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

April 19, 2005

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. 05000280/2005002, AND 05000281/2005002, AND 07200002/2005001 AND ANNUAL ASSESSMENT MEETING SUMMARY

Dear Mr. Christian:

On March 31, 2005, the United States Nuclear Regulatory Commission (NRC) completed an inspection at your Surry Power Station, Units 1 and 2, and the Surry Independent Spent Fuel Storage Installation. The enclosed report documents the inspection findings which were discussed on April 14, 2005, with Mr. Jernigan 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, the inspectors identified one issue of very low safety significance (Green). This issue was determined to involve a violation of NRC requirements. However, because of its very low safety significance and because it has been entered into your corrective action program, the NRC is treating this issue as a non-cited violation in accordance with Section VI.A.1 of the NRC's Enforcement Policy. Additionally, a licensee-identified violation, which was determined to be of very low safety significance, is listed in Section 4OA7 of this report. If you deny 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, 72-02
License Nos.: DPR-32, DPR-37, SNM-2501

Enclosure: NRC Integrated Inspection Report 05000280, 05000281/2005002 and 07200002/2005001 w/Attachment: Supplemental Information

cc w/encls:
Chris L. Funderburk, Director
Nuclear Licensing and
Operations Support
Virginia Electric & Power Company
Electronic Mail Distribution

Donald E. Jernigan
Site Vice President
Surry Power Station
Virginia Electric & Power Company
Electronic Mail Distribution

Virginia State Corporation Commission
Division of Energy Regulation
P. O. Box 1197
Richmond, VA 23209

Lillian M. Cuoco, Esq.
Senior Counsel
Dominion Resources Services, Inc.
Electronic Mail Distribution

Attorney General
Supreme Court Building
900 East Main Street

Richmond, VA 23219

Distribution w/encl:
S. Monarque, NRR
C. Evans (Part 72 Only)
L. Slack, RII EICS
RIDSNRRDIPMLIPB
PUBLIC

☐X SISP REVIEW COMPLETE: Initials: ___BBD_ ☐ SISP REVIEW PENDING*: Initials: _____ *Non-Public until the review is complete
☐ X PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE ☐ NON-SENSITIVE
ADAMS: ☐ Yes ACCESSION NUMBER:_____

OFFICE	RII:DRP	RII:DRS	RII:DRS	RII:DRP	RII:DRP		
SIGNATURE	BBD for	GTH	TCK	BBD	DCA		
NAME	NGARRETT	GHOPPER	TKOLB	BDESAI	DARNETT		
DATE	4/19/2005	4/18/2005	4/18/2005	4/18/2005	4/18/2005		
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: E:\Filenet\ML051090591.wpd

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-280, 50-281, 72-002
License Nos.: DPR-32, DPR-37, SNM-2501

Report Nos.: 05000280/2005002, 05000281/2005002, 07200002/2005001

Licensee: Virginia Electric and Power Company (VEPCO)

Facility: Surry Power Station, Units 1 & 2
Surry Independent Spent Fuel Storage Installation

Location: 5850 Hog Island Road
Surry, VA 23883

Dates: January 1 - March 31, 2005

Inspectors: N. Garrett, Senior Resident Inspector
D. Arnett, Resident Inspector
G. Hopper, Senior Operations Engineer (Section 1R11.1)
T. Kolb, Operations Engineer (Section 1R11.1)

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

Enclosure

SUMMARY OF FINDINGS

IR 05000280/2005-002, IR 05000281/2005-002, IR 07200002/2005-001; on 1/1- 3/31, 2005; Surry Power Station Units 1 & 2 and Independent Spent Fuel Storage Installation, Event followup, Routine Integrated Report.

The report covered a three month period of inspection by resident inspectors, and an announced inspection by a senior operations engineer and an operations engineer. One Green non-cited violation (NCV) and one licencee identified violation 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

Cornerstone: Mitigating Systems

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

  The finding is greater than minor because it affects the design control attribute of the mitigating systems cornerstone objective. A Phase 3 risk analysis determined that this finding was of very low safety significance. This was primarily due to the low frequency of an earthquake of sufficient magnitude to fail offsite power and the circulating water piping connected to the condenser, but of insufficient magnitude to cause catastrophic failure of the turbine building. (Section 4OA5.2)

B. Licensee-Identified Violations

A violation 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. This violation and corrective action tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 started the period at full power. On February 4, 2005, the unit was taken off-line to repair a leaking sixth point feedwater heater. The unit was subsequently shutdown. During startup, on February 7, the unit was manually tripped during startup following the partial drop of a control rod. The unit was taken critical on February 8, and reached full power on February 10.

