UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

January 30, 2006

Virginia Electric and Power Company
ATTN: Mr. David A. Christian
Sr. Vice President and
Chief Nuclear Officer
Innsbrook Technical Center - 2SW
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: SURRY POWER STATION - NRC INTEGRATED INSPECTION REPORT NOS. 05000280/2005005 AND 05000281/2005005

Dear Mr. Christian:

On December 31, 2005, the United States Nuclear Regulatory Commission (NRC) completed an inspection at your Surry Power Station, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on January 10 and 26, 2006, with either Mr. Jernigan or Mr. Adams and other members of your staff.

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

Based on the results of this inspection no findings of significance were identified. However, two licensee-identified violations which were determined to be of very low safety significance are listed in the report. NRC is treating these violations as non-cited violations (NCV) consistent with Section VI.A.1 of the NRC's Enforcement Policy because of the low safety significance of the violations and because they are entered into your corrective action program. If you contest these non-cited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 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 NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Kerry D. Landis, 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 05000280/2005005 and 05000281/2005005
w/Attachment: Supplemental Information

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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.: 05000280/2005005, 05000281/2005005

Licensee: Virginia Electric and Power Company (VEPCO)

Facility: Surry Power Station, Units 1 & 2

Location: 5570 Hog Island Road
Surry, VA 23883

Dates: October 1 - December 31, 2005

Inspectors: N. Garrett, Senior Resident Inspector
D. Arnett, Resident Inspector
J. Kreh, Emergency Preparedness Inspector (Sections 1EP4 and 4OA1)
F. Wright, Senior Health Physics Inspector (Section 2OS2)

Approved by: K. Landis, Chief, Reactor Projects Branch 5
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000280/2005-005, IR 05000281/2005-005; on 10/1/2005 - 12/31/2005; Surry Power Station Units 1 & 2. Routine Integrated Report.

The report covered a three month period of inspection by resident inspectors, a senior heath physics inspector and an emergency preparedness inspector. Two licensee identified violations were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using 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 3, dated July 2000.

A. NRC Identified and Self-Revealing Findings

No findings of significance were identified.

B. Licensee-Identified Violations

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 in the licensee's corrective action program. The violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

Enclosure

REPORT DETAILS

Summary of Plant Status

Unit 1 started the report period operating at or near full rated power. On October 19, the unit was shutdown as a result of high vibrations on the 1B reactor coolant pump, 1-RC-P-1B. On October 30, the unit was taken critical and placed on-line. The unit achieved rated power on October 31, and operated at or near full rated power for the remainder of the report period.

Unit 2 operated at or near full rated power the entire reporting period except for a downpower to 75 percent on November 5, to repair a high pressure heater drain tank level controller.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

The inspectors preformed a seasonal review of the licensee cold weather preparations. The inspectors reviewed licensee procedures 0-OSP-ZZ-001, “Cold Weather Preparations” and OC-21, “Severe Weather Checklist.” The inspectors walked down portions of the emergency diesel generators (EDGs), high level intake structure, low level intake structure, refueling water storage tanks (RWSTs), and condensate storage tanks (CSTs) to assess condition of heat tracing, heaters, and insulation. The inspectors observed equipment condition and documented system deficiencies 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.

1R04 Equipment Alignment

a. Inspection Scope

The inspectors performed partial walkdowns of the following three systems to verify correct system alignment. The inspectors checked for correct valve and electrical power alignments by comparing positions of valves, switches, and breakers to the procedures and drawings listed in the Attachment. Additionally, the inspectors reviewed the corrective action system to verify that equipment alignment problems were being identified and properly resolved.

- Unit 1 emergency service water (ESW) pump 1-SW-P-1A and 1B while 1-SW-P-1C was tagged out for maintenance

- Unit 1 ESW pump 1-SW-P-1B and 1C while 1-SW-P-1A was tagged out for maintenance
- Number 1 and 2 emergency diesel generators (EDG) 1-EE-EG-1 and 1-EE-EG-2 while 1-EE-EG-3 was tagged out for maintenance

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors conducted tours of the following eight areas to assess the adequacy of the fire protection program implementation. The inspectors checked for the control of transient combustibles and the condition of the fire detection and fire suppression systems (using "SPS Appendix R Report,") in the following areas:

- Mechanical equipment room (MER) number 4
- Fire pump house
- MER number 2
- Alternate AC diesel building
- Unit 1 cable vault
- Unit 2 cable vault
- Unit 1 cable spreading room
- Unit 2 cable spreading room

