



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

April 23, 2008

Mr. David A. Christian
Senior Vice President and Chief Nuclear Officer
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060

SUBJECT: SURRY POWER STATION - NRC RESIDENT INSPECTION REPORT NOS.
05000280/2008002 AND 05000281/2008002, AND ANNUAL ASSESSMENT
MEETING SUMMARY

Dear Mr. Christian:

On March 31, 2008, the United States Nuclear Regulatory Commission (NRC) completed an inspection at your Surry Power Station, Units 1 and 2. The enclosed inspection report documents the inspection findings, which were discussed on April 9, 2008, with Mr. Jernigan and other members of your staff.

The inspection examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents one NRC identified and one self-revealing finding of very low safety significance (Green), which involved a violation of NRC requirements. Additionally, two licensee-identified violations which were determined to be of very low safety significance are listed in this report. However, because of the very low safety significance and because they have been entered into your corrective action program, the NRC is treating these violations as non-cited violations (NCVs), consistent with Section VI.A.1 of the NRC's Enforcement Policy. If you contest any NCV in this report you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk Washington DC 20555-0001; with copies to the Regional Administrator Region II; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington D.C. 20555-0001; and the NRC Resident Inspector at the Surry Power Station.

In accordance with 10 CFR 2.390 of the NRC's Rules of Practice, a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the

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Sincerely,

/RA/

James S. Dodson, Acting Chief
Reactor Projects Branch 5
Division of Reactor Projects

Docket Nos.: 50-280, 50-281
(License Nos.: DPR-32, DPR-37)

Enclosure: Integrated Inspection Report 05000280, and 281/2008002
W/Attachment: Supplemental Information

(cc w/encl cont'd - See page 3)

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(cc w/encl cont'd - See page 3)

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4

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-280, 50-281
License Nos.: DPR-32, DPR-37

Report Nos.: 05000280/2008002, 05000281/2008002

Licensee: Virginia Electric and Power Company (VEPCO)

Facilities: Surry Power Station, Units 1 & 2

Location: 5850 Hog Island Road
Surry, VA 23883

Dates: January 1- March 31, 2008

Inspectors: C. Welch, Senior Resident Inspector
D. Merzke, Acting Resident Inspector
K. Ellis, Acting Resident Inspector
D. Arnett, Project Engineer
L. Garner, Senior Project Engineer
J. Dodson, Senior Project Engineer (In Office Review - 4OA5)

Approved by: James S. Dodson, Acting Chief
Reactor Projects Branch 5
Division of Reactor Projects

Enclosure

CONTENTS

SUMMARY OF FINDINGS	3
Summary of Plant Status	5
REACTOR SAFETY	
1R01 Adverse Weather Protection	5
1R04 Equipment Alignment	6
1R05 Fire Protection	7
1R06 Flood Protection Measures.....	8
1R07 Heat Sink	8
1R11 Licensed Operator Requalification Program	9
1R12 Maintenance Effectiveness	9
1R13 Maintenance Risk Assessments and Emergent Work Control.....	10
1R15 Operability Evaluation.....	10
1R18 Plant Modifications	11
1R19 Post-Maintenance Testing.....	11
1R20 Refueling and Other Outage Activities	12
1R22 Surveillance Testing	12
1EP6 Drill Evaluations.....	14
OTHER ACTIVITIES	
4OA1 Performance Indicator Verification.....	15
4OA2 Identification and Resolution of Problems.....	16
4OA5 Other Activities.....	16
4OA6 Meetings, Including Exit.....	18
4OA7 Licensee-Identified Violations.....	19
ATTACHMENT: SUPPLEMENTARY INFORMATION	
Key Points of Contact	A-1
List of Items Opened, Closed, and Discussed	A-1
List of Documents Reviewed	A-2
List of Acronyms	A-5

SUMMARY OF FINDINGS

IR 05000280/2008-02, IR 05000281/2008-02; 01/01/2008 - 03/31/2008; Surry Power Station Units 1 & 2, Surveillance Testing, Other Activities.

The report covered a three month period of inspection by resident and region based inspectors. Two Green findings, all of which were non-cited violations (NCV), were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, Significance Determination Process (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, Reactor Oversight Process, Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

- Green. A self-revealing finding of very low safety significance that constituted a non-cited violation (NCV) of Technical Specification 6.4.D was identified. Licensee personnel failed to follow procedure 2-IPM-CC-F-207A and caused cooling water flow to the thermal barrier of the Unit 2 Reactor Coolant Pump (RCP) 1A to be isolated for approximately 15 minutes. The finding was entered into the corrective action program as Condition Report 093555. Licensee corrective actions included re-opening the valve, restoring cooling flow to the thermal barrier, and providing training station wide on procedure adherence.

The failure to follow procedure 2-IPM-CC-F-207A was a performance deficiency. The finding is more than minor because it is associated with the human performance attribute of the Initiating Event Cornerstone, and adversely affected the cornerstone's objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions. The finding, evaluated per the SDP in IMC 0609, Appendix A, is of very low safety significance (Green) because the finding would not have resulted in exceeding the Technical Specification limit for RCS leakage, due to operation of the RCP seal injection system. This finding has a cross-cutting aspect in the area of human performance work practices (H.4.b) because personnel failed to follow a written and approved procedure. (Section 1R22)

Cornerstone: Mitigating Systems

- Green. An NRC-identified, non-cited violation (NCV) of very low safety significance was identified for the failure to follow start-up procedure 1-GOP-1.7, revision 2, "Unit Startup, RCS Heat Up from Ambient to HSD", which resulted in leaving loose fibrous insulation in containment.