Unit 2 operated at or near full power the entire reporting period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

On March 8, 2005, the site encountered severe weather which included high winds, lightning, and heavy snow, which caused line cycling in the switchyard. This included megawatt spikes from 670 MW to 950 MW. Generator output cycled more than usual during the storm conditions. The inspectors reviewed Operations Checklist OC-21 "Severe Weather Checklist" and Abnormal Procedure, 0-AP-10.18 "Response to Grid Instability." The inspectors assured that vital systems and components were protected from high winds and lightning associated with the conditions. The documents reviewed are listed in the Attachment of the report.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

a. Inspection Scope

The inspectors performed five partial walkdowns of the following 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. The documents reviewed are listed in the Attachment of the report.

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

- Unit 1 ESW pumps, 1-SW-P-1A and 1B, while 1-SW-P-1C was tagged out for maintenance.
- Unit 2 auxiliary feedwater (AFW) pumps, 2-FW-P-2 and 3B, while 1-FW-P-3A was tagged out for maintenance.
- Unit 1 charging (CH) pumps, 1-CH-P-1B and 1C, while 1-CH-P-1A was tagged out for maintenance.
- Number 1 and 3 emergency diesel generator (EDG), 1-EE-EG-1 and 3-EE-EG-1, while 1-EE-EG-2 was tagged out for maintenance.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

.1 Fire Area Walkdowns

a. Inspection Scope

The inspectors conducted tours of the following 12 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:

- Unit 1 normal switchgear room
- Unit 2 normal switchgear room
- Number 1 emergency diesel generator (EDG) room
- Unit 2 safeguards spray side
- Unit 2 safeguards basement
- Unit 2 safeguards valve pit
- Auxiliary building 45' 10" level
- Auxiliary building 27' 6" level
- Auxiliary building Unit 1 general area 13' level
- Auxiliary building Unit 2 general area 13' level
- Auxiliary building Unit 1 basement 2' level
- Auxiliary building Unit 2 basement 2' level

The documents reviewed are listed in the Attachment of the report.

b. Findings

No findings of significance were identified.

.2 Annual Fire Brigade Drill

a. Inspection Scope

The inspectors observed an unannounced fire brigade drill to evaluate the readiness of the licensee's personnel to fight fires. Specific aspects evaluated were: use of protective clothing and self-contained breathing apparatus; 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; and the drill objectives and acceptance criteria.

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-1C. The inspectors discussed the heat exchanger performance monitoring program and historical heat exchanger performance with engineering personnel. The inspectors reviewed the results of surveillance procedure 1-OSP-SW-004, "Measurement of Macrofouling Blockage of Component Cooling Heat Exchanger 1-CC-E-1C," following cleaning. The inspectors observed the condition of the 1C heat exchanger before and after the performance of tube scraping performed under maintenance Work Order (WO) 0058889-01. The inspector also reviewed SSES-8.15, Controlling Procedure for Addressing Heat Exchanger Issues.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

.1 Biennial Requalification Program Review

a. Inspection Scope

The inspectors reviewed the facility operating history and associated documents in preparation for this inspection. During the week of March 21-25, 2005, the inspectors reviewed documentation, interviewed licensee personnel, and observed the administration of simulator operating tests associated with the licensee's operator requalification program. Each of the activities performed by the inspectors was done to assess the effectiveness of the licensee in implementing requalification requirements identified in 10 CFR 55, "Operators' Licenses." The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines

established in NUREG-1021, “Operator Licensing Examination Standards for Power Reactors,” and Inspection Procedure 71111.11, “Licensed Operator Requalification Program.” The inspectors also reviewed and evaluated the licensee’s simulation facility for adequacy for use in operator licensing examinations. The inspectors observed two operator crews during the performance of the operating tests. Documentation reviewed included written examinations, Job Performance Measures (JPMs), simulator scenarios, licensee procedures, on-shift records, licensed operator qualification records, watchstanding and medical records, simulator modification request records and performance test records, the feedback process, and remediation plans. The records were inspected against the criteria listed in Inspection Procedure 71111.11. Documents reviewed during the inspection are listed in the Attachment.

