

## Surry 2

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### Initiating Events

**Significance:**  Aug 11, 2000

Identified By: NRC

Item Type: FIN Finding

**TWO OF THE THREE CABLES THAT CONNECTS OFFSITE POWER TO THE RESERVE STATION TRANSFORMERS HAVE LESS INSULATION THAN SPECIFIED IN INDUSTRY STANDARDS.**

The team identified that two of the three cables that connects offsite power to the Reserve Station Transformers (RSSTs) had less insulation than specified in industry standards. A special analysis was performed by an NRC Region II Senior Reactor Analyst (SRA) to determine the effect on risk of the two RSST feeder cables having less than standard insulation thickness based on the 17 years that the cables had been in service. The risk screening analysis performed for the postulated cable failure indicated that there would be a slight increase in the Loss of Offsite Power (LOOP) initiation frequency resulting in a change in the Core Damage Frequency (CDF) of less than  $1.0 \times 10^{-6}$ . The SRA's review concluded that the change in LOOP initiation frequency and the resultant change in CDF was GREEN. Inspection Report# : [2000007\(pdf\)](#)

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### Mitigating Systems

**Significance:**  Jun 29, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to provide appropriate instructions to ensure proper operation of the emergency switchgear room chillers following a loss of instrument air**

A Non-Cited Violation of Technical Specification 6.4.A was identified due to an inadequate abnormal procedure. Abnormal procedure (AP) - 40, "Non-Recoverable Loss of Instrument Air," did not contain adequate guidance to ensure continued operation of the emergency switchgear room chillers following a loss of instrument air. The finding was of very low safety significance due to the combination of events that would have to occur for the emergency switchgear room components to be adversely affected by the loss of the chillers. The combination of events included a medium or large break loss of coolant accident coupled with a loss of offsite power during the winter months (cold service water temperatures).

Inspection Report# : [2002002\(pdf\)](#)

**Significance:**  Jun 29, 2002

Identified By: NRC

Item Type: FIN Finding

**Determine the risk significance of the failure to provide proper separation between the 125V DC busses**

A finding was identified for not providing proper separation between the 125V DC busses. A single failure could affect both redundant DC busses on a unit and encumber normal decay heat removal systems. The finding was of very low safety significance due to plant design features which mitigate the consequences of a fault within the DC system. Specifically, there are numerous alternative methods of decay heat removal available with simple operator actions.

Inspection Report# : [2002002\(pdf\)](#)

Inspection Report# : [2002003\(pdf\)](#)

**Significance:** N/A Apr 12, 2002

Identified By: NRC

Item Type: FIN Finding

**Supplemental Inspection Results For Unit 1 and 2 White Finding, Emergency Diesel Generator Bearing Failures, and Unit 2 White Performance Indicator, Safety System Unavailability - Emergency AC Power**

This supplemental inspection was performed by the NRC to assess the licensee's evaluation and corrective actions associated with a low to moderate risk significance (White) finding applicable to Units 1 and 2 and a Unit 2 White performance indicator (PI). The White finding and PI are in the mitigating systems cornerstone in the reactor safety strategic performance area. The White finding is described in NRC Final Significance Determination letter dated December 21, 2001, and was associated with the Emergency Diesel Generator (EDG) 3 wrist pin failures. The PI, Safety System Unavailability - Emergency AC Power, crossed the White threshold in the third quarter of calendar year 2001 and remained there through the current quarter. The White PI resulted mainly from the EDG 3 piston wrist pin failures and from EDG 2 output breaker problems. During this supplemental inspection, which was performed in accordance with Inspection Procedure 95001, the inspector determined that the licensee performed an overall adequate evaluation of performance deficiencies related to the EDG 3 piston wrist pin failure and the EDG 2 output breaker problems. The depth of root cause evaluations was adequate. The corrective actions were appropriately prioritized and consistent with the identified root cause and contributing factors and provided reasonable assurance to prevent recurrence.

Inspection Report# : [2002008\(pdf\)](#)



**Significance:** G Dec 14, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

**Number 2 Emergency Diesel Generator Output Breaker Returned To Service Without Identifying And Correcting The Cause Of The Failure**

10 CFR Part 50, Appendix B, Criterion XVI, requires that measures shall be established to assure that conditions adverse to quality, such as failures and malfunctions, are promptly identified and corrected. On September 27, 2001, the licensee identified that they had returned the Number 2 Emergency Diesel Generator breaker to service on September 16 without identifying and correcting the cause of the breaker to close twice on that day prior to returning it to service. This issue has been entered in the licensee's corrective action program as Plant Issue S-2001-2640 and 3850.

