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

July 25, 2002

EA-01-235

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 NUCLEAR POWER STATION - NRC INTEGRATED INSPECTION REPORT NOS. 50-280/02-02, 50-281/02-02

Dear Mr. Christian:

On June 29, 2002, the NRC completed an inspection at your Surry Power Station, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on July 10, 2002, with Mr. Sowers 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 selective 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. If you deny this non-cited violation 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 Nuclear Power Station.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure 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

Enclosures: Integrated Inspection Report
Nos. 50-280, 281/02-02

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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.: 50-280/02-02, 50-281/02-02

Licensee: Virginia Electric and Power Company (VEPCO)

Facility: Surry Power Station, Units 1 & 2

Location: 5850 Hog Island Road
Surry, VA 23883

Dates: 3/31/02 - 6/29/02

Inspectors: R. Musser, Senior Resident Inspector
K. Poertner, Resident Inspector
G. McCoy, Resident Inspector
W. Bearden, Reactor Inspector (Section 1R08.1)
L. Garner, Senior Project Engineer (Sections 1R17.2, 1R22 (partial) and 4OA3)
M. Scott, Senior Reactor Inspector (Section 1R12.2)
S. Vias, Senior Reactor Inspector (Section 1R08.2)

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

Attachment: Supplemental Information

Enclosure

SUMMARY OF FINDINGS

IR 05000280-02-02, IR 05000281-02-02, on 03/31 - 06/29/02; Virginia Electric and Power Co.; Surry Power Station, Units 1 & 2, equipment alignment, integrated resident inspector report.

The inspection was conducted by the resident inspectors, a senior project engineer, two senior reactor inspectors, and a reactor inspector. The inspection identified one Green finding, which is a noncited violation. 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 are indicated by "No Color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website.

A. Inspector Identified Findings

Cornerstone: Mitigation Systems and Initiating Events

Green. A Non-Cited Violation of Technical Specification 6.4.A was identified due to an inadequate abnormal procedure. Abnormal procedure (AP) - 40, "Non-Recoverable Loss of Instrument Air," did not contain adequate guidance to ensure continued operation of the emergency switchgear room chillers following a loss of instrument air.

The finding was of very low safety significance due to the combination of events that would have to occur for the emergency switchgear room components to be adversely affected by the loss of the chillers. The combination of events included a medium or large break loss of coolant accident coupled with a loss of offsite power during the winter months (cold service water temperatures). (Section 1R04.2)

B. Licensee Identified Violations

None.

Report Details

Summary of Plant Status

Unit 1 operated at power the entire reporting period. On May 4, 2002, power was reduced to 63% to repair the A generator leads cooler fan (1-EP-F-1A). On May 5, 2002, the unit was returned to 100 percent power and operated at power for the remainder of the reporting period.

Unit 2 started the period in a scheduled refueling outage. The unit was returned to power operation on April 22, 2002, and operated at power for the remainder of the reporting period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather

a. Inspection Scope

The inspectors performed a review of the licensee's procedures and preparations for hurricanes. The following procedures were reviewed: HRP-N, "Hurricane Response Plan (Nuclear)," 0-AP-37.01, "Abnormal Environmental Conditions," OC-33, "Hurricane and Vacuum Breaker Equipment Audit," and GMP-031, "Emergency Service Water Pump House Stop Log Installation and Removal." Inspectors verified that these instructions limited the risk to the plant from weather related initiating events. The inspectors also reviewed applicable sections of the Updated Final Safety Analysis Report (UFSAR) to ensure that the activities described were being appropriately implemented in procedures to minimize risk in the event of a hurricane.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns

a. Inspection Scope

For the systems identified below, the inspectors reviewed plant documents to determine correct system lineup and observed equipment to verify that the system was correctly aligned:

- Unit 2 charging pump component cooling water system (2-OP-51.5A, "Charging Pump CC & SW Systems Valve Alignment") while the A pump was out of service for maintenance;
- Fire water supply to the hose stations supplying the emergency diesel generator rooms, the normal switchgear rooms, the cable vaults and the cable spreading

room while the low pressure carbon dioxide fire suppression system was out of service; and,

- Unit 2 B motor driven auxiliary feedwater pump and Unit 2 turbine driven auxiliary feedwater pump (2-OP-FW-001A, "Auxiliary Feedwater System Valve Alignment") while the Unit 2 A motor driven auxiliary feedwater pump was out of service.

b. Findings

No findings of significance were identified.