Following the completion of the annual operating examination testing cycle which ended on March 31, 2005, the inspectors reviewed the overall pass/fail results of the individual JPM operating tests, and the simulator operating tests administered by the licensee during the operator licensing requalification cycle. These results were compared to the thresholds established in Manual Chapter 609 Appendix I, “Operator Requalification Human Performance Significance Determination Process.”

b. Findings

No findings of significance were identified.

.2 Quarterly Requalification Activity Review

a. Inspection Scope

The inspectors observed licensed operator performance during simulator training session RQ-05.1-ST-2 and RQ-05.2-SE-1, Rev. 0 to determine whether the operators:

- were familiar with and could successfully implement the procedures associated with recognizing and recovering from reactor trip and safety injection and a reactor trip followed by a loss of heat sink.
- 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 a walkdown 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. Documents reviewed during the inspection are listed in the Attachment.

- Unit 1 and 2 auxiliary feedwater pump (AFW) packing and
- Unit 1 CH pressure control valve, 1-CH-PCV-1145

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed six Plan of the Day (POD) documents for the weeks indicated. The inspectors evaluated the adequacy, accuracy, and completeness of 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:

- POD for week 1/15 - 21 for schedule changes and risk impact including addition of Unit 2 low head safety injection (LHSI) pump, 2-SI-P-1B and Unit 1 turbine driven (TD) auxiliary feedwater (AFW) pump, 1-FW-P-2 for maintenance
- POD for week 1/22 - 28 for schedule changes and risk impact including movement of risk significant surveillance tests and adding Unit 2 LHSI pump, 2-SI-P-1B for maintenance
- POD for week 2/5 - 12 for schedule changes and risk impact including addition of forced outage, adding Unit 1 TDAFW, 1-FW-P-2 and deleted Unit 1 motor driven (MD) AFW pump, adding 1-FW-P-3A for maintenance and deleted Unit 1 TDAFW, 1-FW-P-2, and extending a risk significant surveillance
- POD for week 2/19 - 25 for schedule changes and risk impact including adding peak electrical demand due to major switchyard maintenance

- POD for week 3/5 - 11 for schedule changes and risk impact including adding Unit 2 AMSAC, 2-EP-INV-100 and added Unit 1 charging pump, 1-CH-P-1C for maintenance, and adding risk significant surveillance
- POD for week 3/12 - 18 for schedule changes and risk impact including adding Unit 1 uninterrupted power supply, 1-EP-UPS-1B-2-INV for maintenance, extending Unit 2 TDAFW pump, 2-FW-P-2, and added risk significant surveillance

b. Findings

No findings of significance were identified.

1R14 Operator Performance During Non-routine 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;

- Unit 1 reactor shutdown and startup
- Unit 1 letdown isolation
- Unit 1 operations below the point of adding heat

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors evaluated the technical adequacy of the six 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-2005-0231, Number 1 emergency diesel generator (EDG) declared inoperable because lube oil temperature fell below 85EF
- S-2005-0442, Operability of rod B-10 after partial rod drop during Unit 1 startup
- S-2005-0566, Unit 2 turbine driven auxiliary feedwater (AFW) pump turbine over speed trip device
- S-2005-0767, Potential through wall leakage on Unit 2 circulating water (CW) piping
- S-2005-0890, Minimum pipewall thickness on service water (SW) lines for main control room chiller, 1-VS-E-1D
- S-2005-0916, High amps for the EDG fuel oil pump motors to Number 2 EDG

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds

a. Inspection Scope

The inspectors reviewed the licensee's list of identified operator workarounds as of January 11, 2005, to assess the cumulative effects of operator workarounds on the reliability, availability, and potential for mis-operation of a system to verify that there was no increase in overall plant risk. This assessment included increases of initiating event frequencies, effects on multiple mitigating systems, and the ability of operators to correctly respond to abnormal plant conditions.

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 the following components to determine whether the procedures and test activities were adequate to verify operability and functional capability following maintenance of the following equipment:

- Work Order (WO) 513781-02, Replace 'A' emergency service water (ESW) pump motor
- WO 523473-04, 1-CH-PCV-1145 valve overhaul
- WO 526120-01, Number 1 emergency diesel generator (EDG) air start valve replacement
- WO 526691-01, Drill flush port for packing box on the Unit 2 turbine drive auxiliary feedwater (AFW) pump, 2-FW-P-2
- WO 514158-01, Replace air start sequence for Number 2 EDG in accordance with design change package (DCP) 04-004
- WO 528889-01, Clean component cooling (CC) heat exchanger 1C, 1-CC-E-1C

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 February 4 and ended on February 7.

