

## Surry 2

### 3Q/2005 Plant Inspection Findings

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## Initiating Events

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## Mitigating Systems

**Significance:**  Sep 30, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Translate a Design Change into Design Specifications**

A self-revealing non-cited violation of 10CFR50, Appendix B, Criterion III, Design Control, was identified for failure to correctly translate design changes into design specifications. The licensee developed a design change for the Unit 1 and Unit 2 charging pump lube oil cooler heat exchangers to prevent corrosion related tube failure. The licensee failed to transfer this design change into an applicable procurement specification to procure lube oil cooler heat exchangers with coated tubes.

The finding is determined to be more than minor because it affects the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capacity of systems that respond to initiating events to prevent undesirable consequences. The finding was associated with the equipment and human performance attributes of the cornerstone. The finding was evaluated using Manual Chapter 0609 and determined to be of low safety significance. The finding affects the Mitigating Systems Cornerstone for short term decay heat removal and is of low safety significance because it did not result in the actual loss of a safety system and is not risk significant in response to external events.

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

**Significance:**  Aug 26, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Promptly Correct a Degraded Flow Condition on an Emergency Service Water Pump**

The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly correct a condition adverse to quality. The licensee identified, but did not promptly correct, a degraded flow condition on the 'A' Emergency Service Water Pump.

The finding was determined to be more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capacity of systems that respond to initiating events to prevent undesirable consequences. The finding was associated with the equipment performance and human performance attributes of the cornerstone. The finding affects the Mitigating Systems Cornerstone function of core decay heat removal and is of very low safety significance (Green) because it did not result in the loss of a safety function of a single train for greater than the Technical Specification allowed outage time and is not risk significant in response to external events (seismic, flood, and severe weather). The finding is also related to the cross-cutting area of problem identification and resolution because the cause of the degraded flow condition was not promptly corrected by the licensee.

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

**Significance:**  Aug 26, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Promptly Correct a Lubricating Oil Dilution Condition on an Emergency Service Water Pump**

The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly identify and correct a condition adverse to quality. The licensee identified, but did not promptly correct, a degrading trend in the lubricating oil associated with the 'B' Emergency Service Water Pump.

The finding was determined to be more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capacity of systems that respond to initiating events to prevent undesirable consequences. The finding was associated with the equipment performance and human performance attributes of the cornerstone. NRC Inspection Manual Chapter 0609, Appendix A was used to evaluate this finding. Phase 2 Significance Determination Process analyses determined that this finding is of very low safety significance (Green) because only one of the three trains of emergency service water was affected and only one train is required to mitigate the consequences of an accident. The finding is also related to the cross-cutting area of problem identification and resolution because the lubricating oil degradation condition was not promptly identified and corrected by the licensee.

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

**G**

**Significance:** Aug 26, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Promptly Correct High Moisture Content of the EDG Air Start System**

The team identified a non-cited violation for the failure to comply with 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly correct a condition adverse to quality. Specifically, the licensee failed to take timely corrective actions from a previous event in which corrosion products from the carbon steel air start system prevented the #2 Emergency Diesel Generator to start.

The event was determined to be more than minor because it affected the Mitigation System Cornerstone and affected the reliability of the emergency power system. The item was determined to be of very low safety significance (Green) because it did not result in the loss of a safety function of a single train for greater than the Technical Specification allowed outage time and is not risk significant in response to external events (seismic, flood, and severe weather). The finding is also related to the cross-cutting area of problem identification and resolution because the air dryer installation was not implemented in a timely manner

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

**G**

**Significance:** Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Promptly Correct High Vibrations on a Safety Injection Pump**

The inspectors identified a non-cited violation of 10CFR50, Appendix B, Criterion XVI, "Corrective Action" for failure to promptly correct a condition adverse to quality. The licensee identified, but did not promptly correct, the high vibration condition on the Unit 2 'B' safety injection pump, 2-SI-P-1B. The issue was identified in April 2002 but was not corrected until October 2004.

