



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

January 11, 2001

EA 01-009
NOED 00-2-001

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.
50-280/00-05, 50-281/00-05 AND INDEPENDENT SPENT FUEL STORAGE
INSTALLATION INSPECTION REPORT NO. 72-002/00-07

Dear Mr. Christian:

On December 16, 2000, the NRC completed an inspection at your Surry Power Station, Units 1 and 2, and the Surry Independent Spent Fuel Storage Installation. The enclosed reports document the inspection findings which were discussed on December 20, 2000, with Mr. Richard 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 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 had 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 with the basis for your denial, within 30 days of the date of this inspection report, 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 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/NRC/ADAMS/index.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, 72-002
License Nos.: DPR-32, DPR-37, SNM-2501

Enclosure: Inspection Reports

Attachments: 1. Supplemental Information
2. NRC's Revised Reactor Oversight Process

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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.: 50-280/00-05, 50-281/00-05, 72-002/00-07

Licensee: Virginia Electric and Power Company (VEPCO)

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

Location: 5850 Hog Island Road
Surry, VA 23883

Dates: September 17 - December 16, 2000

Inspectors: R. Musser, Senior Resident Inspector
K. Poertner, Resident Inspector
G. McCoy, Resident Inspector
D. Jones, Senior Radiation Specialist, RII (Sections 2OS2 and 4OA5)
W. Rogers, Senior Reactor Analyst, RII (Section 4OA2.1, partial)

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

Enclosure

SUMMARY OF FINDINGS

IR 05000280-00-05, IR 05000281-00-05, IR 07200002-00-07, on 9/17-12/16, 2000; Virginia Electric and Power Co., Surry Power Station, Units 1 & 2, Surry ISFSI. Identification and resolution of problems.

The inspection was conducted by resident inspectors and a senior radiation specialist. This inspection identified one green finding which was a non-cited violation. The significance of the finding is indicated by its color (green, white, yellow, red) using IMC 0609 "Significance Determination Process" (SDP).

A. Inspector Identified Finding

Cornerstone: Mitigation Systems

- GREEN. The inspectors identified a non-cited violation in which the licensee failed to adequately address a condition adverse to quality that prevented the auxiliary ventilation exhaust filter fans from operating following an automatic start in the minimum safeguards alignment. This matter was originally identified in April 2000. This is a violation of 10 CFR 50, Appendix B, Criterion XVI.

This issue was of very low safety significance since operators could have manually aligned the system for operation. The plant design allowed sufficient time to manually actuate the system such that the safety functions would be performed. (Section 40A2.1)

Report Details

Unit 1 operated at power until October 24, 2000, when the plant tripped due to a maintenance activity being performed on the incorrect unit (Unit 1 in lieu of Unit 2). The unit was restarted on October 25, 2000, and operated at power until the end of the reporting period.

Unit 2 operated at power in end of cycle power coastdown until October 1, 2000, when the unit was shutdown for a scheduled refueling outage. The unit was returned to service on November 1, 2000, 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 reviewed the licensee's preparations for cold weather as described in procedures 0-OSP-ZZ-001, "Cold Weather Preparation," Revision 3-P1, and 0-EPM-1303-01 "Freeze Protection Inspection," Revision 10, to verify that those preparations limited the risk of weather related initiating events, ensured accessibility to accident mitigation system equipment, and adequately protected accident mitigation systems from adverse weather effects.

b. Findings

No findings of significance were identified.

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:

- Motor Driven Fire Pump (1-OP-52.2A, "Fire Protection System Alignment," Revision 6-P1);
- Unit 2 Auxiliary Feedwater (2-OP-FW-001A, "Auxiliary Feedwater System Valve Alignment," Revision 2-P1);
- Unit 2 Inside Recirculation Spray (2-OP-RS-002A, "Inside Recirc Spray System Valve Alignment," Revision 2).

b. Findings

No findings of significance were identified.

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 for (using "SPS Appendix R Report," Revision 17):

- Unit 2 Cable Spreading Room;
- Unit 1 Safeguards Building and Main Steam Valve House;
- Fuel Building;
- Number 3 and 4 Mechanical Equipment Rooms;
- Reserve Station Service Transformers;
- Number 5 Mechanical Equipment Room;
- Number 2 Emergency Diesel Generator Room;
- Unit 1 Cable Vault;
- Unit 1 Vital Battery Rooms.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors conducted a review of the component cooling system performance tests to determine macrofouling on the service water side of the heat exchangers and reviewed completed results to verify the acceptance criteria was met and appropriately categorized. The inspectors conducted a review of the plant issue data base to verify that problems identified concerning the component cooling system heat exchangers were properly categorized and corrective actions appropriately implemented. The inspectors have previously performed visual inspections of the service water side of the heat exchangers during routine cleaning evolutions.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspections Scope