This finding is greater than minor because it is associated with the mitigating systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability and reliability of systems that

respond to initiating events to prevent undesirable consequences. Using the IMC 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance (Green) since it only affected the mitigating systems cornerstone and did not represent a loss of system safety function. The cause of this finding had cross-cutting aspects associated with work practices of the Human Performance area in that the licensee did not provide the appropriate oversight of contractors conducting the containment walk downs (H.4.c). The finding was entered into the corrective action program as Condition Report 02564. Corrective actions to remove the fibrous material from containment prior to startup and to establish the extent of condition and potential impact on Unit-2 were adequate. (Section 4OA5)

B. Licensee-Identified Violation

Two violations of very low safety significance, which were identified by the licensee, have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. The violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at full Rated Thermal Power (RTP) throughout the inspection period with the exception of a brief power reduction to 64% on February 2 to respond to and isolate a faulted non-safety related electrical circuit.

Unit 2 operated at full RTP throughout the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

.1 Cold Weather Preparations

a. Inspection Scope

The inspectors performed a focused review of the licensee's cold weather preparations due to a forecast of cold weather on January 3, 2008. The inspectors reviewed licensee procedures 0-OSP-ZZ-001, "Cold Weather Preparations," and OC-21, "Severe Weather." The inspectors walked down portions of the turbine building, safeguards rooms, fire pump house, emergency diesel generators (EDGs), high level intake structure, refueling water storage tanks (RWSTs), and emergency condensate storage tanks (ECSTs) to assess condition and operability of heat tracing, heaters, and insulation. The inspectors observed equipment condition to determine system readiness for cold weather. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and Technical Specifications (TSs) requirements to verify that these systems would remain operable during cold weather conditions.

b. Findings

No findings of significance were identified.

.2 External Flooding

a. Inspection Scope

On March 8, 2008, the inspector performed an external flood inspection in response to heavy rains and potential flooding predicted for the local area. A walkdown was performed of the Units 1 and 2 emergency switchgear rooms (ESGRs), vital battery rooms, turbine building basement, mechanical equipment room (MER) 3 and 4, and the three EDG rooms. During the walkdown the inspector assessed the condition and adequacy of the following flood mitigating measures: penetration seals, water tight doors, berms, dikes, and floor drains including their associated backflow devices. The inspector verified flooding alarms were operational and periodically tested. The inspector reviewed

the UFSAR, emergency procedures, preventive maintenance procedures, the apparent cause determination for the October 2006 water intrusion event, and interviewed engineering personnel. The inspectors also observed testing of a backflow device on April 4 in response to CR 92679.

b. Findings:

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial System Walkdown

a. Inspection Scope

The inspectors performed partial walkdowns on the four risk-significant systems listed below to verify the systems were correctly aligned to perform their designated safety function. The walkdowns occurred during periods when the redundant train or system was out-of-service for maintenance and/or testing or following realignment after an extended system outage. The positions of critical valves, breakers, and control switches, required for system operability, were verified in the correct configuration by field walkdown and/or review of the main control board. To ascertain the required system configuration, the inspectors reviewed plant procedures, system drawings, the UFSAR, and the Technical Specifications. References used for this review are listed in the attachment to this report. The inspectors reviewed the corrective action program to verify equipment alignment issues were being identified and properly resolved.

- MCR and ESGR "A" loop ventilation systems during replacement of the "C" loop chilled water piping.
- The #3 Emergency Diesel Generator (EDG) during maintenance on the #2 EDG.
- Unit 1 and 2 Auxiliary Feedwater (AFW) systems during maintenance on the Unit 1 motor-driven AFW pump 1-FW-P-3A.
- Emergency Service Water System (ESW) during planned maintenance on ESW pump 1-SW-P-1A.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors performed a detailed walkdown of EDGs 1 and 3 to verify the EDGs were properly aligned to perform their safety function and to assess their material condition. The inspection/walkdown included the governor, the fuel oil subsystem and fuel tank inventories, the lubricating oil subsystem, starting air subsystem, engine cooling subsystem, air intake and exhaust subsystem, and their associated power supplies.

During the walkdown, the inspector verified valve and breaker positions, component labeling, hangers and supports, and that valves were locked in position as required. The plant health report, plant issues documents, condition reports, the UFSAR, and Technical Specifications were reviewed. The documents reviewed by the inspectors are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Quarterly Fire Protection Tours

a. Inspection Scope

The inspectors performed a defense-in-depth walkdown of the areas identified below and reviewed licensee documents to evaluate the fire protection program operational status, and material condition and the adequacy of: (1) control of transient combustibles and ignition sources; (2) fire detection and suppression capability; (3) passive fire protection features; (4) compensatory measures established for out-of-service, degraded or inoperable fire protection equipment, systems, or features; and (5) procedures, equipment, fire barriers, and systems so that the post-fire capability to safely shut down the plant is ensured. The inspectors reviewed the corrective action program to verify fire protection deficiencies were being identified and properly resolved. The references used for this review are listed in the attachment to this report. This inspection activity represents six samples.

- Fire zone 19, Unit-1 Safeguards
- Fire zone 20, Unit-2 Safeguards
- Fire zone 46, Unit-1 Cable Spreading Room
- Fire zone 3, Unit-1 Emergency Switchgear Room
- Fire zone 4, Unit-2 Emergency Switchgear Room
- Fire zone 6, #1 Emergency Diesel Generator

b. Findings

No findings of significance were identified.