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 internal floods. The inspectors performed walkdowns of the turbine building and auxiliary building to review compliance with procedures for internal flooding. The inspectors reviewed completed preventive maintenance and surveillance records for the turbine building sump pumps, station and turbine building flood detection equipment, and floor drain back water stop valve replacement. In addition, the inspectors reviewed the licensee single point vulnerability review associated with internal flooding. The documents reviewed are listed in the Attachment of the report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

a. Inspection Scope

The inspectors observed licensed operator performance during simulator training session RQ-0.56-SP-2 to determine whether the operators:

- were familiar with and could successfully implement the procedures associated with recognizing and recovering from dropped control rod(s) and a steam break in safeguards followed by a loss of feedwater;
- recognized the high-risk actions in those procedures; and,
- were familiar with related industry operating experiences.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

For the two equipment issues described in the plant issues listed below, the inspectors evaluated the licensee's effectiveness of the corresponding preventive and corrective maintenance. For each selected item below, the inspectors performed a detailed review of the problem history and surrounding 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."

- Number 1 emergency diesel generator high vibrations, and
- Unit 1 containment spray pump 1-CS-P-1B.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated the adequacy, accuracy, and completeness of seven plant risk assessments performed prior to changes in plant configuration for maintenance activities or in response to emergent conditions. When applicable, inspectors assessed if the licensee entered the appropriate risk category in accordance with plant procedures. Specifically, the inspectors reviewed:

- Plan of the Day (POD) for Week October 3 - 8 including the failure of the 1-CS-P-1B, containment spray pump, to start due to a failure of its breaker
- POD for Week October 15 - 21 including 1-EE-EG-1 high vibrations, unit shutdown for 1-RC-P-1B high vibrations
- POD for Week of October 29 - November 4 including failure of 1-SW-P-1A and 1-VS-F-58A during surveillance tests
- POD for Week November 12 - 18 including rescheduling of 1-PT-8.4/5/6 until 3-EE-EG-1 EDG was returned to an operable status
- POD for Week December 3 - 9 including declaring 1-SW-P-1B inoperable due to crankcase oil sample results and rescheduling risk significant surveillance tests
- POD for Week December 10 - 16 including declaring 1-FP-P-2 inoperable due to crankcase oil sample results, and
- POD for Week December 27 - 30 including failure of the Unit 2 'A' main feed regulating valve, failure of the Unit 2 'B' pressurizer safety valve acoustic monitor, and service water leak on the 'C' component cooling water heat exchanger.

b. Findings

No findings of significance were identified.

1R14 Operator Performance During Nonroutine Evolutions and Events

a. Inspection scope

For the non-routine event described below, the inspectors reviewed operator logs, plant computer data, and strip charts to determine what occurred and how the operators responded, and to verify if the response was in accordance with plant procedures:

- High vibration on the Unit 1 1B reactor coolant pump, 1-RC-P-1B and Unit 1 shutdown, and
- Isolation of letdown resulting from feedwater transient during Unit 1 startup.

b. Findings

No findings of significance were identified.

Enclosure

1R15 Operability Evaluations

a. Inspection Scope

The inspectors evaluated the technical adequacy of seven operability evaluations to ensure that operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The operability evaluations were described in the plant issues listed below:

- S-2005-4464, Tube leak on the Unit 2 charging pump lube oil coolers
- S-2005-4014, Through wall leak on Unit 1 intermediate seal cooler outlet piping
- S-2005-4717, Through wall leak on service water piping for main control room air conditioner, 1-VS-E-4C
- S-2005-5018, High motor amps on the Unit 2 safety injection pump, 2-SI-P-1A
- S-2005-4381, Elevated iron content for the outboard pump bearing on 1-CC-P-1B, “B” containment spray pump, and
- S-2005-5140, Number 3 emergency diesel generator piston cooling pipe bolts
- S-2005-5127, Mechanical equipment room #3 service water piping supports.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed six post maintenance test procedures and activities associated with the repair or replacement of components to determine whether the procedures and test activities were adequate to verify operability and functional capability following maintenance of the following equipment:

- Maintenance Work Order (MWO) 724876-01/2, Repair of the start relay for start circuit number 2 of the number 2 emergency diesel generator
- MWO 517053-01, Repair gearbox for 2-CH-P-1A, Unit 2 charging pump
- MWO 725925-01, Repair of service water (SW) piping for 1-VS-E-4C
- MWO 729122-02/3, Replacement of service water piping in mechanical equipment room (MER) number 4
- MWO 503016-01, Overhaul 1-VS-F-58B, RCA exhaust fan, and
- MWO 517235-03, “D” Control room chiller end bell replacement, 1-VS-E-4D.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (Unit 1)

a. Inspection Scope

The inspectors performed the inspection activities described below for the Unit 1 forced outage that began on October 19 and ended October 30.

