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

April 25, 2003

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. 50-280/03-02 AND 50-281/03-02

Dear Mr. Christian:

On April 5, 2003, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Surry Power Station, Units 1 and 2. The enclosed integrated inspection report documents the inspection findings which were discussed on April 17, 2003, with Mr. Blount 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 two issues of very low safety significance (Green). Both of these issues were determined to involve violations of NRC requirements. However, because of their very low safety significance, and because they had been entered into your corrective action program, the NRC is treating these issues as non-cited violations in accordance with Section VI.A.1 of the NRC's Enforcement Policy. 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 2.790 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 50-280, 281/03-02
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.: 50-280/03-02, 50-281/03-02

Licensee: Virginia Electric and Power Company (VEPCO)

Facility: Surry Power Station, Units 1 & 2

Location: 5850 Hog Island Road
Surry, VA 23883

Dates: January 5 - April 5, 2003

Inspectors: R. Musser, Senior Resident Inspector
G. McCoy, Resident Inspector
L. Garner, Senior Project Engineer (Sections 1R05 (partial), 1R22 (partial) and 4OA1.2)
Lee Miller, Senior Operations Engineer (Section 1R11.1)
Steven Rose, Operations Engineer (Section 1R11.1)

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

Enclosure

SUMMARY OF FINDINGS

IR 05000280/2003-002, IR 05000281/2003-002; Virginia Electric and Power Co.; 01/05/03 - 04/05/03; Surry Power Station Units 1 & 2; Fire Protection and Identification and Resolution of Problems.

The report covered a three month period of inspection by the resident inspectors, a senior project engineer, a senior operations engineer and an operations engineer. Two Green non-cited violations (NCVs) 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: Initiating Events.

- Green. The licensee failed to properly evaluate and approve the storage of flammable materials in the vicinity of safety-related equipment in the Auxiliary Building and the Unit 2 Safeguards area.

  An NRC-identified non-cited violation of the Technical Specification 6.4.E was identified. This finding is more than minor because the amount of material improperly stored exceeded the quantity specified in the licensee's Combustible Loading Analysis. The finding is of very low safety significance because it did not cause the impairment or degradation of a fire protection feature or defense in depth. (Section 1R05)

Cornerstone: Mitigation Systems

- Green. The licensee failed to take adequate corrective actions to preclude additional de-alloying failures for valves in the charging service water system after a failure had occurred in August 2001.

  A self-revealing non-cited violation of 10 CFR 50, Appendix B, Criterion XVI was identified. This finding is more than minor because of the potential impact on the reliability of the safety injection system. The finding is of very low safety significance because the failure did not actually cause the loss of cooling to the charging pumps. (Section 4OA2)

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Unit 1 started the reporting period at 100 percent power. On January 14, 2003, the operators manually tripped the unit from 100 percent power due to rapidly increasing vibrations and high bearing temperatures on the C Reactor Coolant Pump (1-RC-P-1C). The unit was taken critical on January 24, 2003, but automatically tripped on January 25 from approximately 27 percent power due to a low-low level in the B steam generator during the power ascension. The unit was returned to service on January 28, 2003. The unit operated at power for the remainder of the reporting period.

Unit 2 started the reporting period at 100 percent power. On January 25, 2003, with the unit at 100 percent power, a main transformer and generator leads current differential lockout tripped the generator, resulting in a turbine trip which caused an automatic reactor trip. The unit was returned to service on January 29, 2003. The unit operated at power for the remainder of the reporting period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

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:

- Portions of the Unit 1 recirculation spray system and auxiliary feedwater systems inside containment (Drawings 11448-FM-068A sheet 1 and 11448-FM-084B, sheet 1);
- Unit 1 and Unit 2 component cooling water pumps and heat exchangers when 1-CC-E-1D (D component cooling heat exchanger) was out of service for maintenance. (Drawing 11448-FM-072D, sheets 1 and 2); and
- Number 3 EDG fuel oil and air start systems while the Number 2 EDG was removed from service for maintenance. (Drawings 11448-FB-46C, sheets 1 and 2, 11448-FB-38A, sheets 1, 2, and 4).

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 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 cable vault (fire zone 1)
- Number 1 emergency diesel generator room (fire zone 6)
- Fire pump house (fire zones 32A and 32B)
- AAC diesel building (fire zone Z69)
- Unit 2 safeguards (fire zone 20)
- Spent fuel building (fire zone 17)

b. Findings

Introduction

A green non-cited violation of technical specifications and fire protection plan implementing procedures was identified. The inspectors identified two instances in which flammable materials were stored in the vicinity of safety-related components without proper review and approval.