Inspection Report# : [2001007\(pdf\)](#)



**Significance:** W Sep 25, 2001

Identified By: NRC

Item Type: VIO Violation

**Failure to promptly identify and correct a condition adverse to quality, the failed piston wrist pins and piston carrier bearings in number 3 emergency diesel generator, as required by Criterion XVI.**

The licensee failed to promptly investigate the cause of an increasing trend in the Number 3 Emergency Diesel Generator (EDG) lubricating oil silver concentration. As a result, the licensee did not promptly identify and correct failed piston wrist pins and piston carrier bearings in Number 3 EDG. Two apparent violations were identified. The first apparent violation involved the failure to assure that a condition adverse to quality, involving the failure of the Number 3 Emergency Diesel Generator, was promptly identified and corrected as required by 10 CFR 50, Appendix B, Criterion XVI. The second apparent violation involved the Number 3 EDG being inoperable for a period of time greater than that which was allowed by Technical Specification 3.16.B.1.a.3. The finding appears to have substantial safety significance because the failed piston wrist pins and piston carrier bearings would have caused the Number 3 EDG to fail if it had been called upon to operate for a prolonged period to mitigate accident scenarios involving the loss of offsite power. On both units the SDP calculated increase in risk resulted mainly from the time the condition existed on the Number 3 EDG and the "common cause failure to run factor," due to degraded similar components in the Number 1 EDG. In addition, the calculated increase in risk for Unit 2 was greater than Unit 1 because Unit 2 does not have high temperature seals installed on one reactor coolant pump. By letter dated, December 21, 2001, the NRC informed the licensee of its final significance determination for the proposed apparent violation. The letter identified a violation characterized as a White finding. The text of the violation is: 10 CFR 50, Appendix B, Criterion XVI, states,

in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. TS [Technical Specification] 3.16.A.1 requires, in part, that a reactor shall not be operated such that the reactor coolant system pressure and temperature exceed 450 psig and 350 degrees Fahrenheit, respectively, without two diesel generators (the unit diesel generator and the shared backup diesel generator) OPERABLE. TS 3.16.B modifies the requirements of TS 3.16.A.1. Specifically, TS 3.16.B.1.a.3 requires, in part, that during power operation, if either unit's dedicated diesel generator or shared backup diesel generator is not returned to an OPERABLE status within 7 days, the reactor shall be brought to HOT SHUTDOWN within the next 6 hours and COLD SHUTDOWN within the following 30 hours. Contrary to the above, from approximately June 2000 until April 28, 2001, the licensee failed to establish measures to assure that a condition adverse to quality was promptly identified and corrected. Specifically, the licensee did not promptly identify and correct abnormal wear and eventual failure of Emergency Diesel Generator (EDG) piston wrist pins and piston carrier bearings, as evidenced by abnormally high bearing material wear products in engine oil samples, which rendered the Number 3 EDG inoperable. As a result, with the Unit 1 and 2 reactors in power operation, the Number 3 EDG was not operable from April 15 until April 28, 2001, and the licensee failed to return the Number 3 EDG to OPERABLE status within 7 days and the Unit 1 and Unit 2 reactors were not brought to HOT SHUTDOWN within the next 6 hours and COLD SHUTDOWN within the following 30 hours as required by TS 3.16.A.1. and 3.16.B.1.a.3. A supplemental inspection of this issue, documented in report 50-280, 281/02-08, determined that the licensee had performed an overall adequate evaluation of performance deficiencies related to the failure, and that the corrective actions were appropriately prioritized and consistent with the identified root cause and contributing factors and provided reasonable assurance to prevent recurrence.

Inspection Report# : [2001006\(pdf\)](#)

Inspection Report# : [2002002\(pdf\)](#)



**Significance:** Jun 30, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to implement a fire brigade drill program as required by Surry License Condition 3.I**

A non-cited violation of Surry License Condition 3.I on fire protection was identified for failure to implement a fire brigade training program as required by the license condition. The licensee's fire brigade program inappropriately allowed the use of walk through drills, false alarms, and actual fires to satisfy the quarterly requirements for fire brigade drills. Consequently, the fire brigade received less than the minimum required training drills in 1998.

Therefore, it could be less effective at fighting fires. This violation was of more than minor significance because a potentially less effective fire brigade has a credible impact on safety, in that, untimely or ineffective action by the fire brigade could credibly allow a fire to affect the operability or function of a system or train required for safe shutdown. This issue was determined to have very low safety significance because there was no identified degradation of the other parts of the fire protection defense in depth: fire barriers, fire alarms, and automatic fire suppression.