The inspectors observed the unit shutdown and reviewed cooldown plots to verify that technical specification cooldown restrictions were followed.

The inspectors confirmed that, when the licensee removed equipment from service, the licensee maintained defense-in-depth commensurate with the outage risk control plan for key safety functions and applicable technical specifications, and that configuration changes due to emergent work and unexpected conditions were controlled in accordance with the outage risk control plan.

During the outage, the inspectors:

- Reviewed reactor coolant system (RCS) pressure, level, and temperature instruments to verify that those instruments were installed and configured to provide accurate indication; and that instrumentation error was accounted for;

- Reviewed the status and configuration of electrical systems to verify that those systems met technical specification requirements and the licensee's outage risk control plan;

- Observed decay heat removal parameters to verify that the system was properly functioning;

- Reviewed system alignments to verify that the flow paths, configurations, and alternative means for inventory addition were consistent with the outage risk plan; and

- Reviewed selected control room operations to verify that the licensee was controlling reactivity in accordance with the technical specifications.

The inspectors reviewed the licensee's plans for changing plant configurations to verify on a sampling basis that technical specifications, license conditions, and other requirements, commitments, and administrative procedure prerequisites were met prior to changing plant configurations. The inspectors reviewed RCS boundary leakage and the setting of containment integrity. The inspectors examined the spaces inside the containment building prior to reactor startup to verify that debris had not been left which could affect performance of the containment sumps.

The inspectors reviewed heat-up plots and observed the unit startup.

The inspectors reviewed various problems that arose during the outage to verify that the licensee was identifying problems related to refueling outage activities at an appropriate threshold and entering them in the corrective action program.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the five surveillance tests listed below, the inspectors examined the test procedure and either witnessed the testing and/or reviewed test records to determine whether the scope of testing adequately demonstrated that the affected equipment was functional and operable:

Surveillance Tests

- 2-OPT-EG-001, “Number 2 Emergency Diesel Generator Monthly Start Exercise Test”
- 2-PT-8.6, “Recirculation Mode Transfer Signal Automatic Switchover Logic Test”
- 1-OPT-CH-002, “Charging Pump Operability and Performance Test for 1-CH-P-1B.”

In-service Test

- 0-OPT-SW-001, “Emergency Service Water Pump, 1-SW-P-1A.”

Reactor Leak Rate Test

- 1-OPT-RC-10.0, “Reactor Coolant Leakage - Computer Calculated.”

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the following Temporary Modification(TM) to determine whether system operability/availability was affected, that configuration control was maintained, and that the associated safety evaluation(s) adequately justified implementation.

- TM S1-05-080, Service water degraded pipe supports installed

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level (EAL) and Emergency Plan Changes

a. Inspection Scope

The inspectors reviewed the changes made in Revision 49 to the licensee's Emergency Plan. This revision included substantive changes, but no modifications to the EALs.

The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 04, "Emergency Action Level and Emergency Plan Changes." The applicable planning standard 10 CFR 50.47(b)(4) and related requirements contained in Appendix E to 10 CFR Part 50 were used as reference criteria. This inspection activity represents one sample on an annual cycle.

The inspectors reviewed various documents which are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed licensed operator training in the main control room simulator on October 25, and operator actions in the main control room simulator for an announced emergency response drill on December 6. In both observations, the inspectors assessed the licensee's performance in emergency classification and off-site notification. The drill evaluations are included in the Emergency Response Performance indicator statistics.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS2 ALARA Planning and Controls

a. Inspection Scope

As Low As Is Reasonably Achievable (ALARA). Plant collective exposure history, current exposure dose trends, and the annual and outage dose goals were reviewed to determine if the licensee was implementing ALARA practices as required by 10 CFR 20.1101(b) and licensee procedures. A list of work activities ranked by actual/estimated exposure that were current for calender year 2005 and the most recent Refueling Outage (RFO) tasks were reviewed and discussed with licensee personnel. The inspectors compared the results achieved with the intended dose established in the licensee's ALARA planning. The inspectors reviewed the person-hour estimates developed by responsible organizations such as maintenance, operations, planning and other groups for jobs with high expected doses. These estimates were compared with the actual work activity time requirements to determine the accuracy of exposure time estimates.