Description

On February 24, 2003, during a walkdown of the plant, the inspectors found approximately 25 full 30-gallon plastic trash bags of used protective clothing stored in the Component Cooling Surge Tank room on the 27 foot level of the Auxiliary Building. Interviews with plant personnel revealed that the Supervisor of Safety and Loss Prevention had not approved the storage of this material in the Auxiliary Building. The licensee immediately removed the material and documented the matter in Plant Issue S-2003-0786.

On March 25, 2003, during a walkdown of the plant, the inspectors identified flammable liquids stored in the Unit 2 Safeguards area. The material consisted of a five gallon can of splice wash, two five gallon cans of bonding adhesive, a one gallon can of spice adhesive and 16 tubes of lap sealant. All of these materials were in the original containers, and were marked on the outside with warning labels identifying the material as flammable. The inspectors brought this to the attention of the Supervisor of Safety and Loss Prevention, who had no record of approving the storage of this material. The material was removed and the matter was documented in Plant Issue S-2003-1198.

Analysis

This finding was determined to be more than minor because the amount of material identified by the inspectors in the Auxiliary Building and the Unit 2 Safeguards area exceeded the amounts listed as normally stored materials in the licensee's Combustible Loading Analysis (Technical Report EP-0012). The amount of transient class A material listed in the analysis as normally stored for the Auxiliary Building 27 foot level is 300 lbs. The amount of material identified by the inspectors resulted in exceeding this value by approximately 300 lbs. This same report makes no allowance for transient flammable liquids in the safeguards area, so any flammable liquids exceeds the analysis.

This issue was determined to be of very low safety significance (green) because it did not cause the impairment or degradation of a fire protection feature or defense in depth.

Enforcement

Surry Technical Specifications, section 6.4.E requires that the facility Fire Protection Program and implementing procedures which have been established for the station shall be implemented and maintained. Virginia Power Administrative Procedure (VPAP) 2401 is the procedure which administers the Fire Protection Program. VPAP-2401 section 6.1.2.a.2 states that "Combustible materials stored in permanent structures, other than warehouses or storerooms shall be stored in a storage area specifically approved by the Supervisor Nuclear Site Safety. Section 6.1.2.a.4 states that combustible materials shall not be stored in or in close proximity to safety related areas or equipment. Section 6.1.2.b.3 states that no more than two gallons of flammable or combustible liquids shall be stored in any area containing safety related equipment except as approved by the Supervisor Nuclear Site Safety. Contrary to the above, inspectors identified approximately 300 pounds of transient class A material stored in the Component Cooling Expansion Tank room and several containers of flammable liquids in the Unit 2 Safeguards area. Because the failure to properly evaluate and approve the storage of this flammable material is of very low safety significance and has been entered into the corrective action program (Plant Issues S-2003-0786 and S-2003-1198), this violation is being treated as a NCV, consistent with Section VI.A.1 of the NRC's Enforcement Policy: 50-280, 281/03002-01, Failure to properly evaluate and approve the storage of flammable materials in the vicinity of safety-related equipment.

.2 Annual Fire Brigade Drill

a. Inspection Scope

The inspectors observed the first quarter 2003 fire brigade drill in the unit two turbine building basement. The inspectors evaluated the readiness of the licensee's personnel to fight fires. Specific aspects evaluated were: the 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.

1R11 Licensed Operator Requalification

.1 Biennial Requalification Program Review

a. Inspection Scope

During the week of March 10, 2003, 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 observed two operator crews and one staff crew 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 records, simulator modification request records, and medical records. Licensee documents reviewed during the inspection are listed in the Attachment.

The inspectors reviewed and evaluated the licensee's simulation facility for adequacy for use in operator licensing examinations. The inspectors also reviewed a sample of simulator performance test records (transient tests, malfunction tests, steady state test, and procedure tests), simulator modification request records, and the process for guaranteeing continued assurance of simulator fidelity to ensure compliance with 10CFR55.46, "Simulation Facilities."

The inspectors reviewed the overall pass/fail results of the 2000-2002 Requalification Training Cycle biennial written examination. The inspectors also reviewed the individual JPM operating tests and the simulator operating tests results administered by the licensee for first year of the 2003-2004 Requalification Training 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. Inspections Scope

The inspectors observed licensed operator performance during simulator training session RQ-03.2-SE-1 to determine whether the operators:

- were familiar with and could successfully implement the procedures associated with recognizing and recovering from a loss of a main feed pump, a steam leak in safeguards, and an Anticipated Transient without Scram (ATWS);
- 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 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 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.