.2 Emergency Switchgear Room Chillers

a. Inspection Scope

During the inspection period the inspectors completed a review of the operation of the air operated service water valves associated with the emergency switchgear room (ESGR) chillers. The inspectors reviewed system drawings, plant procedures, and discussed the operation of the system with operations, engineering and risk assessment personnel.

b. Findings

A finding of very low safety significance (Green) was identified by the inspectors concerning a procedural inadequacy associated with the loss of instrument air abnormal procedure which would have prevented the recovery of the emergency switchgear room chillers under certain service water temperature conditions following a loss of instrument air.

The EGSR ventilation system is a support system for the 4.16kv/480v emergency power system. The ESGR ventilation system air handling units (AHUs) are cooled by chilled water. The chilled water chillers are cooled by the service water system by modulating service water flow through a recirculation line and a discharge line to maintain approximately 90 degree Fahrenheit (F) water temperature at the inlet to the chiller. The temperature control is accomplished by two air operated valves (one in the recirculation line and one in the discharge line). On a loss of instrument air the recirculation valve fails closed and the discharge valve fails open resulting in full service water flow through the chiller at the prevailing service water temperature. During periods of cold weather, service water temperature is significantly less than 90 degrees F (sometimes approaching 40 degrees F). Full service water flow with low temperature service water conditions (below approximately 60 degrees F) may result in the chiller tripping on low pressure. Emergency operating procedures and abnormal operating procedures verify that the chillers are operating following an accident and require that the chillers be returned to service within 1 hour if the required number of chillers are not operating.

A review of Abnormal Procedure (AP) 40, "Non-Recoverable Loss of Instrument Air," determined that upon a loss of instrument air, the procedure instructed that the chiller manual outlet valve be throttled to maintain a service water inlet temperature of 85

degrees F. If service water temperatures were below 85 degrees F, throttling the chiller outlet valve could not maintain service water inlet temperature at 85 degrees F. If followed verbatim, the procedure would isolate all cooling water flow to the chillers. The licensee revised procedure AP-40 to require that the outlet discharge valve be throttled to establish a 5 to 10 degree temperature difference across the chiller to ensure proper operation of the chillers following a loss of instrument air.

The finding had a credible impact on safety because it could have affected the reliability of the emergency power system. A Senior Reactor Analyst evaluated this performance deficiency under Phase III of the Significance Determination Process. The deficiency was determined to be of very low safety significance (Green) due to the combination of events that would have to occur for the emergency switchgear room components to be adversely affected by the loss of the ESGR chillers. The combination of events included a medium or large break loss of coolant accident coupled with a loss of offsite power during the winter months (cold service water temperatures).

Technical Specification 6.4.A requires written procedures with appropriate instructions for conditions involving actions to be taken for specific and foreseen malfunctions of systems or components. Contrary to the above, AP-40 did not provide appropriate instructions to ensure proper operation of the ESGR chillers following a loss of instrument air. However, because the violation was of very low safety significance and was entered into the licensee's corrective action program (Plant Issue S-2001-1066), the violation is being treated as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy, and is identified as NCV 50-280, 281/02002-01.

1R05 Fire Protection

a. Inspection Scope

The inspectors conducted tours of the following 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 the "Surry Power Station Appendix R Report" for the following areas:

- Number 2 emergency diesel generator room;
- Unit 2 emergency switchgear room;
- Unit 1 normal switchgear room;
- Number 4 mechanical equipment room;
- Unit 2 safeguards and main steam valve house; and,
- Emergency service water pumphouse.

b. Findings

No findings of significance were identified.

1R06 Flood Protection

a. Inspection Scope

The inspectors performed a walkdown of the Unit 1 and Unit 2 emergency switchgear rooms (ESGR) to verify the internal flood protection features as described in the UFSAR. Maintenance records for the backflow preventer valves in the ESGR sumps were also reviewed.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI)

.1 Inservice Inspection During Unit 2 Outage

a. Inspection Scope

The inspectors observed in-process ISI work activities and reviewed selected ISI records. The observations and records were compared to the Technical Specifications (TS) and the applicable Code (ASME Boiler and Pressure Vessel Code, Sections V and XI, 1989 Edition, with no Addenda) to verify compliance.