Exposures of individuals from selected work groups were reviewed with licensee personnel. Significant exposure variations which existed among workers in a specific work group were reviewed with the licensee staff in order to determine whether the exposure variations were the result of worker job skill differences or whether certain workers received higher doses because of poor ALARA work practices.

The inspectors reviewed dose for all declared pregnant workers during the previous two years. There were no prenatal doses. Monitoring controls specified by applicable procedures were reviewed to assess licensee controls for declared pregnant worker and compliance with 10 CFR 20.

ALARA procedures were reviewed and discussed with licensee staff to verify the licensee had integrated ALARA requirements into work procedures and Radiation Work Permits (RWPs). The inspectors also discussed the implementation of a new dose tracking system that would help the staff better determine where doses are received. The inspectors reviewed the licensee's continuing investigation for the use of permanent and temporary shielding. The inspectors reviewed the qualifications of the ALARA Coordinator. Documents reviewed during this inspection are listed in Section 2OS2 of the report Attachment.

Problem Identification and Resolution. The inspectors reviewed the corrective action program documents that were related to the licensee's ALARA program. The inspectors assessed the licensee's ability to identify, characterize, prioritize, trend and resolve the identified issues in accordance with licensee procedures. The inspectors reviewed problems or concerns that were identified by different methods, such as: radiation

worker problems identified in the field, during post job reviews, and while performing Self Assessments. Documents reviewed during this inspection are listed in Section 2OS2 of the report Attachment.

b. Findings

No findings of significance were identified.

The inspectors completed 10 of the required samples during this inspection. The remaining 19 samples were completed during an inspection of the ALARA program in April and May of 2005. That inspection is documented in NRC Inspection Report No. 05000280, 281/2005003.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors reviewed the licensee's procedure for developing the data for the EP PIs, which are: (1) Drill and Exercise Performance (DEP); (2) Emergency Response Organization (ERO) Drill Participation; and (3) Alert and Notification System (ANS) Reliability. The inspectors examined data reported to the NRC for the period October 2004 - September 2005. Procedural guidance for reporting PI information and records used by the licensee to identify potential PI occurrences were also reviewed. The inspectors verified the accuracy of the PI for ERO and DEP through review of a sample of drill and event records. The inspectors reviewed selected training records to verify the accuracy of the PI for ERO drill participation for personnel assigned to key positions in the ERO. The inspectors verified the accuracy of the PI for ANS reliability through review of a sample of the licensee's records of periodic system tests.

The inspection was conducted in accordance with NRC Inspection Procedure 71151, "Performance Indicator Verification." The applicable regulatory standard 10 CFR 50.9 and NEI 99-02,"Regulatory Assessment Performance Indicator Guidelines," Revision 3, were used as reference criteria. This inspection activity represents three samples on an annual cycle.

The inspectors reviewed various documents which are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Daily Review of Plant Issues

c. Inspection Scope

As required by Inspection Procedure 71152, “Identification and Resolution of Problems,” and in order to help identify repetitive 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, attending daily screening meetings, and accessing the licensee’s computerized database as required.

b. Findings

No findings of significance were identified.

.2 Semi-Annual Review of Plant Issues

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," the inspectors performed a review of the licensee’s corrective action program (CAP) and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspector’s review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in section 4OA2.1 above, licensee trending efforts, and licensee human performance results. The inspector’s review nominally considered the six month period of July 2005, through December 2005, although some examples expanded beyond those dates when the scope of the trend warranted. The review also included issues documented outside the normal CAP in major equipment problem lists, repetitive and/or rework maintenance lists, system health reports, quality assurance audit/surveillance reports, self assessment reports, and maintenance rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee’s latest quarterly trend reports. Corrective actions associated with a sample of the issues identified in the licensee’s trend report were reviewed for adequacy.

The inspectors also evaluated the report against the requirements of the licensee’s corrective action program as specified in VPAP-1601, “Corrective Action” and 10 CFR 50, Appendix B. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified. The inspectors evaluated the licensee trending methodology and observed that the licensee had performed detailed reviews under various systems. The licensee routinely reviewed cause codes, involved organizations, key words, and system links to identify potential trends in their corrective

action program data. The licensee performed statistical evaluations of plant issue data to determine areas of focus for the various plant departments. The licensee used the statistical data to focus on potential trends and wrote Plant Issues to monitor the trends identified. The licensee also included the status of all Plant Issues associated with trends written during the quarter in the quarterly trend report.