.2 Annual Fire Protection Drill Observation

a. Inspection Scope

The inspectors observed the fire brigade drill held on March 6, 2008, to evaluate the readiness of the licensee's personnel to fight fires. Specific aspects evaluated were: the number of individuals assigned to the fire brigade; response timeliness; use of protective clothing and self contained breathing apparatus; control room response including identification of the fire location, dispatch of the fire brigade, and sounding alarms;

brigade leader's command and control, use of pre-fire plan strategies, briefs, and delegation of assignments; fire hose deployment and reach; approach into the fire area; effectiveness of communications among the fire brigade members and the control room; sufficiency of fire fighting equipment brought to the fire scene; search for victims; effective smoke removal; and the drill objectives and acceptance criteria. The inspector observed the post drill critique and verified noted deficiencies were captured.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and the Individual Plant Examination (IPE) of Non-Seismic External Events and Fires for analyzed external and internal floods. Walkdowns were performed in the turbine building, emergency switchgear room, mechanical equipment rooms 4 and 5, and auxiliary building to review compliance with procedures for internal and external flooding. In addition, the inspectors walked down floor drain back water stop valves, various expansion joint shields, and flood and spill control dams. The inspectors reviewed completed preventive maintenance and surveillance records for the turbine building sump pumps. The documents reviewed are listed in the Attachment of the report.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors evaluated the condition of the Unit 1 component cooling (CC) heat exchanger, 1-CC-E-1B, during annual cleaning. The inspectors discussed the heat exchanger monitoring program with engineering personnel and reviewed the current heat exchanger program document ER-AA-HTX-10, "Heat Exchanger Program". The inspectors observed the condition of the heat exchanger prior to the performance of tube scraping performed under Maintenance Work Order (MWO) 749015-01. The inspectors reviewed the performance results of surveillance procedure 1-OSP-SW-003, Rev 18, "Macrofouling of CC HX 1-CC-E-1B", prior to and following the performance of the cleaning.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification Program

.1 Resident Inspector Quarterly Review

a. Inspection Scope

The inspectors observed a licensed operator simulator exam given on January 23, 2008. The exam was administered using scenario RQ-08.1-SE-4, Revision 0, and involved both operational transients and design basis events. The inspector verified that simulator conditions were consistent with the scenario and reflected the actual plant configuration (i.e., simulator fidelity). The inspector observed the crew's performance to determine whether the crew met the scenario objectives; accomplished the critical tasks; demonstrated the ability to take timely action in a safe direction and to prioritize, interpret, and verify alarms; demonstrated proper use of alarm response, abnormal, and emergency operating procedures; demonstrated proper command and control; communicated effectively; and appropriately classified events per the emergency plan. The inspector observed the evaluators' post scenario critique and confirmed items for improvement were identified and discussed with the operators to further enhance performance.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

For the equipment issue described in the CR listed below, the inspectors evaluated the licensee's effectiveness of the corresponding preventive and corrective maintenance. The inspectors performed a detailed review of the problem history and associated circumstances, evaluated the extent of condition reviews, as required, and reviewed the generic implications of the equipment and/or work practice problem. Inspectors performed walkdowns of the accessible portions of the system, performed in-office reviews of procedures and evaluations, and held discussions with system engineers. Inspectors compared the licensee's actions with the requirements of the Maintenance Rule (10 CFR 50.65), VPAP 0815 "Maintenance Rule Program," and the Surry Maintenance Rule Scoping and Performance Criteria Matrix.

- CR 028002, 2-RM-RMS-259/260 Declared Inoperable Due to Flow Fault

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated the following attributes for the six selected systems, structures, and components (SSCs) and activities listed below: (1) the effectiveness of the risk assessments performed before maintenance activities were conducted; (2) the management of the assessed risk; (3) that, upon identification of an unforeseen situation, necessary steps were taken to plan and control the resulting emergent work activities; and (4) that maintenance risk assessments and emergent work problems were adequately identified and resolved. The inspectors reviewed the corrective action program to verify deficiencies in risk assessments were being identified and properly resolved.

- January 7, 2008, Unit 1 and 2 elevated on-line risks (Yellow) due to increased flood risk due to work on the 1B waterbox, testing on the 1B waterbox circulating water inlet valve, and # 1 EDG testing.
- January 16, 2008, Unit-1 and 2 Green on-line risk for planned maintenance and testing.
- February 4 - 5, 2008, Unit-1 and 2 elevated on-line risks (Yellow) associated with C-loop chill water piping replacement.
- February 20, 2008, Unit-2 elevated on-line risk (Yellow) due to increased flood risk and Unit-1 Green risk.
- March 11-12, Units 1 & 2 Green on-line risk assessment for extending the outage time of 1-SW-P-1A and 1-SW-P-1B suction bowl cleaning.
- March 24-26, 2008, Unit-1 and 2 Green on-line risks associated with overhaul of the #2 EDG.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed four operability evaluations affecting risk significant systems, to assess, as appropriate: (1) the technical adequacy of the evaluations; (2) whether continued system operability was warranted; (3) whether other existing degraded conditions were considered; (4) if compensatory measures were involved, whether the compensatory measures were in place, would work as intended, and were appropriately controlled; and (5) where continued operability was considered unjustified the impact on TS limiting condition for operations. Documents reviewed are listed in the Attachment to this report. The inspectors reviewed the corrective action program to verify deficiencies in operability determinations were being identified and properly resolved. The inspectors reviewed the following four operability evaluations:

- Condition Report 028613, Unit 2 Residual Heat Removal Pump (2-RH-P-1B) has 15 of the 20 seal housing to casing bolts made from B8 material.
- Condition Report 090591, Units 1 and 2, embedded wood discovered in ESGR pipe trench.
- Condition Report 028094, No. 3 EDG lube oil circulating pump failure.
- Condition Report 092679, Unit 2 ESGR Backflow Preventer appears to be stuck open.

b. Findings

No findings of significance were identified.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed the following modifications to verify the design bases, licensing bases, and performance capability of risk significant systems, structures, and components (SSCs) were not degraded through modification and to verify modifications performed during increased risk-significant configurations do not place the plant in an unsafe condition.