The inspectors reviewed the weld examination report and radiographs for the ASME Class 2 weld repairs to the 14 inch feedwater piping Weld 1-09A. Ultrasonic (UT) examination of eight Reactor Pressure Vessel (RPV) head studs was observed. Additionally, the inspectors observed calibration of UT examination equipment, portions of ongoing manual UT examinations, and Liquid Penetrant (PT) examinations of the following completed ASME Class 1 weld repairs:

- Weld 1-06 Six inch ASME Class I Safety Injection (SI) piping weld;
- Weld 1-07 Six inch ASME Class I SI System piping weld;
- Weld 1-09 Six inch ASME Class I SI System piping weld;
- Weld 1-10 Six inch ASME Class I SI System piping weld; and,
- Weld 1-11 Six inch ASME Class I SI System piping weld.

The inspectors also observed portions of ongoing remote visual examination of the Unit 2 reactor vessel head.

Qualification and certification records for examiners, equipment and consumables, and nondestructive examination (NDE) procedures for the above ISI examination activities were reviewed. Five Plant Issue (PI) Reports associated with ISI activities which had been documented in the licensee's corrective action program were reviewed.

b. Findings

No findings of significance were identified.

.2 Unit 2 Steam Generator (SG) Inspection [Surry Unit 2 S2R17 - S/G A]

a. Inspection Scope

The inspectors reviewed the implementation of the licensee's inservice inspection program for monitoring degradation of the Unit 2 A steam generator (SG), a reactor coolant system boundary component. The inspectors reviewed selected inspection records for:

- Eddy current examination (ET) and data acquisition for inservice SG tubes;
- ET data analysis history; and,
- SG tube repair (plugging) of one tube as a result of the Unit 2 SG ET inspection.

The above records were compared to the Technical Specifications (TS), License Amendments and applicable industry established performance criteria to verify compliance. The inspectors also verified that the ET equipment setup parameters, methodology and equipment used were in accordance with SRY-SGPMS-002, "Surry Site Specific Eddy Current Analysis Guidelines," and that site procedures had been reviewed and accepted by the Authorized Nuclear Inservice Inspector. Qualification and certification records for examiners, and equipment and procedures for the ET examination activities were reviewed. The inspectors reviewed activities to determine that the ET consistently detected previously identified tube imperfections such as dents, pitting, cold leg tube thinning, tube wear, and manufactured burnish marks at the expected locations.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed licensed operator performance during simulator training session RQ-02.3-ST-1, "Loss of all AC power," to determine whether the operators:

- were familiar with and could successfully implement the procedures associated with recognizing and recovering from loss of all AC power event;
- 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 Rule Implementation

.1 Equipment Issues

a. Inspection Scope

For the equipment issues described in the plant issues listed below, the inspectors reviewed the licensee's implementation of the Maintenance Rule (10 CFR 50.65) using VPAP 0815, "Maintenance Rule Program," and the Surry Maintenance Rule Scoping and Performance Criteria Matrix, with respect to the characterization of failures, the appropriateness of the associated a(1) or a(2) classification, and the appropriateness of either the associated a(2) performance criteria or the associated a(1) goals and corrective actions:

- PIant Issue S-2002-1413, Containment isolation valve 2-SS-TV-201A failed test criteria;
- PIant Issue S-2002-1409, 2-DG-TV-208B failed type C test criteria;
- PIant Issue S-2002-1411, 2-DG-TV-208A failed stroke time test;
- PIant Issue S-2002-1125, 2-IA-RV-223 failed as found lift test;
- PIant Issue S-2002-0298, Nuclear instrument wide range flux detector 1-NI-NFD-1270B1 reads low; and
- PIant Issue S-2002-1480, Unit 2 containment instrument air compressor (2-IA-C-4A) unloaded while tagging the B compressor (2-IA-C-4B).

b. Findings

No findings of significance were identified.