Inspection Report# : [2001002\(pdf\)](#)



**Significance:** Dec 16, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

### **NON-CITED VIOLATION OF 10 CFR 50 APPENDIX B CRITERION XVI FOR FAILURE TO CORRECT A CONDITION WHICH PREVENTED THE AUXILIARY BUILDING EXHAUST FANS FROM OPERATING AFTER AN AUTOMATIC START**

The inspectors identified a non-cited violation in which the licensee failed to adequately address a condition adverse to quality that prevented the auxiliary ventilation exhaust filter fans from operating following an automatic start in the minimum safeguards alignment. This matter was originally identified in April 2000. This is a violation of 10 CFR 50, Appendix B, Criterion XVI. This issue was of very low safety significance since operators could have manually aligned the system for operation. The plant design allowed sufficient time to manually actuate the system such that the safety functions would be performed.

Inspection Report# : [2000005\(pdf\)](#)

**Significance:** N/A Jun 17, 2000

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**MODIFICATION TO AUXILIARY VENT SYSTEM PREVENTED PARALLEL OPERATION OF BOTH FANS IN THE MINIMUM SAFEGUARDS ALIGNMENT**

The inspectors identified a non-cited violation in which a modification was implemented to the auxiliary ventilation system that prevented parallel operation of both fans in the minimum safeguards alignment which would result in one or both fans tripping following an actuation signal. The post-modification testing did not verify proper operation with both fans operating simultaneously. This is a violation of 10 CFR 50, Appendix B, Criterion III and is in the licensee's corrective action program as PI S-2000-0683. The issue was of very low safety significance since the operators could have manually aligned the system for operation. The plant design allowed sufficient time to manually actuate the system such that the safety functions would be performed.

Inspection Report# : [2000003\(pdf\)](#)

**Significance:**  Jun 17, 2000

Identified By: Licensee

Item Type: NCV NonCited Violation

**FAILURE TO HAVE AN ADEQUATE PROCEDURE TO PROVIDE ALTERNATE SHUTDOWN CAPABILITY**

A non-cited violation was identified for the failure to have an adequate procedure in effect to provide alternative shutdown capability (i.e., to achieve and maintain a safe shutdown condition) in the event of a main control room fire. This is a violation of 10 CFR 50, Appendix R, Section III.L.3 and is in the licensee's corrective action program as DR S-99-0745. This item is associated with Licensee Event Report 50-280, 281/99-003-00 which has an event date of March 31, 1999. The issue was of very low safety significance due to the very low fire initiating event frequency associated with the violation condition.

Inspection Report# : [2000003\(pdf\)](#)

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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

**Significance:**  Sep 29, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

**Analytical frequency and detection capability requirements were not met for several milk samples collected during the 3rd and 4th quarters of CY 2000.**

Technical Specification 6.4.B.3 requires that written procedures shall be established and implemented covering implementation of the Offsite Dose Calculation Manual. Attachments 7 and 9 to Procedure VPAP-2103S, "Offsite

Dose Calculation Manual (Surry)," specify the sampling and analysis frequency and the analytical detection capabilities for radiological environmental monitoring program. Analytical frequency and detection capability requirements were not met for several milk samples collected during the 3rd and 4th quarters of CY 2000 due to the vendor laboratory's failure to analyze samples in a timely manner. As a result, the licensee' ability to evaluate the milk-to-man pathway was impaired. This issue was included in the licensee's corrective action program as Plant Issue S-2001-1208.

Inspection Report# : [2001003\(pdf\)](#)

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**Significance:** Mar 31, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

**Failure to properly verify that a receiver's license allows receipt of a quantity of byproduct material prior to shipment as required by 10CFR 30.41(c)**

10CFR 30.41(c) requires that, before transferring byproduct material, the licensee transferring byproduct material shall verify that the transferee's (the receiver's) license authorizes the receipt of the type, form, and quantity of byproduct material to be transferred. On May 24, 2000, the licensee failed to properly verify, prior to shipment, that the receiver's license authorized the receipt of the quantity of byproduct material to be transferred. This occurrence was documented in plant issue report No. S-2000-1920.

Inspection Report# : [2000006\(pdf\)](#)

G

**Significance:** Mar 31, 2001

Identified By: Licensee

Item Type: NCV NonCited Violation

**Failure to survey an exclusive use vehicle before returning it to service as required by 10 CFR 71.5 and 49 CFR 177.843**

10 CFR 71.5 requires NRC licensees to comply with all applicable provisions of 49 CFR when transporting or receiving licensed radioactive materials. 49 CFR 177.843 requires receivers of radioactive materials packages sent exclusive use to survey the vehicle prior to it being returned to service. On September 28, 2000, an exclusive use shipment of radioactive material (surface contaminated object) was received by the licensee and the vehicle returned to service without being surveyed, as described in plant issue S-2000-2126.

Inspection Report# : [2000006\(pdf\)](#)

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## Physical Protection

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**Significance:** Aug 24, 2001

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure To Meet Security Plan Requirements**

A Non-Cited Violation was identified associated with paragraph 4.3.2.a of the Surry Power Station Physical Security Plan Revision 7 While the risk is low in this case, the issue was identified as more than a minor finding because allowing individuals to penetrate the Protected Area perimeter without being detected can have a credible impact on safety and can be viewed as a precursor to a more significant event.