- Design Change Package 07-025, Unit 1 and 2 Auxiliary Feedwater Check Valve Replacement.
- DCP 92-013, Charging Pump SW TCV Controller Replacement (1/2-SW-TC-108-208A-C).
- Temporary Modification S2-08-058, removal of Cell #6 of the #2 emergency diesel generator battery banks.

b. Findings

No findings of significance were identified

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed post-maintenance test (PMT) procedures and/or test activities, as appropriate, for selected risk significant systems to assess whether: (1) plant testing had been adequately addressed by control room and/or engineering personnel; (2) testing was adequate for the maintenance performed; (3) acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing basis documents; (4) test instrumentation had current calibrations, range, and accuracy consistent with the application; (5) tests were performed as written with applicable prerequisites satisfied; (6) jumpers installed or leads lifted were properly controlled; (7) test equipment was removed following testing; and (8) equipment was returned to the status required to perform its safety function. The inspectors reviewed the corrective action program to verify PMT deficiencies were being identified and properly resolved.

The inspectors observed testing and/or reviewed the results for the following five maintenance items:

- Maintenance Work Order (MWO) 00798722; Repair/Replace Unit-2 step counters, I/O relay Driver Board A711, and Supervisory Data Logging Board A114.
- MWO 00798574; No. 2 EDG; Trouble Shoot/Repair 02-EE-RLY-ESTD-Relay.
- MWO 7962230-91; Replace Temperature Control Valve, 2-SW-TCV-208B.
- MWOs 00783917, 00799150, 00786322, 00780183, 00776838, 0757612, 00757613, 76827001, 00757614; charging pump 1-CH-P-1A and associated equipment maintenance.
- MWOs 38102103464, 38102104496, 38102103489; Overhaul motor operated valve (MOV) actuator on 2-FW-260A.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities

a. Inspection Scope

The inspectors observed new fuel receipt and inspection to verify fuel handling operations were being performed in accordance with technical specifications and approved procedures. Included in the inspection was verification that the security seal on the shipping containers was intact, the shipping containers accelerometers were not tripped, the fuel assemblies were being properly tracked, and that personnel who performed the work were appropriately qualified. The documents reviewed are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors witnessed surveillance tests and/or reviewed test data of the six risk-significant SSCs listed below to assess, as appropriate, whether the SSCs met TS, the UFSAR, and licensee procedural requirements. The inspectors also determined if the testing effectively demonstrated that the SSCs were ready and capable of performing their intended safety functions. The inspectors reviewed the corrective action program to verify surveillance testing deficiencies were being identified and properly resolved.

Surveillance Tests

- 1-ST-FW-001, Rev. 0; Evaluation of Auxiliary Feedwater System Vibration

Inservice Tests

- 2-OPT-SI-005, Rev. 27; LHSI Pump Test (A and B pumps)
- 2-OPT-CS-002, Rev. 12; Containment Spray System Test (A and B pumps)
- 1-OPT-FW-001, Rev. 26; Motor Driven Auxiliary Feedwater Pump 1-FW-P-3A

Reactor Coolant Leakage

- 1-OPT-RC-10, Rev.22; Reactor Coolant Leakage - Computer Calculated
- 2-OPT-RC-10, Rev.22; Reactor Coolant Leakage - Computer Calculated

b. Findings

Introduction: A Green self-revealing non-cited violation (NCV) of Technical Specification 6.4.D was identified regarding the failure of licensee personnel to follow procedure 2-IPM-CC-F-207A which caused cooling water flow to the thermal barrier of the Unit-2 Reactor Coolant Pump 1A (RCP) to be isolated for approximately 15 minutes (CR 093555).

Description: On March 23, 2008, while performing procedure 2-IPM-CC-F-207A, "RCP 1A Thermal Barrier Heat Exchanger Outlet Flow Loop F-CC-207A Calibration;" the as found trip voltage for the high flow alarm set point was not able to be obtained when test voltage was raised to activate the high flow alarm per step 6.3.3. The test was continued and the alarm's as found reset voltage was obtained per steps 6.3.6 - 6.3.8. The technicians then re-performed steps 6.3.3 and 6.3.4 to determine the alarm's as found trip setpoint voltage. After acquiring the necessary data, the technicians failed to follow the procedure and did not complete the remaining steps in section 6.3 but instead, proceeded to the restoration section 6.6. As a result, the high flow alarm remained energized due to the voltage signal not having been decreased below the alarm's reset point. Instructions to re-perform the alarm setpoint verification, if necessary, are provided in step 6.3.9 and specify to re-perform steps 6.3.1 through 6.3.8.

Closure of the component cooling water thermal barrier outlet trip valve (38-02-CC-TV-220A) on a high flow signal was prevented during the surveillance by placing B42 COUT in manual. Restoration step 6.6.3 cleared the manual block by restoring B42 COUT to auto. Because the high flow signal had not been cleared in section 6.3, once the manual block was removed per step 6.6.3 the component cooling water thermal barrier outlet trip valve closed isolating cooling water flow to the Unit-2 RCP 1A thermal barrier.

After the outlet trip valve closed, the plant computer system (PCS) alarmed indicating low combined flow for the "A" RCP thermal barrier. Control room operators responded to the alarm and restored the flow to the RCP thermal barrier in approximately 15 minutes.