.3 Annual Sample Review

a. Inspection Scope

The inspectors performed an in-depth review of the failure of the Unit 1 charging system letdown isolation which occurred on February 3, 2005. This issue is documented in the corrective action program as Plant Issue S-2005-0383. The review was performed to ensure the full extent of the issue was identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. The inspectors evaluated the plant issue against the requirements of the licensee's corrective action program as delineated in Station Administrative Procedure VPAP-1601, "Corrective Action" and 10 CFR 50 Appendix B, Criterion XVI, "Corrective Action."

b. Findings and Observations

No findings of regulatory significance were identified. The licensee performed a root cause evaluation for the February 3, 2005, isolation of charging system letdown. The licensee was performing a unit shutdown to hot standby conditions to allow repair of the sixth string feedwater heaters. This shutdown occurred early in the plant operating cycle following refueling. The reactor operator (RO) performed reactivity manipulations by stepping control rods in and borated the reactor coolant system (RCS), as expected for a reactor downpower. The operating crew isolated extraction steam to the first point feedwater heaters in accordance with 1-GOP-2.2, "Unit Shutdown, Less Than 30% to HSD". The control room operators expected a minor decrease in feedwater temperature based on past experience. The RO then performed a boration of the RCS. As a result of the isolation of extraction steam to the first point feedwater heaters and normal reactivity addition, RCS temperature decreased approximately 6EF causing an overall fluid shrinkage in the RCS. As the RCS volume decreased, the volume in the pressurizer (PZR) decreased to compensate for loss of RCS liquid volume. At the PZR low level setpoint, charging letdown isolated to prevent further loss of volume from the RCS.

The licensee performed a thorough root cause evaluation to determine the root and contributing causes of the event. In addition, an outside contractor was used to validate and determine the thoroughness of the root cause evaluation. The feedwater temperature decrease was attributed to the operation of the main feed pump recirculation valve. The recirculation valve (feed pump to main condenser) had been modified with a new style valve which increased recirculation flow. The licensee determined that following the modification, two feedwater transients occurred prior to this event. The licensee determined that a detailed review of the cumulative effects on plant system interactions and reactivity was not required by the modification package;

and therefore, not performed. The licensee changed plant procedures to better manage feedwater system operation following the prior transients but only verified the procedure revisions on a middle of core life simulator model which masked the effects that occur early in core life. Additionally, the operating crew failed to discuss and evaluate the differences in RCS response early in core life on integrated plant operations. The inspectors determined that the root cause and corrective actions were appropriate.

The failure to adequately evaluate design changes which affect reactor plant operations is a violation of 10 CFR 50, Appendix B, Section III, "Design Controls." This violation is minor because this event occurred during the most susceptible portion of the operating cycle and the plant was fully protected by automatic actions. In accordance with Manual Chapter 0612, Appendix B, "Issue Screening," this violation is of minor significance and is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy.

4OA3 Event Follow-up

.1 (Closed) Licensee Event Report (LER) 05000280/2004001-00, Emergency Service Water Pump Found Inoperable After Entry into a Mode.

On December 4, 2004, the 1C emergency service water (ESW) pump failed to start during a periodic surveillance test. The licensee determined that the starter motor on the ESW pump diesel engine failed during the post-modification testing following partial implementation of a design change to the engine starting circuit. The partial implementation of the modification failed to remove unused wiring which energized a circuit and resulted in damage to the diesel starter motor. The modification was installed during a Unit 1 refueling shutdown when pump operability was not required. The 1C ESW pump was tested and returned to service and plant startup subsequently occurred. The 1C ESW pump was required to be operable when Unit 1 exceeded 350EF reactor coolant system (RCS) temperature and 450 psi RCS pressure. The licensee determined that the 1C ESW pump was inoperable prior to the expiration of the seven day LCO action statement requiring three operable ESW pumps. The inspectors reviewed the licensee root cause, Plant Issue S-2004-4621, and the corrective actions taken. The root cause evaluation properly identified the root and contributing causes and the corrective actions should prevent recurrence. This licensee identified performance deficiency is a violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." The enforcement aspects of the violation are addressed in Section 4OA7 of Inspection Report 05000280/2004005, 05000281/2004005.

.2 (Closed) LER 05000280/2005001-00, Manual Trip Initiated Due to Misaligned Control Rod.

