance activities. Upon achieving a reactor defueled plant condition, the licensee failed to continue risk assessments during system alignments and maintenance activities associated with power supplies for the spent fuel cooling pumps. The licensee resumed the risk assessments and entered the deficiency into their corrective action program after identification of the finding by the inspectors.

The licensee's failure to perform risk assessments is 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 to the reactor core and the associated cornerstone attribute of human performance. The finding did not increase the likelihood of a loss of offsite power or degrade the licensee's ability to cope with a loss of offsite power due to actual component failures, resulting in the characterization of very low safety significance (Green). The cause of the finding impacts the cross-cutting area of human performance.

Inspection Report# : [2005005\(pdf\)](#)**G****Significance:** Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Correct a Condition Adverse to Quality Regarding Small Debris in Containment

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, which requires in part that measures shall be established to assure that conditions adverse to quality, such as deficiencies, are promptly identified and corrected. During a containment closeout inspection for the refueling outage on Unit 2, an appreciable amount of small debris was found beneath the seismic support plates in all 3 loop rooms and beneath the air recirculation fans. The licensee took immediate action to remove the debris prior to entering Mode 4 and entered the problem into their corrective action program.

The inspectors determined the finding is more than minor because it could be reasonably viewed as a precursor to a significant event involving debris accumulation on the containment sump screens and a subsequent impairment to suction flow for emergency core cooling system pumps. The inspectors further determined the finding was of very low safety significance and impacted the Mitigating Systems Cornerstone. However, the finding did not result in a loss of function per Generic Letter 91-18, did not represent an actual loss of safety function, and was not potentially risk significant due to possible external events. This finding impacts the cross-cutting area of problem identification and resolution.

Inspection Report# : [2005005\(pdf\)](#)**G****Significance:** Dec 31, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Establish Adequate Instructions or Procedure for Placing Placards on Safety-Related Equipment

A self-revealing non-cited violation was identified of 10 CFR 50 Appendix B, Criterion V, which requires in part that activities affecting quality shall be prescribed by documented procedures of a type appropriate to the circumstances and shall be accomplished in accordance with these procedures. As a result of the licensee's failure to establish an adequate procedure to control placards affixed to safety-related equipment, a trip of the 2-III Vital Bus Inverter occurred. The licensee has entered this problem into their corrective action program to determine appropriate corrective actions.

The finding was more than minor due to the impact on the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and its attribute of procedure quality. The inspectors determined that no additional qualitative assessment was warranted based on the continued availability of core cooling, and the finding resulted in the characterization of Green (very low safety significance). The cause of this finding involved the cross-cutting area of human performance. Inspection Report# : [2005005\(pdf\)](#)

G**Significance:** Sep 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate Design Control Results in Degradation of SW Supports/Restraints

A self-revealing non-cited violation of 10 CFR 50, Appendix B, Criterion III, was identified for inadequate design controls. During the development of a service water (SW) expansion joint modification, which was implemented in December 2003, the licensee failed to verify the design adequacy of adjacent pipe support and restraints. The design failed to incorporate normal system pressure loads in the design. As a result, on June 14, 2005, during inspections of the SW expansion joints, the licensee noted severe damage on adjacent pipe support and restraints. Both the Unit 1 and Unit 2 'A' and 'B' trains of SW were affected. The SW system was determined to operable but degraded.

This finding had a credible impact on safety based on a design control error which impacted both trains of the SW system which is a link between the transfer of reactor decay heat to the plant's ultimate heat sink. The finding is more than minor due to the impact on the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage) and the cornerstone attribute of design control of plant modifications. The finding is of very low safety significance because the design deficiency was confirmed not to result in loss of function per Generic Letter 91-18. This finding contains aspects relating to the cross-cutting area of human performance.

Inspection Report# : [2005004\(pdf\)](#)**G****Significance:** Jan 28, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Determine the Cause and take Appropriate Corrective Actions for the Installation of Incorrect Thermocouples in the Charging Pump Bearings.

Between 1993 and 2004, the licensee replaced 5 of the 18 thermocouples associated with the Unit 1 and 2 charging pump inboard, outboard, and thrust bearings. The replacement thermocouples were of the incorrect type. The finding was a failure of the licensee to take corrective actions following the identification of the incorrect thermocouples being used on the charging pump bearings in 2002. The finding was more than minor as the condition could have adversely impacted the ability of control room operators to detect charging pump bearing degradation or an impending failure during normal or emergency operations.

The event was determined to be of very low safety significance (Green) because the alternate train charging pumps which had the original "T" type thermocouples were available to perform their safety function for the period between 1993 and 2004. This finding is a non-cited violation of 10 CFR 50 Appendix B Criterion XVI, "Corrective Actions." This finding involved the cross-cutting aspect of Problem Identification and Resolution.

Inspection Report# : [2005006\(pdf\)](#)**Barrier Integrity****G****Significance:** Sep 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Follow Procedures Affecting Safety-Related Breakers

A self-revealing non-cited violation of Technical Specification 5.4.1.a was identified for a failure to follow a maintenance procedure. On February 19, 2005, the Unit 2 'B' quench spray pump motor breaker overload setpoints were not set in accordance with procedures. As a result, the pump tripped while starting on August 19, 2005.

The finding had a credible impact on safety due to the starting failure of one of the components required to reduce containment pressure following a design basis accident. The finding was more than minor because it affected the Barrier Integrity cornerstone objective to provide

reasonable assurance that the containment physical design barriers protect the public from radio nuclide releases caused by accidents or events, and the respective cornerstone of human performance. The finding was determined to be of very low safety significance because it did not impact design deficiencies, result in a loss of system safety functions, exceed related TS outage times, nor involved a seismic, flooding, or severe weather initiating event. This finding contains aspects relating to the cross-cutting area of human performance.

Inspection Report# : [2005004\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

Significance: N/A Jan 28, 2005

Identified By: NRC

Item Type: FIN Finding

BIENNIAL NRC PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT NOS. 50-338/2005-006 AND 50-339/2005-006

The team concluded that, in general, problems were properly identified, evaluated, and corrected. The licensee was effective at identifying problems and entering them in the corrective action process. Issues were prioritized and evaluated appropriately, and in a timely fashion. The evaluations of significant problems were in general of sufficient depth to determine the likely root or apparent causes, as well as, address the potential extent of the circumstances contributing to the problem and provide a clear basis to establish corrective actions. Corrective actions that addressed the causes of problems were generally identified and implemented. Reviews of sampled operating experience information were comprehensive. Licensee audits and assessments were found to be adequately broad based and effective in providing management a tool for identifying adverse trends. Previous noncompliance issues documented as non-cited violations were properly tracked and resolved via the corrective action program. Based on discussions with plant personnel and the low threshold for items entered in the corrective action program database, the inspectors concluded that workers at the site were free to raise safety concerns to their management.

Inspection Report# : [2005006\(pdf\)](#)

Last modified : March 03, 2006