Corrective action to open the valve was promptly taken. Additional corrective actions were initiated by the licensee to reinforce standards and requirements for procedure usage and adherence.

Analysis: The failure to follow procedure 2-IPM-CC-F-207A was a performance deficiency. The finding is more than minor because it is associated with the human performance attribute of the Initiating Event Cornerstone, and adversely affected the cornerstone's objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions. The finding, evaluated per the SDP in IMC 0609, Appendix A, is of very low safety significance (Green) because the finding would not have resulted in exceeding the Technical Specification limit for RCS leakage, due to operation of the RCP seal injection system. This finding has a cross-cutting aspect in the area of human performance work practices (H.4.b) because personnel failed to follow a written and approved procedure.

Enforcement: Technical Specification 6.4.D, "Unit Operating Procedures and Programs", requires, in part, that procedures pertaining to calibration and testing of instruments, components, and systems involving nuclear safety of the station be followed. Contrary to the above, on March 23, 2008, licensee personnel failed to follow procedure 2-IPM-CC-F-207A. As a result, component cooling water flow to the Unit 2 RCP 1A thermal barrier was inadvertently isolated for 15 minutes. Because this violation is of very low safety significance and has been entered into the licensee's corrective action program (CR 093555), it is being treated as a NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: 05000281/2008002-01, Loss of thermal barrier cooling due to a failure to follow procedures.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

.1 Emergency Planning Drill

a. Inspection Scope

The inspectors observed the announced emergency response training drill conducted on February 19, 2008, to assess the licensee's performance in emergency classification, protective action recommendations and off-site notification. The drill included emergency response actions taken by the management team in the Technical Support Center (TSC), and Local Emergency Operations Facility (EOF). This drill evaluation is included in the Emergency Response Performance Indicator statistics.

b. Findings

No findings of significance were identified.

.2 Simulator Training

a. Inspection Scope

The inspector observed operations simulator training conducted on January 23, 2008, to assess the licensee's performance in emergency classification, protective action recommendations, and off-site notification. This drill evaluation is included in the Emergency Response Performance Indicator statistics.

b. Findings

No findings of significance were identified.

4 OTHER ACTIVITIES

4OA1 Performance Indicator Verification

.1 Initiating Event Cornerstone

a. Inspection Scope

The inspectors performed a periodic review of the following Unit 1 and 2 performance indicators (PI) to assess the accuracy and completeness of the submitted data and whether the performance indicators were calculated in accordance with the guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline." Specifically, the inspectors reviewed the PI indicator data from the fourth quarter 2006 through the fourth quarter 2007. Documents reviewed included applicable monthly operating reports, licensee event reports, and operator logs.

Initiating Event Cornerstone

- Unplanned Scrams per 7000 Critical Hours
- Unplanned Power Transients per 7000 Critical Hours
- Unplanned Scrams With Complications

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Daily Reviews of Items Entered into the Corrective Action Program:

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems", and in order to help identify repetitive, long-term, or latent equipment failures, or specific human performance issues for follow-up; the inspectors performed a daily screening of

items entered into the licensee's corrective action program. This review was accomplished by reviewing hard copies of each condition report, or attending daily screening meetings, and/or accessing and reviewing the licensee's computerized database.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 (Closed) URI 05000280/2007005-04, Fibrous Material Left in Unit 1 Containment

a. Inspection Scope

The inspectors completed a review and characterization of URI 05000280/2007005-04. The inspectors reviewed the licensee's design and licensing basis for the containment sump, calculations for the new Unit 1 containment sump strainer, and past operability determination performed by the licensee.

b. Findings

Introduction: A Green, NRC-identified, non-cited violation (NCV) was identified for the failure to follow start-up procedure 1-GOP-1.7, revision 2, "Unit Startup, RCS Heat Up from Ambient to HSD", which resulted in leaving loose fibrous insulation in containment.

Description: On 11/28/07, during Unit 1 Containment Close-out, inspectors identified loose bat insulation in a 15' X 5' penetration in the 'C' Loop Room. When the inspectors notified the licensee, they removed two 55 gallon bags of fibrous insulation which were approximately 45 pounds in weight. Additional investigation found that the insulation had been there for greater than one year. The licensee could not verify the exact number of years. The inspectors reviewed the affected start-up procedure, 1-GOP-1.7 Rev 2, "Unit Startup, RCS Heat Up from Ambient to HSD" and determined that even though the procedure had several steps in Attachment 3 to ensure containment was clear of debris and fibrous material, the associated licensee walk down failed to reveal the presence of the loose insulation.

The fibrous material identified, was not accounted for in the original design basis for the containment sump screens and emergency core cooling system pump strainers. The original design and licensing basis assumes no transport of fibrous insulation in containment during a LOCA. Based on recent debris generation and transport analysis, the conclusion was that fibrous material would transport to the containment sump.

The past operability determination provided by Surry to address this issue is provided by the Surry Unit 1 Fiber Operability Assessment 2007-12-14.doc and supported by calculations ME-0777, Debris Generation Due to LOCA within Containment for Resolution of GSI-191, dated 12/18/07; and ME 0778, Post LOCA Transport to Containment Sump Strainer for Resolution of GSI-191, dated 12/17/07. The assessment

addresses the original, unmodified strainer configuration. The calculations were developed to support the design of the recently modified screens. The assessment does not address past operability with respect to the current GL 2004-02 modified configuration installed in the recent outage as the fibrous insulation was identified prior to the time when ECCS was required to be in service following the modification.