Inspection Report# : [2001008\(pdf\)](#)

**Significance:** N/A Oct 26, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

**WILLFUL FAILURE OF AN INDIVIDUAL TO REPORT AN ARREST IN ACCORDANCE WITH PHYSICAL SECURITY PLAN AND VPAP-0105.**

The inspectors identified a non-cited violation for the failure to comply with the requirements of the Physical Security Plan (PSP). Specifically, an individual willfully failed to report an arrest in accordance with VPAP-0105. Based on the individual's position in the organization, lack of management involvement and no other similar events involving the individual, this finding was determined to be of very low significance. Due to the willful nature of the issue, the Significance Determination Process was not used. No color was assigned.

Inspection Report# : [2000008\(pdf\)](#)

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**Significance:** Jun 17, 2000

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO COMPLY WITH THE REQUIREMENTS OF THE PHYSICAL SECURITY PLAN**

The inspectors identified a non-cited violation for the failure to comply with the requirements of the Physical Security Plan (PSP). Specifically, the officer providing the last access control function, at the Primary Access Control on March 27, 2000, and at the Secondary Access Portal on April 26, 2000, did not remain isolated within a hardened structure in order to satisfy the requirements of the PSP. This is in the licensee's corrective action program as PI S-2000-1024.

Based on the other response and assessment capabilities in place as well as the licensee's previous four-quarter performance in this area, these findings were determined to be of very low risk significance.

Inspection Report# : [2000003\(pdf\)](#)

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## Miscellaneous

**Significance:** N/A Dec 14, 2001

Identified By: NRC

Item Type: FIN Finding

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

The licensee's threshold for identifying problems and entering them into the corrective action program (CAP) was at an appropriate level. Self-disclosing events, equipment failures and human errors were appropriately evaluated. Formal processes such as audits and self-assessments performed by the licensee's staff and outside organizations were effective in identifying issues. The inspectors concluded that external industry operating experience and NRC generic communications had been evaluated for plant applicability and incorporated into the CAP as appropriate. The inspectors determined that the licensee was effective in prioritizing and evaluating issues commensurate with the safety significance. Licensee reviews adequately addressed the extent of condition, generic implications, common cause failure modes, and previous occurrences. Significant conditions adverse to quality were evaluated and resolved in a timely manner. Plant employees were not reluctant to report safety concerns.

Inspection Report# : [2001007\(pdf\)](#)

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**Significance:** Dec 14, 2001

Identified By: NRC

Item Type: FIN Finding

#### **Adequacy Of Emergency Diesel Generator Contingency Plans To Meet Intent Of Nuclear Energy Institute 99-02 Guidance And Report Unavailability Time Accurately**

A finding was identified when the Revised Oversight Process Working Group determined that the recovery actions in an emergency diesel generator (EDG) surveillance procedure did not meet the guidelines of NEI 99-02, and the corresponding unavailability hours should be counted towards the Safety System Unavailability - Emergency AC Power Performance Indicator (PI) during the testing of the EDG. When the licensee revised the PI data, the PI on Unit 1 changed from green to white for the fourth quarter of 2001 and the first and second quarters of 2002. The finding was of very low safety significance because the added unavailability hours reflect only a small portion of the time required for the PI to exceed the green/white threshold. The majority of the unavailability hours were the result of issues that were previously identified and inspected, and therefore, no additional regulatory response is required.

Inspection Report# : [2001007\(pdf\)](#)

Inspection Report# : [2002003\(pdf\)](#)

**Significance:** N/A Dec 15, 2000

Identified By: NRC

Item Type: FIN Finding

**THE LICENSEE WAS EFFECTIVE AT IDENTIFYING AND RESOLVING PROBLEMS**

The licensee was effective at identifying problems and entering them into the corrective action program. The threshold for entering problems into the corrective action program was low. Operating experience was appropriately incorporated into plant procedures and activities. Generally, problems entered into the corrective action program were adequately evaluated and appropriate corrective actions were identified. Category 1 and 2 root cause evaluations, performed for the most and next most significant issues, respectively, were thorough and specified corrective actions were appropriate. Although risk was not formally used in prioritizing issues, corrective actions were usually implemented in a timely manner commensurate with their safety significance. Licensee audit and self-assessment results were consistent with NRC observations and identified deficiencies were entered into the corrective action program. Based on interviews, a safety conscious work environment was present where employees felt free to raise nuclear safety concerns. However, some negative observations were identified involving time to resolve some issues and the adequacy of some evaluations and resolutions. These negative observations involved issues that were of very low safety significance.

Inspection Report# : [2000009\(pdf\)](#)

Last modified : December 02, 2002