.2 Periodic Evaluation

a. Inspection Scope

The inspectors reviewed the licensee's Maintenance Rule periodic assessment, "2002 Maintenance Rule Periodic Assessment Report - Surry Power Station," dated April 22, 2002, while on-site the week of June 3, 2002. The report was issued to satisfy paragraph (a)(3) of 10 CFR 50.65, and covered the period June 1, 2000, through November 30, 2001, for both units. The inspection was to determine the effectiveness of the assessment and that it was issued in accordance with the time requirement of the Maintenance Rule (MR) and included evaluation of: balancing reliability and unavailability, (a)(1) activities, (a)(2) activities, and use of industry operating experience. To verify compliance with 10 CFR 50.65, the inspectors reviewed selected MR activities covered by the assessment period for the following risk significant systems: Service Water, Emergency Diesel Generator, Instrument Air, Station Blackout Generator, and Charging Pumps. Specific procedures and documents reviewed are listed in the attachment to this report.

During the inspection, the inspectors reviewed selected plant work order data, site guidance implementing procedures, walked down several systems' related problems, attended maintenance rule related-meetings (Working Group Meeting and a Problem

Issue Review Team Meeting), reviewed generic operations event data, and discussed issues with system engineers and the probabilistic risk staff. The inspectors selected work orders of systems recently out of 10 CFR 50.65 a(1) status and those in a(2) status for some period to assess the justification for their status. The work orders were compared to the site's maintenance rule criteria and the MR a(1) evaluations (plant issue reports). The inspectors examined corrective action information in the form of work orders, plant issue reports, and audits listed in the attachment.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluations

a. Inspection Scope

The inspectors evaluated the adequacy, accuracy, and completeness of plant risk assessments performed prior to any 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:

- Removal from service of the E control room chiller (1-VS-E-4E), with valve 1-RH-MOV-1720A inoperable, and the number 1 emergency diesel generator (1-EE-EG-1) removed from service for repairs on the immersion heater and the Unit 2 turbine driven feedwater pump (2-FW-P-2) unavailable because the plant was shutdown and cooled down;
- Removal from service of the low pressure carbon dioxide fire protection system (1-FP-TK-3) with the Unit 2 service air compressor (2-SA-C-1) out of service and valve 1-RH-MOV-1720A inoperable;
- Removal from service of the Unit 1 service air compressor (1-SA-C-1) and the Unit 2 A containment instrument air compressor (2-SA-C-4A), loss of power to the Unit 1 screenwell transformer (1-EP-TX-1G) and valve 1-RH-MOV-1720A inoperable;
- Removal from service of the Unit 1 A coolant charging pump (1-CH-P-1A), Unit 1 service air compressor (1-SA-C-1), Unit 2 A containment instrument air compressor (2-SA-C-4A), Unit 2 emergency switchgear room air handling unit (2-VS-AC-7), B emergency service water pump (1-SW-P-1B), performance of the Unit 1 safety injection logic test, and valve 1-RH-MOV-1720A inoperable;
- Removal from service of Unit 2 coolant charging pump (2-CH-P-1A) and number 2 emergency diesel generator (2-EE-EG-1) with the Unit 2 A instrument air compressor (2-IA-C-4A) and valve 1-RH-MOV-1720A inoperable; and
- Removal from service of the number 1 emergency diesel generator (1-EE-EG-1) with the Unit 2 A containment instrument air compressor (2-IA-C-4A) and valve 1-RH-MOV-1720A inoperable and discovery that fire fighting water was not available to the Unit 2 auxiliary feedwater system at valve 2-FW-120.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions

a. Inspection Scope

The inspectors reviewed the operating crews' performance while securing the residual heat removal (RHR) system and controlling plant temperature with Unit 2 in cold shutdown. The RHR system was secured to remove and replace a 3/4 inch line which developed a leak. The inspectors evaluated if their response was appropriate and in accordance with procedures and training. Operator logs, plant computer data, and associated operator actions were reviewed.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors evaluated the technical adequacy of 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 engineering transmittals (ETs) and plant issues listed below:

- ET S-02-0110, Narrow range RTD manual data evaluation;
- ET S-02-0104, Evaluation of local leakage rate test results as per 2-OPT-CT-201;
- PIant Issue S-02-1814, Inability to clean the cooling water strainer on the A emergency service water pump (1-SW-P-1A);
- PIant Issue S-02-1689, Loop 1 B high delta-temperature alarm; and,
- PIant Issue S-02-1916, Number 2 emergency diesel generator air flask cross-connect valve was inadvertently left open.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds

a. Inspection Scope

The inspectors reviewed operator workaround 2002-ODB-001, Unit 1 main feed regulating valve slow response, to determine whether the identified workaround affected either the functional capability of the related system or human reliability in responding to

an initiating event. During these reviews, the inspectors specifically considered whether the identified workaround affected the operators' ability to implement abnormal or emergency operating procedures.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

.1 Breaker Addition to DC Busses

a. Inspection Scope

The inspectors reviewed the portion of Design Change Package (DCP) 01-026, "Circuit Breaker Additions/Replacement in 125 VDC Battery Switchboards," which installed an additional isolation breaker in the cross-tie line between the two 125 VDC switchboards in Unit 2. The inspectors observed the work performed.

b. Findings

Prior to the installation of this DCP, power from both 125 VDC busses was present within the A DC switchboard (2-EPD-DCS-2A). In the event of a fire in this switchboard, a single fault could cause the loss of both 125 VDC power busses and affect the operation of the plant. This condition also exists in the Unit 1 and a similar DCP is scheduled to be implemented during the next refueling outage.

This condition is identified as an unresolved item (URI) 50-280, 281/02002-02 pending determination of its risk significance.

.2 EDG Output Breaker Circuit Modification

a. Inspection Scope

The inspectors reviewed DCP 00-49, "EDG Output Breaker Circuit Modification and Relay Setpoint Change /Surry /Units 1 & 2 and the associated safety evaluation 01-044 for compliance with Technical Specifications requirements and consistency with the EDG's design basis. The inspectors observed the DCP installation and post modification testing on the Unit 2 J emergency buss to determine if the installation instructions were properly implemented and if the testing was adequate to verify proper operation of the EDG output breaker after the modification. In addition, the inspectors reviewed the completed post modification test procedures on the Unit 1 H and J emergency busses. The need to update the UFSAR and the simulator was assessed. Documents reviewed during this inspection included:

- Final design test procedures FDTP 00-049-1-1H, -1J and -2J;
- Procedure 0-NAT-1-002, "Instruments and Control Circuit Installation Checkout (J buss); and,
- Drawings S-00049-0-1FE21J, -1FE21Q, -2FE21J and -2FE21Q.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

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

- Work Order (WO) 459355 - 1-CC-P-2A motor maintenance;
- WO 457518 - 2-SW-P-10A motor maintenance;
- WO 456679 - Unit 2 turbine driven auxiliary feedwater pump replacement;
- WO 438399 - Unit 2 B inside recirculation spray pump replacement; and
- WO 469579 - Loop C low flow trip relay replacement.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (Unit 2)

a. Inspection Scope

The inspectors evaluated the licensee's Unit 2 refueling outage activities (March 24 through April 22, 2002). The following activities were reviewed:

- Reviewed that, when equipment was removed 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.
- Tags for tagout number 2-02-CH-0005 (charging system) to verify that tags were properly hung and that associated equipment was appropriately configured to support the function of the tagout;
- 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 residual 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;

- Reviewed selected control room operations to verify that the licensee was controlling reactivity in accordance with the technical specifications;
- Observed licensee control of containment penetrations to verify that the licensee controlled those penetrations in accordance with the refueling operations technical specifications and could achieve containment closure for required conditions;
- Reviewed fuel handling operations to verify that those operations and related activities were being performed in accordance with technical specifications and approved procedures;
- Observed spent fuel pool operations to verify that outage work was not impacting the ability of the operations staff to operate the spent fuel pool cooling system during and after core offload; and,
- 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 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. The inspectors reviewed the plant issues listed below which were initiated during the refueling outage and were considered significant:

- Plant Issue S-2002-0958 - 2-RC-P-1B electrical penetration repair;
- Plant Issue S-2002-1390 - Replacement of RHR pipe on 2-RH-P-1B balance line;
- Plant Issue S-2002-1054 - Loss of power to manipulator crane while moving fuel; and,
- Plant Issue S-2002-1055 - Loss of level in the spent fuel pool and transfer canal.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the 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:

- 2-OPT-ZZ-001, “ESF Actuation with Undervoltage and Degraded Voltage - 2H Bus,”
- 2-EPT-1801-01, “Bus 2H Protective Relay Testing,”
- 2-EPT-0106-01, “Main Station Battery 2A Service Test,”
- 2-NPT-RX-004, “Hot Rod Drop Test,” and

- 2-EDG-EG-001, “Number 2 Emergency Diesel Generator Monthly Start Exercise Test.”