The inspectors reviewed portions of the cooldown process 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 the status and configuration of electrical systems to verify that those systems met technical specification requirements and the licensee's outage risk control plan;

- 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 various problems that arose during the outage to verify that the licensee was identifying problems related to forced 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 six 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

- 1-OPT-FW-003, Turbine Driven Auxiliary Feedwater Pump 1-FW-P-2
- 1-PT-36, Instrument Surveillance
- 2-OPT-FW-003, Turbine Driven Auxiliary Feedwater Pump 2-FW-P-2
- 1-OPT-FW-007, Turbine Driven AFW Pump Steam Supply Line Check Valve Test

In-Service Test

- 1-OPT- CS-002, Containment Spray System Test

Reactor Coolant Leak 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 three Temporary Modifications to determine whether system operability/availability was affected, that configuration control was maintained, and that the associated safety evaluation adequately justified implementation:

- 2-OPT-EG-009, Number 2 Emergency Diesel Generator Major Maintenance Operability Test, Attachment 11
- S1-05-066, Installation of an alternate flow transmitter for the Unit 1 ‘A’ reactor coolant pump seal leak-off
- S2-05-030, Temporary power for Unit 2 radiation monitor

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed the announced emergency response training drill conducted on February 1, 2005, to assess the licensee's performance in emergency classification, off-site notification, and protective action recommendations. The drill included emergency response actions taken by the management team in the Technical Support Center (TSC). This drill evaluation is included in the Emergency Response Performance Indicator statistics.

b. Findings

No findings of significance were identified.

4 OTHER ACTIVITIES

4OA2 Problem Identification and Resolution

.1 Daily Review of Plant Issues

a. 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 plant issue, attending daily screening meetings, and accessing the licensee's computerized database.

b. Findings

No findings of significance were identified.

.2 Annual Sample Review

a. Inspection Scope

The inspectors performed an in-depth review of the failure of the Unit 1 "B" motor driven auxiliary feedwater (AFW) pump, 1-FW-P-3B, which occurred on November 29, 2004. This issue was documented in the corrective action program as Plant Issue S-2004-4489. 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 issues 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 November 29, 2004, failure of the Unit 1 ‘B’ motor driven AFW pump. During the fall refueling outage, the licensee installed a rebuilt pump with a stainless steel rotating element. As part of the return to service testing, the pump was run on recirculation at varying flowrates. During this run, the pump motor amps varied by 2 to 3 amps during full recirculation flow and increased by 6 amps on the minimum flow recirculation. When the pump was secured, it stopped abruptly. Later the licensee attempted to start the pump for a full flow run and the motor breaker tripped. During subsequent investigation, the licensee determined that the motor was free to rotate but the pump shaft would not rotate. The licensee’s root cause analysis determined the pump failure was primarily due to wrong size packing installed in the pump and deformation of the packing box bushing caused by an excessively long stuffing box anti-rotation bushing combined with a shallow mating hole in the pump casing. The licensee attributed the installation of the wrong sized packing to an inadequate procedure. The root cause evaluation attributed the incorrect packing installation to an incorrect measurement of the pump shaft outside diameter resulting in the selection of the incorrect sized packing as prescribed in a generic pump packing procedure. The corrective actions taken include; specific packing replacement instructions in pump maintenance procedures for all pumps using packing and developing specific inspection criteria for measurement of bushing pins and holes in pump casings. The inspectors determined that the root cause and corrective actions were appropriate.

Failure to have adequate procedures and to follow procedures is a violation of Technical Specification 6.4.A.7. This non-cited violation is minor because the failure of the Unit 1 ‘B’ AFW pump occurred prior to returning the pump to service. There are no prior operability issues with this pump because it had never been in service following maintenance. The pump outage time was within the allowed limiting condition for operability time allowed by technical specifications. 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 71153

.1 (Closed) Licensee Event Reports (LERs) 05000281/2004001-00 and 05000281/2004001-01, Switchyard Device Failure Results in a Reactor Trip.