The assessment uses break S1 in the Unit 2 "A" loop room as the worst case scenario with possible 32.57 lbs of margin. This 32.57 lbs value was an arbitrary 5 percent margin assumed for the debris generation and transport analysis to address GL 2004-02 requirements. It was not a limiting or meaningful value for acceptability of the fibrous insulation debris volume. The assessment states that the margin value does not bound the 45 lbs. of fibrous insulation found in Unit 1.

The original sump screens were approximately 158 square feet, and the modified screens are approximately 8400 square feet. Inspectors reviewed the design and licensing basis for the original screen design, debris transport analysis for the GL 2004-02 response which was applicable to the Unit 1 fibrous insulation issue, and discussed the information with the licensee's technical staff. A temporary change to the licensing basis allowed compensatory measures to mitigate the potential impact of debris blockage until the sump modifications were completed. These measures included containment walkdowns prior to start up. The inspector concluded that the licensee did not control the containment configuration consistent with the licensing basis assumptions to assure the function of the containment sump screens and subsequently, assurance of the ECCS pumps' operability, in the recirculation mode. Licensee procedure 1-GOP-1.7 rev. 2, "Unit Startup, RCS Heat up from Ambient to HSD", requires containment inspections and correction of conditions which are inconsistent with the design and licensing basis. The inventory of insulation and debris assumed in the licensing basis which provided an assumption regarding the adequacy of the containment sump screen design was not controlled as evidenced by the additional fibrous insulation discovered by inspectors.

Analysis: Fibrous insulation was found inside containment by resident inspectors, which the licensee had not identified during the performance of procedure 1-GOP-1.7 Rev. 2, "Unit Startup, RCS Heat Up from Ambient to HSD". This failure to identify fibrous insulation in containment prior to Unit Start up as required by procedure 1-GOP-1.7 Rev. 2, and assure the function of emergency core cooling system pumps during a LOCA consistent with design basis assumptions, was a performance deficiency and finding.

This finding is greater than minor because it is associated with the mitigating systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Using the IMC 0609, "Significance Determination Process," Phase 1 Worksheets, the finding is determined to have very low safety significance (Green) since it only affected the mitigating systems cornerstone and did not represent a loss of system safety function. The cause of this finding had cross-cutting aspects associated with work practices of the Human Performance area in that the licensee did not provide the appropriate oversight of contractors conducting the containment walk downs (H.4.c).

Enforcement: Technical Specification (TS) 6.4.A, "Unit Operating Procedures and Programs," requires, in part, that detailed written procedures with appropriate check-off lists and instructions be provided for normal startup, operation, and shutdown of a unit, and of all systems and components involving nuclear safety of the station. TS 6.4.D, requires, in part, that all procedures specified in TS 6.4.A be followed. Contrary to the above, on November 28, 2007, during Unit 1 containment close-out, the licensee had not identified the fibrous insulation during the performance of procedure 1-GOP-1.7 Rev. 2, "Unit Startup, RCS Heat Up from Ambient to HSD." Therefore the licensee failed to assure the function of emergency core cooling system pumps during a LOCA consistent with design basis assumptions. Because the finding was of very low safety significance and was entered into the CAP as CR 025641, this violation is being treated as an NCV, consistent with Section VI.A of the Enforcement Policy: NCV 05000280/2008002-02, Failure to Follow Start-up Procedure which Resulted in Leaving Loose Fibrous Insulation in Containment.

.2 Institute of Nuclear Power Operations (INPO) Plant Assessment Report Review

a. Inspection Scope

The inspectors reviewed the final report for the INPO plant assessment of the Surry power station conducted in April 2007. The inspectors reviewed the report to ensure that issues identified were consistent with NRC perspectives of licensee performance and to verify if any significant safety issues were identified that required further NRC follow-up.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

.1 Exit Meeting Summary

On April 9, 2008, the inspection results were presented to Mr. Don Jernigan, and members of his staff who acknowledged the findings. The inspector asked the licensee whether any proprietary material examined during the inspection was not returned. No proprietary information was identified.

.2 Annual Assessment Meeting Summary

On April 15, 2008, the NRC's Resident Inspectors assigned to the Surry Power Station met with Virginia Electric and Power Company to discuss the NRC's Reactor Oversight Process (ROP) and the NRC's annual assessment of Surry Power Station safety performance for the period of January 1 through December 31, 2007. The major topics addressed were the NRC's assessment program, and the results of the Surry Power Station assessment. Attendees included Surry Power Station site management.

This meeting was open to the public. The presentation material used for the discussion and the list of attendees is available from the NRC's document system (ADAMS) as

accession number ML081130167. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

40A7 Licensee-Identified Violations

The following violations of very low significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

.1 Inadequate Maintenance Risk Assessment

10 CFR part 50.65(a)(4), requires, in part, that before performing maintenance activities, the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activity. Contrary to the above, on February 4, 2008, the licensee tagged out and drained the emergency switchgear room ventilation coolers 1-VS-AC-6 and 2-VS-AC-6, rendering them inoperable, without properly assessing the risk. The components were erroneously thought to be included in the recently added chilled water piping replacement risk term. The licensee recognized the error on February 4, 2008, prior to releasing work. The omitted components were selected in the Safety Monitor program and risk for both units increased to a slightly elevated (Yellow) risk condition. In accordance with Manual Chapter (MC) 0612, Appendix E, example 7.e, the issue is more than minor. The finding was evaluated per MC 0609, Appendix K, and found to be of very low safety significance (Green) because the change in risk had existed for only a short period of time prior to being corrected and the necessary compensatory actions were in-place. This finding was entered into the licensee's corrective action program as CR 090374.