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed Temporary Modification S2-02-005, “U2 IRPI K02 Isolation Transformer,” to determine whether system operability/availability was affected, that configuration control was maintained, and that the associated safety evaluation adequately justified implementation.

b. Findings

No findings of significance were identified.

4 OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Review

.1 Reactor Coolant System Leakage PI

a. Inspection Scope

The inspectors performed a periodic review of the Reactor Coolant System Leakage PI for Units 1 and 2. Specifically, the inspectors reviewed this PI from the second quarter of 2001 through the first quarter of 2002. Documents reviewed included licensee event reports and operator logs.

b. Findings

No findings of significance were identified.

.2 Safety System Unavailability PI

a. Inspection Scope

The inspectors performed a periodic review of the safety system unavailability PI for the residual heat removal system submitted during 2001 and the first quarter of 2002. The inspectors also verified the safety system unavailability PI for the emergency AC power system which was submitted during the last two quarters of 2001 and the first quarter of 2002. To verify the PI data, the inspectors reviewed control room logs, maintenance rule records and searched plant issue reports.

b. Findings

No findings of significance were identified.

The counting of planned unavailability hours for the EDGs during the performance of surveillances is still the subject of a frequently asked question (FAQ) under discussion by the Office of Nuclear Reactor Regulation and the Nuclear Energy Institute.

4OA3 Event Follow-up

.1 (Closed) Licensee Event Report (LER) 50-281/2000001-00: Containment isolation valve found with unacceptable leakage during maintenance. This LER documents that the redundant containment isolation valve for the containment sump pump discharge line had leakage in excess of allowable limits during the time the other containment isolation valve was being replaced. The condition occurred for less than one hour. The inspectors reviewed the licensee's root cause evaluation and corrective actions. No findings of significance were identified.

.2 (Closed) Apparent Violation (AV) 50-280, 281/01006-01: Failure to promptly identify and correct a condition adverse to quality, the failed piston wrist pins and piston carrier bearings in the number 3 emergency diesel generator, as required by Criterion XVI of 10 CFR 50 Appendix B.

(Closed) AV 50-280, 281/01006-02: Number 3 emergency diesel generator inoperable for 6 days longer than the 7 days allowed by Technical Specification 3.16.B.1.a.3.

The AVs were issued in NRC Special Inspection Report Nos. 50-280, 281/01-06 (ADAMS accession number ML012850202). By letter, dated December 21, 2001, (ADAMS accession number ML020020100) the NRC informed the licensee of its final significance determination for the AVs. The letter identified a violation which was characterized as a White finding.

A supplemental inspection of the White finding, documented in Inspection Report Nos. 50-280, 281/02-08 (ADAMS accession number ML021280594), determined that the licensee had performed an overall adequate evaluation of performance deficiencies related to the failure, and that the corrective actions were appropriately prioritized and consistent with the identified root cause and contributing factors and provided reasonable assurance to prevent recurrence. Based upon the results of the supplemental inspection, no further NRC inspection followup is planned and the White finding is considered closed.

4OA6 Meetings

Exit Meeting Summary

The inspectors presented the inspection results to Mr. T. Sowers, Director of Nuclear Station Operations and Maintenance, and other members of the licensee's staff on July 10, 2002. The inspectors asked the licensee whether any of the material examined

during the inspection should be considered proprietary. No proprietary information was identified.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

NRC

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

Licensee

M. Adams, Manager, Engineering
R. Allen, Manager, Maintenance
R. Blount, Site Vice President
B. Foster, Director, Nuclear Station Safety and Licensing
M. Gaffney, Manager, Organizational Effectiveness/Self Evaluation
D. Llewellyn, Manager, Training
R. MacManus, Manager, Nuclear Oversight
M. Small, Supervisor, Licensing
T. Sowers, Director, Nuclear Station Operations and Maintenance
T. Steed, Manager, Radiological Protection
J. Swientoniewski, Manager, Operations