- Plant Issue S-2003-0644, Four bolts were broken when removing the unit 2B condenser waterbox inlet expansion joint splash shield.
- Plant Issue S-2003-021, Flexible boot connecting 1-VS-FL-9 to 1-VS-F-42 is partially disconnected from the inlet to the fan.

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 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:

- Unit 2 turbine driven AFW pump (2-FW-P-2) and Unit 2 A instrument air compressor (2-1A-C-4A) out of service with load shed defeated;
- Number 3 EDG out of service for testing with E control room chiller (1-VS-E-4E), D component cooling pump (1-CC-P-1D), and Unit 2 A instrument air compressor (2-1A-C-4A) out of service;
- Unit 2 blender danger tagged out for maintenance with Unit 1 B charging pump (1-CH-P-1B) out of service for replacement, A component cooling pump (1-CC-P-1A) Unit 2 charging pump service water pump (2-SW-P-10A) and D control room chiller (1-VS-E-4D) out of service for maintenance;
- Number 2 EDG removed from service for repairs with Unit 1 B charging pump (1-CH-P-1B) out of service for replacement, Unit 2 A instrument air compressor (2-IA-C-4A) out of service; and
- B control room chiller (1-VS-E-4B) became inoperable with Unit 1 1B-2 uninterruptible power supply regulated line conditioner (1-EP-UPS-1B-2-RLC) and Unit 2 A instrument air compressor (2-IA-C-4A) out of service for maintenance and Unit 1 B charging pump (1-CH-P-1B) out of service for replacement.

b. Findings

No findings of significance were identified.

1R14 Nonroutine Plant Evolutions

a. Inspection Scope

For the non-routine events 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.

- On January 14, Unit 1 was manually tripped from 100 percent power due to rapidly increasing vibrations and high bearing temperatures on the C Reactor Coolant Pump.
- On January 25, Unit 1 automatically tripped from approximately 27 percent power due to a low-low level in the B steam generator.
- On January 25, Unit 2 automatically tripped from 100 percent power due to a turbine trip caused by a main generator trip from a main transformer and generator leads current differential lockout.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors evaluated the technical adequacy of the 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 transmittal (ET) and Plant Issues listed below:

- Plant Issue S-2003-0125, Water found in the oil of the angle drive for 1C emergency service water pump (1-SW-P-1C);
- ET-CEE-03-0001, Re-powering of Condensate Polishing Building Loads in Support of Unit Restart Following Load Shed;
- ET S-01-0209, Rev. 1, Maximum opening size in the main control room pressure boundary;
- Plant Issue S-2003-0347, Use of the hand wheel to increase closing force on 1-RH-MOV-1720A to reduce seat leakage; and
- Plant Issue S-2003-0995, Snubber 2-SI-HSS-103 fluid reservoir was found empty.

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

- Number 1 EDG return to service testing following maintenance in accordance with 1-OPT-EG-009, “Number 1 Emergency Diesel Generator Major Maintenance Operability Test;”
- Unit 1 Turbine Driven Auxiliary Feedwater Pump return to service testing following replacement of the turbine governor in accordance with 1-OPT-FW-003, “Turbine Driven Auxiliary Feedwater Pump 1-FW-P-2;"
- Number 1 EDG return to service testing following maintenance in accordance with 1-OPT-EG-001, “Number 1 Emergency Diesel Generator Monthly Start Exercise Test;”
- Modification of Number 3 EDG Output Breaker 15J3 Closing Circuit in accordance with Final Design Test Procedure FDTP 03-022-1; and
- Number 2 EDG return to service testing following maintenance on the air start system in accordance with 2-OPT-EG-001, “Number 2 Emergency Diesel Generator Monthly Start Exercise Test,” one-time-only PAR 1.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

.1 Unit 1 Forced Outage

a. Inspection Scope

The inspectors performed the inspection activities described below for the Unit 1 forced outage that began on January 14, 2003, and ended on January 28, 2003.

The inspectors reviewed the licensee's outage risk control plan ("Unit 1 2003 'C' RCP Forced Outage Risk Assessment," and VPAP-2805, "Shutdown Risk Program") to verify that the licensee had appropriately considered risk, industry experience and previous site specific problems, and to confirm that the licensee had mitigation/response strategies for losses of key safety functions.

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 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 (DHR) 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; and

- Reviewed the outage risk plan to verify that activities, systems, and/or components which could cause unexpected reactivity changes were identified in the outage risk plan and were controlled accordingly.