.2 Inadequate Fire Barriers

Surry Power Station (SPS) Operating License Condition 3.I states, in part, that the "Licensee shall implement and maintain in effect the provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report." Branch Technical Position (BTP) Chemical Engineering Branch (CMEB) 9.5-1, which incorporated the guidance of Appendix A to BTP Auxiliary Systems Branch (ASB) 9.5-1 and the technical requirements of Appendix R to 10 CFR Part 50, established the regulatory and licensing requirements for the fire protection program at SPS. Section 9.10.1 of the UFSAR states, in part, "Compliance with these criteria is contained in the following documents: Fire Protection Program document." Section 6.1.o of VPAP-2401, "Fire Protection Program," Rev. 28, states that penetration seals must provide equal or greater fire rating than that of the fire barrier. Contrary to the above, the licensee failed to have any sealant providing a fire rating in two fire penetrations in the block walls that separate the Unit 1 and Unit 2 Main Control Room HVAC rooms (Fire Area 5) from the north stairwell (Fire Area 68). This violation is of very low safety significance because the violation did not affect ignition frequencies, detection, or suppression system performance. This issue was entered into the licensee's corrective action program as CR 090704.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Adams, Director, Nuclear Station Safety and Licensing
B. Garber, Supervisor, Licensing
K. Grover, Manager Operations
E. Hendrixson, Director, Site Engineering
D. Jernigan, Site Vice President
L. Jones, Manager, Radiation Protection and Chemistry
R. Simmons, Manager, Outage and Planning
K. Sloane, Director, Nuclear Station Operations and Maintenance
B. Stanley, Manager, Maintenance
D. Georgianna, Supervisor Electrical Maintenance
M. Gabriele, Supervisor Instrumentation & Controls
M. Smith, Manager Nuclear Engineering Programs
C. Olsen, Manager Systems and Components

NRC

E. Guthrie, Chief, Branch 5, Division of Reactor Projects, Region II

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Opened and Closed

05000281/2008002-01	NCV	Loss of thermal barrier cooling due to a failure to follow procedures. (Section 1R22)
05000280/2008002-02	NCV	Failure to Follow Start-up Procedure which Resulted in Leaving Loose Fibrous Insulation in Containment. (Section 4OA5)

Closed

05000280/2007005-04	URI	Fibrous Material Left in Unit-1 Containment (Section 4OA5)
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather

OC-21, Severe Weather Checklist

0-MPM-1900-02 (Rev.9), Flood Protection Floor Drain Back Water Stop Valve Replacement

0-MPM-1900-01 (Rev.9), Periodic Inspection of Flood and Spill Protection Dikes, Dams, and Expansion Joint Shields

UFSAR Appendix 9C, Flood Control System

0-AP-13.00 (Rev.19), Turbine Building or MER 3 Flooding

0-AP-13.01 (Rev.5), Uncontrollable Turbine Building Flooding

Apparent Cause Evaluation CR 002199, Water Intrusion Event 10/7/06

Section 1R04: Partial System Alignment

0-OP-EG-001A, Rev. 12; EDG 3 System Alignment

DWG 11448-FMC-068A, Rev. 50, Feedwater System

Reviewed Condition Reports from 4/1/06 to Present

Health System Report 2007 Quarter 4

Health System Report 2007 Quarter 3

Health System Report 2007 Quarter 2

0-OP-EG-001 Number 3 Emergency Diesel Generator

1-OP-EG-001 Number 1 Emergency Diesel Generator

0-OP-EG-001A EDG 3 System Alignment

0-OP-HS-001 Fuel Oil Storage Tanks

1-OP-EG-001A EDG 1 System Alignment

NCRODP-55 Emergency Diesel Generator System

Section 1R05: Fire Protection

0-FS-FP-121, Diesel Generator Room Number 1 Elevation 27 ft 6 in

1-FS-FP-107, Unit 1 Emergency Switchgear Room Elevation 9 ft 6 in

1-FS-FP-127, Unit 1 Cable Spreading Room Elevation 45 ft 3 in

1-FS-FP-140, Safeguards Basement – Unit 1 Elevation 11 ft 6 in

1-FS-FP-141, Safeguards Spray Side – Unit 1 Elevation 27 ft 6 in

1-FS-FP-142, Main Steam Valve House and AFW – Unit 1 Elevation 27 ft 6 in

2-FS-FP-107, Unit 2 Emergency Switchgear Room Elevation 9 ft 6 in

2-FS-FP-140, Safeguards Basement – Unit 2 Elevation 11 ft 6 in

2-FS-FP-141, Safeguards Spray Side – Unit 2 Elevation 27 ft 6 in

2-FS-FP-142, Main Steam Valve House and AFW – Unit 2 Elevation 27 ft 6 in

CR090704, Two fire penetrations were discovered without foam

CR090291, Oxygen and Acetylene bottles in MER 3

CR090262, Hourly fire watch round not completed in the time required

CR090433, Declared 1-BS-DR-40/41 & 2-BS-DR-43/44 non-functional

CR090623, Fire watch not assigned to proper area

CR090510, 1-BS-DR-42 non-functional

Section 1R06: Flood Protection Measures

0-AP-13.00, Turbine Building or MER3 Flooding, Rev. 19

0-AP-13.01, Uncontrollable Turbine Building Flooding, Rev. 5

0-MPM-1900-01, Periodic Inspection of Flood and Spill Prevention Dikes, Dams and Expansion Joint Shields, Rev. 9
0-EPM-0805-01, Station Flood Detection Testing, Rev. 7
1-OSP-PL-001, Performance Test of Turbine Building Sump Pumps 1-PL-P-2A, 1-PL-P-2B, 1-PL-P-2C, Rev. 7
1-OSP-PL-002, Performance Test of Turbine Building Sump Pumps 1-PL-P-2D, 1-PL-P-2E, 1-PL-P-2F, Rev. 7
WO765085-01, Mandatory Inspection of Dikes, Dams, and Shields
WO471348-05, Remove/Reinstall Dike for 2-BS-DR-21
WO766206-01, Station Flood Detection Testing