The inspectors observed licensed operator performance during simulator training session RQCEP-231-ST-1 "Steam Generator Tube Leak," Revision 6, to determine whether the operators:

- Were familiar with and could successfully implement the procedures associated with recognizing and recovering from a primary coolant leak;
- 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," Revision 10, and the Surry Maintenance Rule Scoping and Performance Criteria Matrix, Revision 11, 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:

- S-2000-2078, B Main Steam PORV Isolated;
- S-2000-2142, Source Range N-31 Failure;
- S-2000-2302, 2-FW-MOV-250B Motor Will Not Engage;
- S-2000-0315, 2-CW-MOV-206A Leaks by 140 GPM;
- S-2000-0449, CC HX 1C Inoperable Due To Fouling;
- S-2000-0795, 1-SW-MOV-103B Will Not Operate.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's assessment of the risk impact of removing from service those components associated with the emergent work items listed below.

The inspectors reviewed the following emergent items to verify that the licensee had taken the necessary steps to demonstrate that emergent work activities were adequately planned and controlled to avoid initiating events, and to verify that the licensee ensured the functional capability of accident mitigation systems:

- Unit 1 operation with one 58 fan (1-VS-F-58A) inoperable.
- Unit 1 operation with unit 2 steam-driven AFW pump (2-FW-P-2) inoperable.
- Removal of charging pump 2-CH-P-1B from service for maintenance.
- Removal of vital AC power supply 2-EP-UPS-2B-1 from service for maintenance.
- Removal of service water filter 1-VS-S-1B, supply for control room chillers, from service for maintenance.
- Removal of charging service water pump 2-SW-P-10A from service for maintenance.

b. Findings

No findings of significance were identified.

1R14 Nonroutine Plant Evolutions

.1 Reactor Plant Startup following Trip

a. Inspection Scope

Inspectors observed the reactor plant startup following the Unit 1 trip on October 25, 2000. This startup was unusual because it occurred at peak Xenon condition, and would involve unusual reactivity transients. The inspectors observed the performance of the following procedures: 1-GOP-1.4, "Unit Startup, HSD to 2% Reactor Power," Revision 19; 1-OP-RX-004, "The Calculation of Estimated Critical Conditions," Revision 7-P2; and 1-OP-RX-006, "Withdrawal of the Control Banks to Critical Conditions," Revision 9.

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 transmittals (ET), plant issues, or other documents listed below:

- ET NAF 2000-0123, Revision 0, Impact of Debris from a Broken Light on Core Operation;
- Engineering Log Entry; 12/9/00 at 5:39 p.m., Evaluation of High Vibrations on 1B Emergency Service Water Pump;
- Plant Issue S-2000-2839, Failure of Valve 2-CH-MOV-2286C to Operate Electrically from the Control Room;
- Plant Issue S-2000-2334, Horizontal Vibration Increasing on 2-RS-P-1B;
- Plant Issue S-2000-2424, 2-RC-MOV-2591 Torque Switch Inoperable.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds

a. Inspection Scope

During this inspection period, the inspectors reviewed Operator Workaround 2000-ODA-001, "1-VS-F-58A & B" to determine whether the workaround affected either the functional capability of the related system or human reliability in responding to an initiating event. During this review, 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.

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 that the

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

- WO 439115-01, Replacement of Relay 1-RLY-CLS-2AM-X
- 0-OPT-SW-002, "Emergency Service Water Pump 1-SW-P-1B," Revision 14, Test of Pump Following Replacement
- 2-OPT-FW-001, "Motor Driven Auxiliary Feedwater Pump 2-FW-P-3A," Revision 8, Test of Pump Following Preventive Maintenance Activities;
- 2-CH-OPT-003, "Charging Pump Operability and Performance Test for 2-CH-P-1C," Revision 28, Test of Pump Following Preventive Maintenance Activities;
- WO 438032-01, Change 01-VS-PS-128A&B Setpoints;
- WO 435214-01, Perform CS Limitorque PM.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (Unit 2)

a. Inspection Scope

With respect to the Unit 2 refueling outage that began on October 1, 2000 and ended November 1, 2000, the inspectors used inspection procedure 71111.20, "Refueling and Outage Activities" to complete the inspections described below.

Prior to (and during) the outage, the inspectors reviewed the licensee's outage risk control plan "Unit 2 2000 Refueling Outage Safety Assessment," Revision 0-P6, and VPAP-2805, "Shutdown Risk Program," Revision 4, 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.

During the reactor plant shutdown and cooldown which preceded the outage, the inspectors reviewed portions of the shutdown and cooldown procedures to verify that technical specification requirements 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.