On May 21, 2004, the Unit 2 ‘A’ phase coupling capacitor voltage transformer (CCVT) catastrophically failed. The failure tripped the main generator protective relays resulting in a turbine trip followed by a reactor trip. The CCVT failure caused a fire in the switchyard and a Notification of Unusual Event (NOUE) was declared. During the reactor trip all automatic safety features functioned as designed. The inspectors

reviewed the licensee root cause, Plant Issue S-2004-1923, and the corrective actions taken and planned. The root cause evaluation properly identified the root and contributing causes as age-related degradation and the corrective actions appear adequate to prevent recurrence on both Unit 1 and 2. In addition, this LER identified a AFW system leak from the minimum flow recirculation line to the condensate storage tank. The root and contributing causes and corrective actions are documented in PI S-2004-1932 and Section 4OA2.2 of NRC Inspection Report 05000280/2004005, 05000281/2004005.

4OA5 Other Activities

.1 Observation of Dry Cask Loading (60855.1)

a. Inspection Scope

The inspectors observed: setting the lid on top of the loaded dry storage cask TN-32-44; positioning and verification of positive engagement of cask lifting device; lifting the loaded cask above the water surface; draining a small portion of water from the cask for the lid bolting; removing water from bolt holes; hand tightening lid bolts; draining the water from the cask; moving the loaded cask to the cask setting area by following the heavy load lifting path; drying the cask; backfilling with helium; verification of torque on lid bolts, and the final transportation of the cask to the ISFSI facility. In addition, the inspectors observed loading spent fuel into cask TN-32-46. The inspectors observed radiation protection controls and monitoring during the cask operations and cask movement. Observations were compared to the licensee's procedures to ensure compliance.

The inspectors reviewed the completed TN-32 Cask Number 44 independent spent fuel storage installation (ISFSI) Fuel Assembly and Insert Component Certification and Cask Loading Map to verify that the licensee identified each fuel assembly placed in the cask and recorded all fuel assembly parameters and characteristics. The inspectors verified through review of selected records and personnel interviews that records have been established for all the spent fuel stored at the ISFSI pad; that duplicate records of spent fuel is stored at both Surry Power Station and at the corporate offices; and that a physical inventory has been completed on all spent fuel stored in the ISFSI within the last 12 months.

b. Findings

No findings of significance identified.

.2 (Closed) Unresolved Item (URI) 05000280,281/2004006-001: Failure to Provide a Power Supply for Turbine Building Flood Instrumentation and CW Condenser Inlet Valve Logic Which Would be Available Following a LOOP. Inspection Report 05000280,281/2004006 identified a finding in that the turbine building flood control system did not provide adequate protection for all licensing basis flooding scenarios. Specifically, portions of the flooding detection and mitigation circuitry, turbine building

flood level detection instrumentation, and CW condenser inlet valve closure logic, would not be available for some flooding scenarios involving a loss of offsite power. This was identified as a finding, which was unresolved pending the completion of a significance determination.

A Phase 3 significance determination evaluation was performed since the finding involved the loss of equipment specifically designed to mitigate flooding (external initiating event). A Regional Senior Reactor Analyst with support from Nuclear Reactor Regulation's Division of Engineering (Mechanical and Civil Engineering Branch) and the Division of Systems Safety and Analysis (Probabilistic Safety Assessment Branch) performed this evaluation. This effort included an analysis of a licensee calculation, SM-1454, PRA Risk Assessment of the NRC Inspection Finding on the Flood Control Panel at Surry, and a companion calculation, CE-1736, Seismic PRA Analysis for Turbine Building/Emergency Switchgear Room Flooding Scenarios - Surry Power Station, as well as a partial walkdown of selected turbine building components.

The significance determination concluded that the performance deficiency was of very low safety significance (Green).

The dominant accident sequence involved an earthquake of sufficient magnitude to fail offsite power and the circulating water piping connected to the condenser, but of insufficient magnitude to cause catastrophic failure of the turbine building. The analysis assumed that the failed circulating water piping would not automatically isolate since the flood control panel was not powered by an onsite emergency power source. Turbine building flooding was then postulated to result in de-energization of the onsite emergency power distribution system, ultimately leading to core damage.

The major influence in reducing the risk of this sequence to its very low safety significance was the low frequency of an earthquake that could cause this set of conditions.