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.

b. Findings

No findings of significance were identified.

.2 Unit 2 Forced Outage

a. Inspection Scope

The inspectors performed the inspection activities described below for the Unit 2 forced outage that began on January 25, 2003, and ended on January 29, 2003.

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 (DHR) parameters to verify that the system was properly functioning; 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.

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:

- 1-OPT-FW-003, “Turbine Driven Auxiliary Feedwater Pump,” (flow to the steam generators),
- 1-OPT-SI-010, “Close Test of Accumulator Discharge Check Valves,”
- 1-OPT-SI-005, “LHSI Pump Flow Test,”
- 1-CAL-311, “Emergency Borate Flow Instrument Calibration,”
- 0-OPT-VS-004, “Control Room Air Filtration System Flow Test,” and
- 0-OPT-VS-006, “Auxiliary Ventilation Filter Train Test.”

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed emergency response training drills conducted on the following dates to assess the licensee’s performance in emergency classification, notification, and protective action recommendation development:

- March 5, 2003, drill in the simulator,
- March 19, 2003, plant-wide drill in the Technical Support Center.

b. Findings

No findings of significance were identified.

4 OTHER ACTIVITIES

4OA1 Performance Indicator Review

.1 "Unplanned Scrams per 7000 Critical Hours" Performance Indicator

a. Inspection Scope

The inspectors performed a periodic review of the "Unplanned Scrams per 7000 Critical Hours" performance indicator for Units 1 and 2. Specifically, the inspectors reviewed this performance indicator from the first quarter through the fourth quarter of 2002. Documents reviewed included applicable monthly operating reports, licensee event reports, and operator logs.

b. Findings

No findings of significance were identified.

.2 "Reactor Coolant System Leakage" Performance Indicator

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 for the first quarter through the fourth quarter of 2002. This inspection was to assess the accuracy of the submitted information and if the PI was calculated in accordance with the methodology established in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline." The inspectors compared the submitted data with that recorded in operator logs for the period January 1, 2002, through December 31, 2002. The inspectors also discussed this PI with the cognizant engineer and licensing staff and reviewed the system engineer's data sheets.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

a. Inspection Scope

The inspectors performed an in-depth review of the issues described in Plant Issues S-2001-2225, S-2001-2229 and S-2003-1052. These plant issues described a failure of vent valves in the charging service water system. Inspectors reviewed the root cause evaluations, corrective actions, and conducted interviews with personnel involved. During this review the inspectors determined whether:

- identification of the problem was complete and accurate,
- the problem was identified in a timely manner,

- the licensee properly classified and prioritized the resolution,
- the licensee evaluated and dispositioned operability and reportability issues,
- the licensee considered extent of condition, generic implications, common causes, and previous occurrences, and
- corrective actions were completed in a timely manner.

b. Findings

Introduction

A green self-revealing non-cited violation was identified for the licensee's failure to take adequate corrective actions to preclude additional de-alloying failures for valves in the charging service water system after a failure had occurred in August 2001.

Description

On August 7, 2001, the licensee experienced the failure of three brass vent valves in the charging service water system. Subsequent investigation revealed that these valves were manufactured from brass, a copper/zinc alloy which was susceptible to de-alloying in the stagnant salt-water environment of the service water system. This de-alloying resulted in through-wall leakage, brittleness, and structural failure of these valves. Subsequently, the licensee identified all the brass valves of this type and replaced them with bronze valves which were not susceptible to this type of failure.

On March 16, 2003, charging service water system vent valve 1-SW-185 destructively failed when plant personnel placed a pipe wrench on the pipe in preparation for the removal of the pipe cap on the outlet of the valve. At the time, a portion of the charging service water system was being tagged out for the removal of the B coolant charging pump (1-CH-P-1B). The licensee's investigation revealed that this was a brass valve which should have been identified and replaced during the corrective actions from the August 2001 failure.

Analysis

This finding was determined to be more than minor because the presence of this brass valve, with its susceptibility to de-alloying, in the charging service water system affects the availability of a mitigating system. The charging service water system provides cooling to the seals and the lube oil system of the charging pumps, which also serve as the high head safety injection pumps. The failure of the body of the valve occurred on the inlet side of the ball, where it had been weakened due to continuous exposure to the stagnant service water. A failure of this type would lead to a loss of a majority of service water flow to the B charging pump lube oil cooler, and a smaller reduction of flow to the A and C charging pump lube oil coolers and the intermediate seal coolers.

