

# Surry 1

## 4Q/2007 Plant Inspection Findings

---

### Initiating Events

**Significance:**  Jun 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Perform an Adequate Risk Assessment for Unit 2 Cross-Under Relief Valve 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. Specifically, in assessing the increase in risk of planned maintenance activities, the licensee failed to adequately assess planned risk. The licensee entered this issue in their corrective action program as CR-003611 for resolution.

The finding was considered to be more than minor because the licensee's risk assessment had known errors or incorrect assumptions that had the potential to change the outcome of the assessment. 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. The inspectors determined that the cause of the finding was related to the proper work planning aspect of the human performance cross-cutting area.

Inspection Report# : [2007003](#) (*pdf*)

**Significance:**  Mar 31, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to Perform an Adequate Extent of Condition Review for Unit 1 June 29, 2006, Turbine Building Damage Event**

A Green self-revealing finding was identified for not performing an adequate extent of condition review in accordance with the licensee's established procedures. The potential consequences of having siding torn from the Turbine Building if Unit 2 experienced steam relief valve actuations, as had occurred on Unit 1 on June 29, 2006, was not recognized. Consequently on October 7, 2006, the actuation of Unit 2 steam relief valves resulted in the loss of normal power to two emergency buses on Unit 1 and one emergency bus on Unit 2 due to flying debris impacting electrical conductors. The finding was entered into the licensee's corrective action program as Condition Report (CR) 003598. Sections of the Turbine Building near the discharge of the steam relief valves were temporarily strengthened while additional long term corrective actions were being evaluated.

The finding is more than minor due to its impact on the Initiating Events objective to limit the likelihood of those events that upset plant stability and the related attribute of human performance. This finding was of very low safety significance (Green) because the increase in risk was limited by the duration of the condition. The cause of the finding was directly related to the appropriate and timely corrective actions aspect of the problem identification and resolution cross-cutting area because sufficient information was available for the licensee to have identified potential damage to plant equipment and taken actions to limit it when the Unit 2 steam relief valves actuated.

Inspection Report# : [2007002](#) (*pdf*)

---

### Mitigating Systems

**Significance:**  Dec 31, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Emergency Service Water Pump 1-SW-P-1B Inoperable Due to an Inadequate Maintenance Instruction for**

### **Reassembly of the ESW strainer**

A Green self-revealing non-cited violation of Technical Specification 6.4, "Unit Operating Procedures and Programs," was identified for failure to have an adequate maintenance procedure for the emergency service water (ESW) pump strainer. This resulted in the emergency service water pump 1-SW-P-1B being declared inoperable. This procedure failed to provide adequate instructions for the reassembly of ESW strainer 1-SW-STR-4B. The finding was documented in the licensee's corrective action program as condition report CR023818. Corrective action was taken to restore pump operability and to correct the procedure and post-maintenance test error.

The finding is more than minor, because it is associated with the operability, availability, reliability, or function of a system or train in a mitigating system. This finding was evaluated using the Significance Determination Process and was determined to be of very low safety significance because it did not result in a loss of safety function or the loss of a single train of ESW for more than the allowed Technical Specification outage time. This finding has a cross-cutting aspect in the area of human performance work practices (H.4.a), because personnel proceeded in the face of uncertainty when they continued to re-assemble the strainer operating mechanism without the requisite work instructions.

Inspection Report# : [2007005](#) (*pdf*)

**Significance:**  Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Temporary Fire Suppression Capacity Not Equivalent to Unit 1 Containment Fire Hose Stations**

A Green NRC-identified non-cited violation of paragraph (a)(1) of 10 CFR 50.48, "Fire Protection," was identified for failure to maintain the fire suppression capability for the Unit 1 containment building as specified by the approved fire protection plan. On October 27, 2007, the licensee failed to provide equivalent fire suppression capacity when the Unit 1 containment fire hose stations were removed from service for repair. This finding was entered into the licensee's corrective action program as condition report CR025073. Planned corrective actions included developing equivalent fire suppression capacity determinations for other hose stations.

This finding is more than minor because it was associated with a degradation of a fire protection feature. The finding is of very low safety significance because it involved low degradation of a fixed fire protection system. A significant cause of this finding involved the Decision-Making component of the cross-cutting area of Human Performance and the aspect of making safety-significant or risk-significant decisions using a systematic process, in that, a formal evaluation was not used to determine equivalent capacity (H.1.a).

Inspection Report# : [2007005](#) (*pdf*)

**Significance:**  Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Carbon Dioxide Suppression System Degraded in Two Fire Areas in Unit 1 and Three Fire Areas in Unit 2**

The NRC identified a Green NCV of Unit 1 and Unit 2 Operating License Condition 3.I because the installed carbon dioxide (CO<sub>2</sub>) fire suppression systems could not be shown to deliver the design basis gas concentration. This finding applied to the Unit 1 and Unit 2 normal switchgear rooms, the Unit 2 cable tunnel, and the Unit 1 and Unit 2 cable vaults. The licensee had implemented or initiated system modifications to address this violation.

The finding is more than minor because it affects the Mitigating Systems cornerstone objective of ensuring reliability and capability of systems that respond to initiating events and the cornerstone attribute of protection against external factors, i.e. fire. The finding was determined to be of very low safety significance in a Significance Determination Process Phase 3 analysis. For the cable vault areas, the analysis showed that fires could initiate scenarios which could challenge the mitigating systems. However, the risk of these scenarios was calculated to be in the very low significance band. Analysis with respect to the normal switchgear rooms led to the conclusion that it was of very low safety significance primarily due to the frequency of fires potentially challenging mitigating systems being relatively low and the availability of unaffected safety-related shutdown systems. The finding for the Unit 2 cable tunnel was also of very low safety significance because it did not have any significant fixed ignition sources (cables were thermoset type) and the probability for transient combustible fires or hot work initiated fires damaging important cables was judged to be low.