Key factors and assumptions involved in the evaluation were:

- The circulating water expansion joint spray shields and the flood control panel were not directly affected by the earthquake.

- Operator actions to terminate floods in the turbine building lasting longer than 2 hours, that had yet to impact the onsite emergency power distribution system, were credible.

- No credit for offsite power recovery was considered.

Consistent with the licensee's Individual Plant Evaluation of External Events responses, the Electric Power Research Institute seismic hazard curves were used to develop the frequency of the earthquake.

This finding is identified as FIN 05000280,281/2005002-001: Failure to Provide a Power Supply for Turbine Building Flood Instrumentation and CW Condenser Inlet Valve Logic Which Would be Available Following a LOOP. URI 05000280,281/2004006-001 is closed.

4OA6 Meetings, Including Exit

.1 Exit Meeting Summary

On April 14, 2005, the resident inspectors presented the inspection results to Mr. Jernigan and other members of his staff who acknowledged the findings.

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

.2 Other Meetings

On March 30, 2005, the NRC Chief of Reactor Projects Branch 5 met with Virginia Electric Power Company to discuss the NRC's Reactor Oversight Process (ROP) and the Surry Power Station (SPS) annual assessment of safety performance for the period of January 1, 2004 - December 31, 2004. The major topics addressed were the NRC's assessment program and the results of the SPS assessment. Attendees included corporate and site management, site staff and members of the local news media.

This meeting was open to the public. The presentation material used for the discussion is available from the NRC's document system (ADAMS) as accession number ML051030212. ADAMS is accessible from the NRC Web site as http://www.nrc.gov/reading-rm/adams.html (the Public Reading Room).

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a Non-Cited Violation (NCV).

- Technical Specification 6.4 A.1. requires in part that detailed written procedures with appropriate check-off lists and instructions shall be provided for operation of a unit. Contrary to this, on February 4, 2005, the licensee did not maintain reactor power within the requirements of the operating procedure in effect. The procedure required operations between 1% and 5% reactor power using steam generator (SG) power operated relief valves (PORV). The licensee allowed reactor power to decrease from approximately 2% power to approximately $1X10^{-10}$ amps without operator action and then returned reactor power to approximately 3% without procedural guidance. This finding is not suitable for SDP evaluation; however, the finding represented a weakness in reactivity management, an important attribute of licensed operators. This issued has been

reviewed by NRC management and is determined to be a Green finding of very low safety significance as the power changes were small and well within normal operating limits. This issue was identified in Plant Issue S-2005-0501.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

R. Allen, Manager, Outage and Planning
M. Gaffney, Director, Nuclear Station Safety and Licensing
B. Garber, Supervisor, Licensing
T. Huber, Manager, Engineering
D. Jernigan, Site Vice President
L. Jones, Manager, Radiation Protection and Chemistry
D. Llewellyn, Manager, Training
R. MacManus, Manager, Nuclear Oversight
K. Sloane, Director, Nuclear Station Operations and Maintenance
B. Stanley, Manager, Maintenance
J. Swientoniewski, Manager, Operations

NRC

K. Landis, Chief, Branch 5, Division of Reactor Projects, Region II
R. Moore, Senior Reactor Inspector, Division of Reactor Safety, Region II

LIST OF ITEMS OPENED AND CLOSED

Open and Closed		
05000280,281/2005002-001	FIN	Failure to Provide a Power Supply for Turbine Building Flood Instrumentation and CW Condenser Inlet Valve Logic Which Would be Available Following a LOOP (Section 4OA5.2)
Closed		
05000280,281/2004006-001	URI	Failure to Provide a Power Supply for Turbine Building Flood Instrumentation and CW Condenser Inlet Valve Logic Which Would be Available Following a LOOP (Section 4OA5.2)
050000281/2004001-00 & 050000281/2004001-01	LER	Switchyard Device Failure Results in a Reactor Trip (Section 4OA3.1)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Plant Procedures
0-OP-SW-002A, Emergency Service Water System Alignment
2-OP-FW-001A, Auxiliary Feedwater System Valve Alignment
1-OP-CH-002, Charging Pump A Operations
2-OPT-EG-008, Number 2 Emergency Diesel Generator Starting Sequence Test
2-OPT-EG-009, Number 2 Emergency Diesel Generator Major Maintenance Operability Test