Section 1R07: Heat Sink Performance

ER-AA-HTX-1002, Heat Exchanger Program Visual and Leak Testing, Rev. 0
ER-AA-HTX-1003, Heat Exchanger Monitoring and Assessment, Rev. 0
1-OSP-SW-005, Measurement of Macrofouling Blockage of Component Cooling Heat Exchanger 1-CC-E-1D, Rev. 17

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

DNAP-2000, Rev. 6; Dominion Work Management Process
PLAP-2000, Rev. 7; Supplemental Work management Process
Operations Check List OC-97, Protected Equipment Program (effective date 8/21/07)
NRC Safety Evaluation by The Office of Nuclear Reactor Regulation related to Amendments Nos. 257 and 258.

Section 1R15: Operability Evaluations

OP-AA-102-1001, Rev. 0; Development of Technical Basis to Support Operability Determinations
OP-AA-102, Rev. 1; Operability determination
ACE000921, 2-RH-P-1B has 15 of the 20 seal housing to casing bolts made from B8 material CR 092774,
PRA Manual Part III, Chapter G, Rev 14 (Att.4)
Drawing # 11448-FB-27A and 11548-FB-15A

Section 1R18: Plant Modifications

DCP 92-013, Charging Pump SW TCV Controller Replacement (1/2-SW-TC-108-208A-C)
ET-CEM-08-0001, Seismic Qualification of Fisher Model 4166K Pneumatic Temperature Controllers

Section 1R19: Post-Maintenance Testing

0-ECM-1803-01, Rev. 14; Agastat Time Delay Relay Replacement and Testing.
2-OPT-EG-001, Rev. 43; Number 2 Emergency Diesel Generator Monthly Start Exercise Test DWG 11548-FE-19AC, Rev. 12; EDG 2 Engine Start 1 & 2
DWG 11548-FE-19AD, Rev 6; EDG 2 Engine and Governor Control
0-ICM-RD-CAB-001 (Rev 20 OTO1); Rod Control System Power Cabinet and Logic Cabinet Trouble Shooting and Maintenance
0-ICM-RD-RPI-001, Rev. 8; CERPI System Diagnostic Checks and Maintenance
DWG 11548-RE-25B
1-OPT-CH-001(Rev. 43), Charging Pump Operability and Performance Test for 1-CH-P-1A

ME-0771 (Rev.2), Minimum Delivered HHSI Flow for LOCA Analysis and CH/HHSI Pump Flow Test Acceptance Criteria, Surry 1&2
ET-S-05-0016 (Rev.0), IST Acceptance Criteria for Charging Pump 1-CH-P-1A

Section 1R22: Surveillance Testing

NF-AA-FPA-5001 New Fuel Inspection
0-OP-4.2 Receipt and Storage of New Fuel
NF-AA-FPA-503 New Fuel Inspection
Personnel Qualifications

Section 1R22: Surveillance Testing

ME-0616, Rev 0. Minimum Delivered LHSI Flow for LB LOCA Analysis and Acceptance Criteria for LHSI Pump Operability Verification testing - Surry 1&2.
ET S-01-0074, Acceptance Criteria for Low Head SI Pump and Valve Procedures
ET S-01-0238, Acceptance Criteria for New 1-FW-P-3A
ET S-01-0027, Acceptance Criteria for Auxiliary Feedwater Pumps
ME-0597, Rev. 4; Minimum Delivered AFW Flow and Acceptance Criteria for AFW Pump Operability Verification Testing
2-IPM-CC-F-207A (Rev. 3), "RCP 1A Thermal Barrier Heat Exchanger Outlet Flow Loop F-CC-207A Calibration
DNAP-0509 (Rev.8), Dominion Nuclear Procedure Adherence and Usage

Section 40A1: Performance Indicator Verification

ER-SU-SPI-1001, Rev 0; Implementation of the Consolidated Data Entry (CDE) Reporting System
NEI 99-02, Rev. 5; Regulatory Assessment Performance Indicator Guideline

LIST OF ACRONYMS

AFW	Auxiliary Feedwater
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CO ₂	Carbon Dioxide
CR	Condition Report
CST	Condensate Storage Tank
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
ESFAS	Engineered Safety Feature Actuation System
ESW	Emergency Service Water
FME	Foreign Material Exclusion
GL	Generic Letter
I&C	Instrument and Control
IP	Inspection Procedure
LOCA	Loss of Coolant Accident
MSPI	Mitigating Systems Performance Index
MWO	Maintenance Work Order
NCV	Non-cited Violation
NEI	Nuclear Energy Institute
NFPA	National Fire Protection Association
NPSH	Net Positive Suction Head
OS	Occupational Radiation Safety
PI	Performance Indicator
PMT	Post Maintenance Test
PORV	Power Operated Relief Valve
RCS	Reactor Coolant System
RFO	Refueling Outage
RG	Regulatory Guide
RHR	Residual Heat Removal
RP	Radiation Protection
RPV	Reactor Pressure Vessel
RS	Recirculation Spray
RTP	Rated Thermal Power
SCBA	Self-Contained Breathing Apparatus
SDP	Significant Determination Process
SG	Steam Generator
SSC	System, Structure and Component
TI	Temporary Instruction
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
U1	Unit 1
U2	Unit 2
URI	Unresolved Item