Inspection Report# : [2007005](#) (*pdf*)

**G****Significance:** Oct 12, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Properly Categorize a Maintenance Preventable Functional Failure**

The inspectors identified an NCV of 10 CFR 50.65 (a)(2) after Surry Power Station failed to categorize the failure of the Unit 2 Charging Pump Component Cooling System as a maintenance preventable functional failure and accordingly, failed to monitor the component as required by 10 CFR 50.65 (a)(1). Condition Report 021045.

The finding is greater than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of the Charging System. Example 7.b in MC 0612, App. E, states that violations of Paragraph 10 CFR 50.65 (a)(2), failure to demonstrate effective control of performance or condition and not putting the affected (SSCs) in (a)(1), are not minor because they necessarily involve degraded SSC performance or condition. The finding is of very low safety significance because the failure to place the system in (a)(1) status did not lead to any further instances of system unreliability or unavailability. The cause of this finding was directly related to the aspect of "Training of personnel" in the cross-cutting area of human performance (resources component) because the engineer conducting the maintenance rule evaluation, the Maintenance Rule Program Coordinator, and Engineering Supervisor reviewing the evaluation, did not fully understand when to apply the functional failure exemptions. (IMC 0305, H.2.b)

Inspection Report# : [2007008](#) (*pdf*)**G****Significance:** Oct 12, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Promptly Identify and Correct Procedures Related to the Operation of the Auxiliary Feedwater System**

NRC identified non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, for the licensee's failure to revise procedure ECA 0.0, Loss of all AC Power, as corrective action for a condition identified by the licensee that could cause a loss of Net Positive Suction Head (NPSH) to the Turbine Driven Auxiliary Feedwater Pump (TDAFW), and potential damage to the only available feedwater pump during a loss of all AC power event. Other procedures where single AFW pump operation could cause inadequate NPSH had been revised.

The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affects the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was determined to be of very low safety significance because no actual safety function was lost. The cause of the finding is related to the cross-cutting area of problem identification and resolution and the aspect of lack of thoroughness of evaluation such that the resolution addresses the causes and extent of conditions. (IMC 0305, P.1.c) [Section 4OA2.a (3)(ii)]

Inspection Report# : [2007008](#) (*pdf*)**G****Significance:** Jun 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Ensure the Suitability of Application of Equipment Essential to Safety-Related Functions**

The NRC identified a non-cited violation (NCV) for the failure to ensure the suitability of application of equipment essential to the safety-related functions of structures, systems, and components (SSCs) through their commercial dedication process as required by 10 CFR Part 50, Appendix B, Criterion III, Design Control. The licensee entered each of the two examples identified by the team into their corrective actions program as CR-013984, including an action to review their overall commercial dedication program.

The examples involve Agastat 7000 relays used in supporting the emergency diesel generator (EDG) start sequence and pressure control valves (PCVs) for use in the safety-related air supply supporting design operation of the power-operated relief valves (PORVs). In the first example, the licensee's commercial grade dedication did not verify the

adequacy of seismic qualification. In the second, the licensee utilized a non-conservative test pressure as part of their dedication to critical characteristics. Both examples of the finding are more than minor because they are associated with the Design Control attribute affecting the Reactor Safety Mitigating Systems Cornerstone objective. The examples to the finding were evaluated using the SDP for Reactor Inspection Findings for At-Power Situations. The SDP Phase 1 analysis demonstrates the finding to be of very low safety significance (Green) as the licensee confirmed operability in accordance with plant procedures for both examples. The cause of the first example is related to the cross cutting aspect of human performance.

Inspection Report# : [2007003](#) (*pdf*)

**G**

**Significance:** Mar 31, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to Follow Procedures During Maintenance Resulting in a Stuck Control Rod**

A self-revealing, non-cited violation of Technical Specification 6.4.D, "Unit Operating Procedures and Programs", was identified for failure to follow procedure. Specifically, foreign material was left inside a Unit 1 control rod guide tube which prevented the full insertion of control rod K-14 during a manual reactor trip. The procedure in use during maintenance specifically required an inspection for and removal of all foreign material from the control rod guide tube. The licensee entered this violation in their corrective action program as CR002285 for resolution, performed a root cause analysis, and determined corrective actions.

The finding is more than minor because it affects 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 resulted in a degraded rod control system. The inspectors determined that the finding is of very low safety significance (Green) since only one control rod was affected. The cause of the finding was directly related to the procedural compliance aspect of the human performance cross-cutting area because personnel failed to adequately perform a search for foreign material as required by procedures.

Inspection Report# : [2007002](#) (*pdf*)

**G**

**Significance:** Mar 31, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Breaker Control Circuit Design Deficiency Results in Failure to Supply Emergency Bus 1J**

A self-revealing, non-cited violation of 10 CFR 50.63 was identified regarding a breaker control circuit design deficiency which prevented the licensee from supplying the 1J emergency bus on Unit 1 from the alternate AC diesel generator. The problem occurred during a transient on October 7, 2006, in which the actuation of Unit 2 steam relief valves resulted in the loss of normal power to two emergency buses on Unit 1 and one emergency bus on Unit 2 due to flying debris impacting electrical conductors. The licensee installed a modification to correct the breaker circuit design deficiency.

The finding is more than minor because it impacted the Mitigating Systems 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 related attribute of design control. This finding was of very low safety significance (Green) because the recovery of the alternate AC diesel generator's ability to energize a safety bus after four hours was credible.

Inspection Report# : [2007002](#) (*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

Last modified : February 04, 2008