For selected components which were removed from service, the inspectors examined clearance tags to verify that tags were properly hung and that associated equipment was appropriately configured to support the function of the clearance.

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;
- 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;
- 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;
- 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;
- 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; and,
- The inspectors reviewed fuel handling operations to verify that those operations and related activities were being performed in accordance with technical specifications and approved procedures.

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

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

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the 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-CT-207, "Electrical Penetration Type B Local Leak Rate Test (Amphenol and Older Style Conax Penetrations)," Revision 4; 1-CT-208, "Electrical Penetration Type B Local Leak Rate Test (Conax Penetrations)," Revision 4; 1-CT-209, "Westinghouse Electrical Penetration Type B Local Leak Rate Test," Revision 4;
- 0-OPT-VS-010, "Auxiliary Ventilation Engineered Safeguards Test," Revision 0;
- 2-OPT-ZZ-001, "ESF Actuation With Undervoltage and Degraded Voltage-2H Bus," Revision 10-OTO2;
- 2-OPT-SI-014, "Cold Shutdown Test of SI Check Valves to RCS Hot and Cold Legs," Revision 7;
- 2-OPT-RC-001, "Przr PORV Refueling Test," Revision 6;
- 1-OPT-CH-003, "Charging Pump Operability and Performance Test for 1-CH-P-1C," Revision 26;
- 2-OPT-ZZ-002, "ESF Actuation with Undervoltage and Degraded Voltage - 2J Bus," Revision 10.

b. Findings

One green finding was identified and is discussed in Section 4OA2.1.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed Temporary Modification S2-00-010, "Bypass 2-RC-MOV-2591 Torque Switch," to determine whether system operability/availability was affected, that

configuration control was maintained, and that the associated safety evaluation (SE 00-126) adequately justified implementation.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstones: Public Radiation Safety

2OS2 ALARA Planning and Controls

a. Inspection Scope

The plant collective exposure history for the years 1992 through 1999, based on the data available from NUREG-0713, was reviewed and discussed with the licensee. The inspectors observed job site implementation of ALARA controls and radiation worker performance at five selected high exposure job sites in the Unit 2 Containment Building during the Unit 2 refueling outage (RFO). The observed work activities at the selected job sites was being performed pursuant to the following Radiation Work Permits (RWPs): (1) 00-2-3101 Loop Stop Valve Repair; (2) 00-2-3031 Containment Recirculation Spray Test & Inspection; (3) 00-2-3014 RHR System Maintenance; (4) 00-2-3100 RHR Piping Replacement; and (5) 00-2-3021RCP Motor Maintenance. The work controls established for those RWPs were reviewed for consistency with the ALARA planning and controls prescribed by the ALARA Evaluations (AEs) for those tasks. The inspectors also independently verified that the job site dose rates were consistent with the dose rates recorded on the pre-job survey maps for the selected work areas. Exposure tracking during the Unit 2 outage and records of exposures to declared pregnant workers year-to-date (YTD) 2000 were also reviewed. The inspectors reviewed procedure C-HP-1061.020 "Personnel Contamination Monitoring and Decontamination." The Personnel Contamination Reporting Log and the Non-Reportable Personnel Contamination Log were reviewed for consistency with the above procedure during the current Unit-2 RFO. The inspectors reviewed the training materials used for the Unit 2 Outage Readiness Team Briefing which addressed radiological protection activities, including response to personnel contamination events, for the Unit 2 RFO. The Attendance Record for that team briefing of the radiation protection staff was also reviewed. Selected elements of the licensee's source term reduction and control program were reviewed by the inspectors. Specific areas reviewed included hot spot monitoring and reduction, primary chemistry shut down controls, radiation field monitoring and trending, and temporary shielding. The effectiveness of problem identification and resolution for selected radiation protection related issues identified during May through August 2000 was evaluated by the inspectors. Through the above reviews and observations, the licensee's ALARA program implementation and practices were evaluated by the inspectors for consistency with Technical Specifications and 10 CFR Part 20 requirements.

b. Findings

No findings of significance were identified.

4 OTHER ACTIVITIES

4OA1 Performance Indicator Review

.1 Unplanned Power Changes per 7000 Critical Hours Performance Indicator

a. Inspection Scope

The inspectors performed a periodic review of the Unplanned Power Changes per 7000 Critical Hours performance indicator for Units 1 and 2. Specifically, the inspectors reviewed this performance indicator from the first quarter through the third quarter of 2000. Documents reviewed included applicable monthly operating reports and operator logs.

b. Findings

No findings of significance were identified.

.2 Scrams with Loss of Normal Heat Removal

a. Inspection Scope

The inspectors performed a periodic review of the Scrams with Loss of Normal Heat Removal indicator for Units 1 and 2. Specifically, the inspectors reviewed this performance indicator for the second and third quarters of 2000. Documents reviewed included Licensee Event Reports, operator logs, and monthly operating reports.

b. Findings

No findings of significance were identified.