On February 7, 2005, while withdrawing control rod bank "A" during Unit 1 reactor startup, control rod B-10 indicated a rapid, partial drop from approximately 42 steps to 17 steps on the computer enhanced rod position indication (CERPI) panel. The reactor operator stopped withdrawal of the "A" control bank with CERPI indicating control rod B-

10 position at 17 steps. The remaining CERPIs in control bank "A" were observed to be indicating 40 to 45 steps. Due to the partially dropped B-10 control rod, the operating team determined that the reactor should be tripped. The inspectors reviewed the licensee root cause, Plant Issue S-2005-0442, and the corrective actions taken and planned. The root cause evaluation properly identified the root cause to be an accumulation/buildup of particulate (debris or crud) in the control rod drive mechanism internals and the corrective actions should prevent recurrence on both Unit 1 and 2.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On January 10, 2006, the resident inspectors presented the inspection results to Mr. Jernigan and other members of his staff who acknowledged the findings. On January 26, 2006, a re-exit of the inspection results was presented by the residents to Mr. Adams who acknowledged the findings.

The inspectors confirmed that proprietary information was not provided or examined during the inspection.

4OA7 Licensee Identified Violations

The following findings of very low significance 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 Non-Cited Violations (NCV).

- Technical Specification 6.4.A.2 requires in part that detailed written procedures with appropriate check lists and instructions shall be provided for the calibration and testing of components involving nuclear safety of the station. Contrary to this, on October 3, 2005, the licensee found that the breaker for the Unit 1 "B" containment spray pump was left at 3190 amps following the last breaker maintenance, outside the ± 20% procedural requirement. The licensee determined that program guidance and methodology was inadequate to account for overcurrent device loss of calibration (drift), set point variability, and total clearing time. In accordance with Inspection Manual Chapter (IMC) 0612 Appendix B, "Issue Screening", the issue is more than minor, in that, the lack of detailed written procedures affected the ability to Maintain Functionality of Containment attribute of the Barrier Integrity Cornerstone. In accordance with the IMC Chapter 0609 Appendix A SDP Phase 1 screening worksheet, the finding was determined to be of very low safety significance because it did not result in the actual loss of a safety system and is not risk significant in response to external events (seismic, flood, and severe weather). This issue was identified in Plant Issue S-2005-4541.

- Technical Specification 6.4.A.1 requires in part that detailed written procedures with appropriate check-off lists and instructions shall be provided for the operations of components involving nuclear safety of the station. Licensee procedure GMP-012, "Roving Flood Watch Responsibilities," requires that the watertight door to mechanical equipment room (MER) #3 be closed or monitored. Contrary to this, on September 21, 2005, the watertight door to MER #3 was found open and unattended. This watertight door is a flood protection barrier between the MER and the emergency switchgear. The flood control door is located behind a fire door and is not readily observable. The exposure time is a conservative exposure time of 4 hours that is based on the estimated time the work group left the room and the time the door was discovered open. Under the significance determination process (SDP), a regional Senior Reactor Analyst performed a Phase 3 analysis. The performance deficiency was characterized as of very low safety significance (Green) based upon the results of this analysis. The dominant accident sequence dealt with an unmitigated piping break originating within the Mechanical Equipment Room that eventually caused an unrecoverable failure of all onsite alternating current. The critical assumptions and major factors as to why the performance deficiency was of such low significance were the low frequency (< once per 1000 years) of piping rupture and the short exposure time (4 hours). This issue was identified in Plant Issue S-2005-4408.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Adams, Director, Nuclear Station Safety and Licensing
J. Costello, Supervisor, Nuclear Emergency Preparedness (corporate)
M. Crist, Manager, Operations
J. Grau, Manager, Nuclear Oversight
B. Garber, Supervisor, Licensing
T. Huber, Manager, Engineering
D. Jernigan, Site Vice President
L. Jones, Manager, Radiation Protection and Chemistry
C. Luffman, Manager, Protection Services
R. Savedge, Emergency Preparedness Specialist
R. Simmons, Manager, Outage and Planning
K. Sloane, Director, Nuclear Station Operations and Maintenance
B. Stanley, Manager, Maintenance
M. Wilson, Manager, Training

NRC

K. Landis, Chief, Branch 5, Division of Reactor Projects, Region II

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened
None.

Closed

05000280/2004-001-00	LER	Emergency Service Water Pump Found Inoperable After Entry into a Mode.
05000280/2005-001-00	LER	Manual Trip Initiated Due to Misaligned Control Rod.

Discussed
None.