This issue was determined to be of very low safety significance (green) because the failure did not represent an actual loss of the function of the safety injection system. This failure could have resulted in the eventual failure of only the B charging pump because of a lack of cooling water for the lube oil cooler. Because of the relatively minor reduction of flow to the intermediate seal coolers and the A and C charging pump

lube oil coolers, as well as the availability of isolation valves for the B charging pump lube oil cooler which isolate 1-SW-185 from the charging service water system, it is reasonable to assume that the A and C charging pumps would continue to operate.

Enforcement

10 CFR 50, Appendix B, Criterion XVI requires that, for significant conditions adverse to quality, measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. Contrary to the above, following the valve failures of August, 2001, the licensee failed to take adequate corrective actions to preclude additional de-alloying failures for valves in the charging service water system. Because the failure to identify and replace all the susceptible valves is of very low safety significance and has been entered into the corrective action program (Plant Issues S-2003-1052 and S-2003-1525), this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC's Enforcement Policy: 50-280/03002-02, Failure to Preclude Additional De-alloying Failures for Valves in the Charging Service Water System.

4OA6 Management Meetings

.1 Annual Assessment Meeting Summary

On April 3, 2003, the NRC's Chief of Reactor Project's Branch 5 and the Senior Resident Inspector assigned to the Surry Power Station (SPS) met with Virginia Electric and Power Company to discuss the NRC's Reactor Oversight Process (ROP) and the SPS annual assessment of safety performance for the period of January 1, 2002 - December 31, 2002. The major topics addressed were: the NRC's assessment program, the results of the SPS assessment, and NRC security activities. Attendees included SPS site management, members of site staff, corporate management and staff, and a member 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 ML030980597. ADAMS is accessible from the NRC Web site at *http://www.nrc.gov/reading-rm/adams.html* (the Public Electronic Reading Room).

.2 Exit Meeting Summary

On April 17, 2003, the resident inspectors presented the inspection results to Mr. Blount and other members of his staff who acknowledged the findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Adams, Manager, Engineering
R. Allen, Manager, Outage and Planning
R. Blount, Site Vice President
B. Foster, Director, Nuclear Station Safety and Licensing
B. Garber, Acting Supervisor, Licensing
D. Llewellyn, Manager, Training
R. MacManus, Manager, Nuclear Oversight
B. Stanley, Manager, Maintenance
T. Sowers, Director, Nuclear Station Operations and Maintenance
T. Steed, Manager, Radiological Protection
J. Swientoniewski, Manager, Operations

NRC

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

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

50-280, 281/03002-01	NCV	Failure to properly evaluate and approve the storage of flammable materials in the vicinity of safety-related equipment. (Section 1R05)
50-280/03002-02	NCV	Failure to Take Adequate Corrective Actions to Preclude Additional De-alloying Failures for Valves in the Charging Service Water System. (Section 4OA2)

Discussed

None

Attachment

LIST OF DOCUMENTS REVIEWED

Section 1R11.1

Simulator Configuration Management, TRCP-3006
Control Room Simulator, VPAP-2703
Simulator Software Management, TRCP-3004
Simulator Preventive and Corrective Maintenance Program, TRCP-3005
Simulator Modification Reports, TRCP-3002
Nuclear Training Organization, Responsibilities, and Authorities, TRCP-001
Annual Report on Simulator Certification Testing for year 2002
Core Cycle 18 Test Procedure, SPS-RX-SMR-200201021030
Open Deficiency Reports: Numerous
Surry Simulator Modification Reports: Numerous
100% Steady State One Hour Run, SPS-ANSI-09
Manual Reactor Trip, SPS-ANSI-10
Simultaneous Trip of All Feedwater Pumps, SPS-ANSI-11
Simultaneous trip of all Reactor Coolant Pumps, SPS-ANSI-13
LOCA with Loss of Offsite Power, SPS-ANSI-17
LOCA to Saturated Conditions (AMSAC & SI & CLS signals failed), SPS-ANSI-19
Malfunction Test Math Unit Test Failure High/Low 1998/1999, SPS-MRD-08
Malfunction Test Dropped RCCA, SPS-MRD-12
Reactor Physics Tests Report, VEP0025-23-R1, 12/31/2001
Nuclear Startup to Rated Power, ANSI-03-1998
Heatup From Cold Shutdown to Hot Shutdown ANSI-01 and 02, 1997
Licensed Operator Medical Records: Numerous
Licensed Operator Requalification Program, FIG 01, Rev. 11
LORP Sample Plan Basis Document, FIG 02, Rev. 7
Conduct of Annual LORP Examinations, FIG 05, Rev. 14