The finding was determined to be more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capacity of systems that respond to initiating events to prevent undesirable consequences. The finding was associated with the equipment performance and human performance attributes of the cornerstone. The finding affects the Mitigating Systems Cornerstone function of core decay heat removal and is of low safety significance (Green) because it did not result in the loss of a safety function of a single train for greater than the Technical Specification allowed outage time and is not risk significant in response to external events. The finding is also related to the cross-cutting area of identification and resolution of problems because the cause of the vibration condition was not promptly identified and corrected by the licensee.

Inspection Report# : [2005003\(pdf\)](#)

**G**

**Significance:** Jun 30, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Corrective Action Resulting in Recurring Thru-wall Leaks on Main Control Room Chillers '4D' and '4E'**

The inspectors identified a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action" for failure to prevent recurrence of a condition adverse to quality. The licensee identified but did not take corrective actions to prevent recurrence of thru-wall leaks in service water related components on main control room chillers '4D' and '4E'. At least 11 thru-wall leaks have occurred between June 1995 and February 2005 without proper corrective actions to address the cause.

The finding was determined to be more than minor because it affects the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding is associated with the equipment performance and design control attributes of the cornerstone. The finding affects the Mitigating Systems Cornerstone function of core decay heat removal and is of low safety significance (Green) because it did not result in the loss of a safety function of a single train for greater than the Technical Specification allowed outage time and is not risk significant in response to external events. The finding is also related to the cross-cutting area of identification and resolution of problems because corrective actions were not taken to prevent recurrence of the flow accelerated corrosion condition.

Inspection Report# : [2005003\(pdf\)](#)

**G**

**Significance:** Mar 31, 2005

Identified By: NRC

Item Type: FIN Finding

**Failure to Provide a Power Supply for Turbine Building Flood Instrumentation and Circulating Water Condenser Inlet Valve Logic Which Would be Available Following a Loss of offsite power**

The inspectors identified a finding in that the turbine building flood control system did not provide adequate protection for all licensing basis flooding scenarios. Specifically, portions of the flooding detection and mitigation circuitry, turbine building flood level detection instrumentation, and circulating water (CW) condenser inlet valve closure logic, would not be available for some flooding scenarios involving a loss of offsite power. The licensee's completed corrective actions include installation of a design change which provides redundant, vital bus

powered detection and warning of flooding in the turbine building basement which alarms in the control room.

The finding is greater than minor because it affects the design control attribute of the mitigating systems cornerstone objective. A Phase 3 risk analysis determined that this finding was of very low safety significance. This was primarily due to the low frequency of an earthquake of sufficient magnitude to fail offsite power and the circulating water piping connected to the condenser, but of insufficient magnitude to cause catastrophic failure of the turbine building. (Section 40A5.2)

Inspection Report# : [2005002\(pdf\)](#)

**Significance:** N/A Dec 10, 2004

Identified By: NRC

Item Type: FIN Finding

#### **95002 Supplemental Inspection Resulta for Degraded Mitigating Systems Cornerstone**

This supplemental inspection was performed by the NRC to assess the licensee's problem identification, root cause evaluation, extent of condition determination, and corrective actions associated with a White performance indicator (PI) and a White inspection finding. These two issues, which were in the Mitigating Systems Cornerstone, placed the performance of Surry Units 1 and 2 in the Degraded Cornerstone Column of the NRC's Action Matrix for the first quarter 2004. The PI, Safety System Unavailability - Emergency AC Power, crossed the threshold from Green to White in the fourth quarter 2001 for both units and remained through the first quarter 2004 for Unit 2, and through the third quarter 2004 for Unit 1. The White PI was evaluated in Supplemental Inspection Report 05000280,281/2002008. The White inspection finding involved Surry fire response procedures that were not effective in ensuring safe shutdown for a fire in Emergency Switchgear and Relay Room Numbers 1 or 2, of Surry Power Station Units 1 and 2 respectively. Specifically, the procedures may not have precluded an extended loss of reactor coolant pump (RCP) seal injection flow, resulting in an RCP seal loss of coolant accident. The performance issue associated with this inspection finding was previously characterized as having low to moderate risk significance (White) in NRC "Final Significance Determination" letter dated September 15, 2004.

During this supplemental inspection, which was performed in accordance with Inspection Procedure 95002, the inspectors utilized the results from Supplemental Inspection Report 05000280,281/2002008 to address the White PI, Safety System Unavailability - Emergency AC Power. The combined assessment of the White PI and the White inspection finding that resulted in the degraded Mitigating Systems cornerstone is summarized below.