Attachment

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Plant Drawings
11448-FB-38A
11448-FM-71A
11448-FM-71E

Plant Procedures
0-OP-SW-002, Emergency Service Water Pump Operation
0-OP-SW-002A, Emergency Service Water System Alignment
1-OP-EG-001A, EDG 1 System Alignment
2-OP-EG-001A, EDG 2 System Alignment

Section 1R05: Fire Protection

Plant Procedures
0-FS-FP-199, Electric Fire Pump Room Elevation 27' - 6"
0-FS-FP-198, Diesel Fire Pump Room Elevation 27' - 6"
0-FS-FP-225, Alternate AC Diesel Room - Construction Site
0-FS-FP-173, Charging Pump Service Water Pump Room (MER 4) Elevation 9' - 6"
1-FS-FP-101, Unit 1 Cable Vault Penetration Area Elevation15' - 0"
1-FS-FP-102, Unit 1 Cable Vault Tunnel Elevation 9' - 6" and 15' - 0"
1-FS-FP-103, Unit 1 Upper Cable Vault Elevation 35' - 6"
2-FS-FP-101, Unit 2 Cable Vault Penetration Area Elevation 15" - 0"
2-FS-FP-102, Unit 2 Cable Vault Tunnel Elevation 9' - 6" and 15' - 0"
2-FS-FP-103, Unit 2 Upper Cable Vault Elevation 35' - 6"
2-FS-FP-126, Mechanical Equipment Room Number 2 Elevation 45' - 3"

Section 1R06: Flood Protection Measures

Work Orders
Maintenance Work Order (MWO) 530184, Semi-Annual Back Flow Preventers PM, 0-MPM-1900-2, Flood Protection Floor Drain Back Water Stop Valve Replacement (Turbine Building and Service Building)
MWO 530185, Semi-Annual Back Flow Preventers PM, 0-MPM-1900-2, Flood Protection Floor Drain Back Water Stop Valve Replacement (Auxiliary Building)
MWO 597823, Station Flood Detection Testing, 0-EPM-0805-01, Station Flood Detection Testing

Plant Procedures
1-OSP-PL-001, Performance Test of Turbine Building Sump Pumps 1-PL-P-2A, 1-PL-P-2B, 1-PL-P-2C (Turbine Building Sump Number 1)
1-OSP-PL-002, Performance Test of Turbine Building Sump Pumps 1-PL-P-2D, 1-PL-P-2E, 1-PL-P-2F (Turbine Building Sump Number 2)

2-OSP-PL-001, Performance Test of Turbine Building Sump Pumps 2-PL-P-2A, 1-PL-P-2B, 1-PL-P-2C (Turbine Building Sump Number 3)

Section 1R12: Maintenance Effectiveness

Plant Issues
S-1991-0106, S-2001-2070, S-2001-2723, S-2001-2997, S-2002-3299, S-2004-1301, S-2004-3388,
S-2004-3591, S-2004-4532, S-2005-4703, S-2005-4541, –2005-3225

Work Orders
444970-01, 449078-01, 450131-01, 458605-01, 458605-0, 454287-01, 459567-04, 475166-01, 481094-01, 523360-03, 724157-01, 724157-03

S-01-0147, Rev. 0, Emergency Diesel Generator No. 1 Vibration Analysis
S-01-0193, Rev. 1, Evaluation of 1-EE-EG-1-GENERA Vibrations
S-01-0229, Rev. 0, Evaluation of 1-EE-EG-1-GENERA Vibrations
Vendor Technical Manual 38-E035-00001, Operating Manual 999 System Generating Plant, Model 999-20

Section 1R20: Refueling and Outage Activities

Plant Procedures
1-GOP-2.1, Unit Shutdown, Power Decrease from Allowable Power to Less than 30% Reactor Power
1-GOP-2.2, Unit Shutdown, Less Than 30% to HSD
1-GOP-2.4, Unit Cooldown, HSD to 351EF
1-GOP-2.5, Unit Cooldown, 351EF to Less Than 205EF
1-OP-RC-004, Draining the RCS to Reactor Flange Level
1-GOP-1.1, Unit Startup, RCS Heatup from Ambient to 195EF
1-GOP-1.4, Unit Startup, HSD to 2% Reactor Power
1-GOP-1.5, Unit Startup, 2% Reactor Power to Max Allowable Power

Section 1EP4: Emergency Action Level (EAL) and Emergency Plan Changes

Plans and Procedures

Surry Emergency Plan, Rev. 49
EPIP-1.06, Protective Action Recommendations, Rev. 6

Records and Data

10 CFR 50.54(q) Review for Rev. 49 to Surry Emergency Plan

Section 2OS2: ALARA Planning and Controls

Procedures

VPAP-2102, Station ALARA Program, Rev. 11
General Operating Procedure (GOP)-2.8, Unit Cool-down, HSD to CSD For Refueling, Rev. 0
C-HP-1091.231, "External Exposure Control Program: Surveillance and Evaluation," Rev.4
C-HP-1091.281, "Radiation Work Permit Program: Surveillance and Evaluation," Rev.5
C-HP-1091.275, "Restricted and Controlled Area Doses: Surveillance and Evaluation," Rev. 6