Plant Drawings
11448-FMC-099B
11448-FB-046A
11448-FB-046C

Section 1R05: Fire Protection

Plant Procedures
0-FS-FP-121
0-FS-FP-161
0-FS-FP-162
1-FS-FP-124
1-FS-FP-152
1-FS-FP-159
2-FS-FP-124
2-FS-FP-139
2-FS-FP-140
2-FS-FP-141
2-FS-FP-152
2-FS-FP-159

Section 1R11:Licensed Operator Requalification Program

Exam Results Since Last Requal Inspection 2003 to 2004
Simulator Performance Reports-RQ-04.1 thru 4.7

Simulator Scenarios:
RQ-05.2-SE-7, Loss of 1J Bus ('A' RSST Lockout) with a failure of #3 EDG to start and load, C Leak, RCS leak develops into a LBLOCA with ESF failures.
RQ-05.2-SE-8, PRNI failure, Isophase Bus Duct Cooling Fan failure, AP-23.00 Ramp, Loss of Main Feed, Main Steam Line Break in Safeguards, and Loss of Aux Feedwater flow.
Job Performance Measure Observations:
JPM 38.08, Locally Isolate U-1 RCP Seals and Establish Charging Pump Crosstie.
JPM 55.02, Create a false SI Signal to start an EDG.
Licensed Operator Reactivation records (4)
Badge Access Transaction Reports for Reactivation of Licenses (4)
Licensed Operator Medical Records (7)
Feedback Summaries

2004 Active License Status Maintenance Attachment 1 to Functional Implementation Guideline 07 (14)
Reactivity Event Brief
Remedial Training Records: Inspectors reviewed four remedial training records, one for a simulator exam failure, and three for simulator passes with remediation.
RQ-04.1-XB-1 Written exam
RQ-04.1-XB-4 Written exam
Surry SMR Report
Surry Priority SMR Report
Surry Simulator Core Model Verification & Validation Report - U-1 Cycle 20
Annual Simulator Certification Testing for 2004
Annual Report on Simulator Certification Testing for 2004
Simulator Modification Record 200410111115 Rod Control Malfunction
1-NPT-RX-008, Unit 1 Startup Physics Testing
1-NPT-RX-010, Calculation of Moderator Temp Coefficients and Limits
Simulator Scenario Based Test ND-90.3-ST-7.1
0-SPS-ANSI-06, Hot to Intermediate Shutdown Normal Evolution Test
0-SPS-ANSI-09, 100% Steady State Run Normal Evolution Test
0-SPS-ANSI-12, Simultaneous Trip of all Main Steam Isolation Valves
0-SPS-ANSI-15, Main Turbine Trip <10% Power
0-SPS-ANSI-18, Maximum Size Main Steam Line Rupture

Section 1R12: Maintenance Effectiveness

Plant Procedures
Vendor Technical Manual 38-I096-00005, Instruction Manual for Centrifugal Pumps, Ingersoll-Rand
DNAP-2000, Dominion Work Management Process
1-OPT-FW-002, Motor Driven Auxiliary Feedwater Pump 1-FW-P-3B
ET-S-05-0002, Repair of Inboard Flush Connection on 2-FW-P-2
IMP-C-G-34, Valve Positioning Checkout, Repair or Replacement

Plant Issues
S-2004-4539, S-2004-4345, S-2004-4485, S-2004-4489, S-2004-4687, S-2004-4752, S-2004-4794, S-2004-4843, S-2004-4855, S-2004-4889, and S-2004-4892

Plant Drawings
11448-FM-088A, Sheet 3 & 4 of 4

Work Orders
260084-01, 260129-01, 277338-01, 283171-01, 306021-01, 330595-01, 330595-02, 339893-01, 344045-01, 351661-01, 351248-01, 356192-01, 360740-01, 364450-01, 382378-01, 402199-01, 405807-01, 411454-01, 437801-01, 456679-01, 457483-01, 461133-01, 477051-01, 481496-01, 482910-01, 485068-01, 491477-01, 492670-02, 492670-04, 492840-01, 492840-08, 492875-01, 495902-01, 498401-01, 503741-01, 509452-01, 509452-02, 509811-01, 519828-02, 523473-01, 523473-02, 523473-03, 523473-04, 523473-05, 523473-06, 523473-08, 523473-09, 523473-10, 523473-11, 523473-12, 524323-01, 524379-01, 524379-02, 524380-01, and 524574-01