As indicated in Supplemental Inspection Report 05000280,281/2002008, the licensee's formal root cause evaluations (RCE) for the White PI, Safety System Unavailability - Emergency AC Power, was acceptable. The licensee implemented adequate corrective actions to prevent recurrence based upon their RCEs.

The licensee performed a Category 1 RCE, S-2003-1490, to address the fire response procedure finding associated with restoration of seal injection flow to the RCPs. This RCE was considered by the inspectors to be independent and consistent with the prescribed charter. However, the inspectors noted that the licensee's extent of condition reviews lacked thoroughness with regard to the RCE findings. Additionally, the licensee performed Common Cause Evaluation (CCE) S-2004-1504 in January 2004 to assess Surry Power Station Units 1 and 2 performance in the NRC's Reactor Oversight Process. The licensee also performed CCE S-2004-3295 in October 2004 to address the degraded Mitigating Systems cornerstone for Surry Units 1 and 2. The inspectors considered that, although CCE S-2004-3295 did not possess the attributes of an extent of condition evaluation, this CCE determined, through review of various corrective action system documents, that there was a common cause for these White issues. During this 95002 supplemental inspection, the licensee performed more comprehensive extent of condition related actions through additional reviews of external information programs and processes, and reviews of various management committees' charters/procedures for dispositioning technical concerns. These additional extent of condition and extent of cause related reviews, combined with the efforts in CCE S-2004-3295, were considered to be appropriately focused based on the inspectors' independent extent of condition review.

Although corrective actions appeared to be appropriately prioritized and tracked, the inspectors noted that the licensee was still evaluating long-term corrective action options for resolving the White inspection finding related to restoration of RCP seal injection flow. Consequently, the licensee had not identified all of the corrective actions for this finding and a completion date was not available. Overall, corrective actions related to this White inspection finding adequately addressed compliance restoration and the identified root causes and causal factors. While the inspectors considered that the appropriate root causes were identified by the licensee in RCE S-2003-1490, the contributing cause identified in this RCE was not considered to be the most appropriate. Specifically, the licensee identified that the failure to install Westinghouse (W) high temperature O-rings in the RCP seals in a timely manner was a contributing cause to the failure to revise the Surry Fire Contingency Action (FCA) procedures once the difference between the FCAs and the emergency response guidelines (ERG) was identified. The inspectors noted that the RCE did not recommend any corrective actions for this identified contributing cause. However, the inspectors considered that this contributing cause identified in the RCE was not the most appropriate one. The inspectors considered that the more appropriate contributing cause should have been the unclear responsibilities and inaccurate perception of who had ownership of the FCA procedures. This determination was based on the inspectors' review of RCE S-2003-1490, Potential Problem Report (PPR) 2000-004, and the meeting minutes of the Management Problem Review Team (MPRT) related to PPR 2000-004. The inspectors noted that the licensee had implemented corrective actions to address ownership of the FCA procedures by revising Virginia Power Administrative Procedure (VPAP)-0502, Procedure Process Control.

Inspection Report# : [2004011\(pdf\)](#)

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## Emergency Preparedness

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## Occupational Radiation Safety

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## Public Radiation Safety

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## Physical Protection

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

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## Miscellaneous

**Significance:** N/A Aug 26, 2005

Identified By: NRC

Item Type: FIN Finding

### **Results of Problem Identification and Resolution Inspection**

The team concluded that, in general, problems were properly identified, evaluated, and corrected. The licensee was effective at identifying problems, issues were prioritized, evaluated appropriately, and dispositioned in a timely fashion. 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. A recent licensee self-assessment identified several areas of improvement. Numerous corrective actions have been implemented as well as planned to address issues raised during the recent self-assessment. Significant changes to address issues, such as extent of condition review, ensure corrective actions match what was expected, and manage number of action items stemming from Plant Issues (PIs), are underway or planned. The team observed the corrective action review board as well as the Plant Issues Review Team (PIRT) and noted improvement in the quality of the resolution of PIs. Reviews of sampled operating experience information were comprehensive. 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 team concluded that workers at the site were free to raise safety concerns to their management.

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

Last modified : November 30, 2005