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-280, 281/02002-02	URI	Determine the risk significance of the failure to provide proper separation between the 125V DC busses. (Section 1R17)

Opened and Closed During this Inspection

50-280, 281/02002-01	NCV	Failure to provide appropriate instructions to ensure proper operation of the ESGR chillers following a loss of instrument air. (Section 1R04.2)

Closed

50-281/2000001-00	LER	Containment isolation valve found with unacceptable leakage during maintenance. (Section 4OA3.1)
50-280, 281/01006-01	AV	Failure to promptly identify and correct a condition adverse to quality, the failed

		piston wrist pins and piston carrier bearings in the number 3 emergency diesel generator, as required by Criterion XVI of 10 CFR 50 Appendix B. (Section 4OA3.2)
50-280, 281/01006-02	AV	Number 3 emergency diesel generator inoperable for 6 days longer than the 7 days allowed by Technical Specification 3.16.B.1.a.3. (Section 4OA3.2)

LIST OF DOCUMENTS REVIEWED

Section 1R08.1

Procedures

- Non-Destructive Examination (NDE) Procedure, NDE-7.5 General Requirements for ISI Non-Destructive Examination, Rev 3
- NDE Procedure, NDE-PT-701, Liquid Penetrant Examination, Rev. 3
- NDE Procedure, NDE-MT-702, Magnetic Particle Examination of RPV Studs, Rev. 2
- NDE Procedure, NDE-UT-705, Manual Ultrasonic Examination of Reactor Coolant Piping Welds, Rev. 2
- NDE Procedure, NDE-UT-801, Ultrasonic Examination of Austenitic Piping Welds, Rev. 0
- NDE Procedure, NDE-UT-802, Ultrasonic Examination of Ferritic Piping Welds, Rev. 0
- NDE Procedure, NDE-UT-804, Ultrasonic Examination of Bolting Greater than 2 Inches, Rev. 1

Other Documents

- Plant Issue (PI) Report S-2002-0735, Improper use of red ink on NDE qualification documentation.
- PI Report S-2002-0860, Hot shutdown valve leakage.
- PI Report S-2002-1035, NDE technician qualification documentation did not conform to contract requirements.
- PI Report S-2002-0940, ISI visual support inspection rejection due to loose bolt.
- PI Report S-2002-1113, Vendor purchase order for ISI inspection services did not accurately translate Dominion Power requirements.

Section 1R08.2

- SPS-SGMIPP-001 - Steam Generator Monitoring and Inspection Plan - Surry Units 1&2, Revision 3 - July 2001. (updated to NEI 97-06 Rev 1)
- SRY-SGPMS-002 - Surry Site Specific Eddy Current Analysis Guidelines, Rev. 6
- Eddy Current Analyst Orientation & Training Program Manual, August 13, 2001
- Surry Unit 2 S2R17 March 2002, Steam Generator Eddy Current Inspection, Inspection Results
- Acquisition Technique Specification Sheets
- Analysis Technique Specification Sheets
- Sludge Height Evaluations

- Work Order: 00453809 02, Perform S/G A Eddy Current Inspection
  - 100% Full Length Bobbin
  - 20% Hot Leg Top of Tubesheet RPC
  - 100% Row 1 Ubend RPC
  - 200 Tube Cold Leg Top of Tubesheet RPC
  - Plugged tube R11C24 due to AVB wear 23%TW @AV2
- Surry Unit 1&2 Plugging History
- Sampling Requirements for Performance Based Examinations
- TS 4.19-1 Steam Generator Inservice Inspection
- Plugging Tube Flow Diode Effects in Recirculating Steam Generators (TMI severed tube) Westinghouse Letter LTR-SGDA-01-300, 12/10/01
- NRC Memo - Sullivan to Bateman - 9/18/01 - NRC Staff Comments of Steam Generator Inspection Intervals
- NEI Letter - Revised Steam Generator Program Generic License Change Package, 1/2/02
- North Anna and Surry Power Stations Nuclear Outage Forecast: 2002-2007
- Surry Unit 1&2 ECT Inspection Program History
- S/G monitoring Program Pre-Outage Assessment - Surry Unit 2 - Spring 2002
- Audit 01-12, Inservice Inspection/NAPS Refueling Activities, 12/19/01