ALARA Documents and Records

2004 Annual ALARA Report
2005 Unit Two, Refueling, Ten year ISI, and Split Pin Outage Report
Minutes of Station ALARA Committee Meeting, 10/22/05.
Surry Power Station ALARA Committee Minutes: 09/26/2005
Station ALARA Committee Meeting Agenda, 11/29/2005
2006 Non-Outage Exposure Goals
2006 Unit 1 RFO Exposure Goals
Surry 2005 Unit 2 Refueling Outage Temporary Shielding Plan, 04/28/05
ALARA Evaluation # 05-037, "U1 RCP Motor Maintenance/Pump Replacement", RWP 05-2-4505

Post-Job ALARA Reviews for U2 RFO, 2005

ALARA Evaluation # 05-023, "U2 RFO: 10 Year ISI Inspection", RWP 05-2-3012.

CAP Documents

Audit 04-08, Radiation Protection and Process Control Program, 5/20/04
S-2005-0208-R6 Exposure Control Program Evaluation
Radiation Work Permit Program Evaluation, 10/2002 - 08/2005
ALARA Program Evaluation, 01/2002-06/2004
Nuclear Oversight Audit 05-06:RP/PCP/CHEM Programs
Radiological Protection 2005 Self Assessment Schedule
Category 3 Root Cause Evaluation - S-2005-1366-E1
PIR S-2005-1366-R1 - R3, R5 - 15, R17 - R19, "Radiation Dose Control: Lack of Focus On A Comprehensive Source Term Reduction Program Has Resulted in Some Failures to Reduce Dose Rates."
PI S-2005-4001, 2006 Unit 1 Refueling Outage Exposure Reduction Plan.
PIR S-2005-4001-R1, Dose Rates Potentially Will be 2.5 to 3 Times Higher in the RCP Cubicle Due to Expanded Steam Generator Scope.
PI S-2005-4002, Action Items - 2006 Unit 1 Refueling Exposure Reduction Plan- I&C
PI S-2005-4003, Radiological Protection
PIR S-2005-4003-R4, Develop Temporary Shielding Plan to Provide Increased Shielding at the Tube Side Handholes to Match the Tube Lane Handholes for Sludge Lance and FOSAR Work.

PIR S-2005-4003-R10, A Portaband Was Used to Remove the RHR Seal Coolers in U2. This Was In Part An Airborne Issue.
PIR S-2005-4003-R11, Develop Temporary Shielding Package to Shield the Non-Regen Heat Exchanger to Lower Dose Rates for Gate 15 Valve Work.
PIR S-2005-4005-R1, Schedule Steam Generator Inspection to be Performed Prior to Draining or After Filling of the Secondary Side of the Generators.
PIR S-2005-4005-R4, Develop List of NDE Inspections That Can Be Performed From a Teletower or Ladder and Provide to NSS Scaffold Supervisor So Team Approach Can Be Employed and Scaffold Exposures Reduced.
PIR S-2005-4005-R5, Review the Final NDE Inspection Plan With ALARA Prior to the Start of the Outage to Identify any Conflicts with Areas Scheduled to have Temporary Shielding Installed.
PI S-2005-4006-R1, Schedule Steam Generator Scaffold Installation to be Performed Prior to Draining the Secondary Side and Scaffold Removal After Filling of the Secondary Side of the Generators.

Section 4OA1: Performance Indicator (PI) Verification

Procedures, Records, and Data

DNAP-2605, Emergency Preparedness Performance Indicators, Rev. 2
Documentation of ERO drill on 02/01/2005
Documentation of DEP opportunities: Licensed Operator Simulator evaluations on 02/22/2005, 03/01/2005, 03/08/2005, 03/15/2005, 03/22/2005, 03/29/2005
Documentation of ANS tests, 10/01/2004 - 09/30/2005
Records of drill and exercise participation by selected key ERO personnel, 2004-2005

Section 4OA2: Identification and Resolution of Problems

Plant Procedures
VPAP-1501, Deviation

Plant Issues
S-2005-0442, S-2005-1379, S-2005-5333, S-2005-5334, S-2005-5335, S-2005-5336, S-2005-5337, S-2005-5338
S-2005-5401

Dominion Trend Analysis Manual
Dominion Nuclear Trend Report Surry Power Station 2nd Quarter 2005
Dominion Nuclear Trend Report Surry Power Station 3rd Quarter 2005