.3 High Pressure Safety Injection System Unavailability Performance Indicator

a. Inspection Scope

The inspectors performed a periodic review of the High Pressure Safety Injection performance indicator for Units 1 and 2. Specifically, the inspectors reviewed this performance indicator for the second and third quarters of 2000. Documents reviewed included maintenance rule reports, work orders and operator logs.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Tripping of Auxiliary Ventilation Exhaust Filter Fans During Safeguards Testing

a. Inspection Scope

The inspectors reviewed the circumstances surrounding and the licensee's actions in response to both auxiliary ventilation exhaust filter fans tripping during the performance of procedure 2-OPT-ZZ-002, "ESF Actuation with Undervoltage and Degraded Voltage - 2J Bus," Revision 10.

b. Findings

On October 3, 2000, during the performance of procedure 2-OPT-ZZ-002, auxiliary ventilation exhaust filter fans 1-VS-F-58A and B both tripped after auto starting in response to a simulated safety injection signal. At the time of the event Unit 2 was in a refueling outage and Unit 1 was operating at 100 percent power. This event was similar to a dual fan trip in April 2000, during a Unit 1 refueling outage (See NRC Integrated Inspection Report Nos. 50-280, 281/00-03) that was documented in Plant Issue S-2000-0863, "1-VS-F-58A and B will not operate in parallel without tripping one or both fans." The licensee initiated a recovery team to identify and correct the cause of the dual fan trip. The licensee also implemented administrative controls to allow one exhaust filter train to be returned to service and place the operating unit in a seven day Technical Specification Action Statement.

The recovery team identified that the testing following the April 2000 event was not an adequate test in that the system had been manually aligned and the fans manually started as opposed to performing an automatic start resulting in damper realignment and simultaneous starting of the fans. The licensee determined that the time delay associated with damper repositioning and fan starting was not sufficient and resulted in the fans tripping on low suction pressure. The licensee initiated a design change to install a time delay relay in both fans start circuitry to allow the dampers to completely reposition prior to the fans receiving a start signal. The licensee also determined that the system was operating extremely close to the low suction pressure trip setpoint during normal operation in the accident alignment and initiated a design change to raise the setpoint.

On October 10, 2000, the licensee requested Enforcement Discretion to extend the allowed outage time of an exhaust filter train by 10 days to allow implementation of the design changes identified, tune the fan flow controllers, perform maintenance on the inlet flow control dampers, and to conduct the required testing to ensure operability of the system with both fans in automatic. The licensee was notified by a telephone call on that day of the NRC's decision to authorize enforcement discretion. The Notice of Enforcement Discretion (NOED), number 00-2-001, was issued on October 12. On October 19, 2000, the Auxiliary Ventilation Exhaust Filter Trains Technical Specification Action Statement was exited following completion of the maintenance activities and testing. The inspectors verified that the licensee complied with the compensatory measures discussed in the NOED. During this time frame at least one exhaust filter train was maintained operable. The inspectors verified that the root cause evaluation,

discussed in Plant Issue S-2000-2180, "1-VS-F-58A and B Fans Trips on 10/3 and 10/4," was adequate. Long term corrective actions to improve reliability, such as providing additional margin between the suction pressure fan trip setpoints and operating conditions, were in progress at the end of the report period. NOED 00-2-001 is closed.

A Phase I Significance Determination Process screening was performed and the performance deficiency met the criteria for further evaluation. An NRC senior reactor analyst performed a Phase III risk evaluation and determined the performance deficiency to be GREEN. The risk analysis was performed using results from the licensee's full scope probabilistic safety assessment model. The baseline core damage frequency (CDF) was $3.3E-5$ with a Risk Achievement Worth (RAW) of 2.83 for the common cause failure of the fans. RAW is the increase in CDF given both fans were out of service for one year. The change in CDF due to the performance deficiency existing for 11 months versus 12 was:

$$3.3E-5 * 2.83 - 3.3E-5 = 6E-5 * 11/12 = 5.5E-5$$

Operator recovery of restarting the fans which would reduce this CDF increase was considered and deemed appropriate. A human error probability (HEP) was derived using the diagnosis section of an Accident Sequence Precursor Human Error Worksheet. The baseline failure probability of $1E-2$ was modified by the available time and stress performance shaping factors (beyond the nominal value). Due to the long time available to turn on the fans before affecting high head safety injection pump performance, a value of 0.05 (<24 hours but >1 hour) was selected. A value of 2 was selected for high stress. Therefore, an HEP of $1E-2 * .05 * 2 = 1E-3$ was used. The resulting change in CDF was $5.5E-5 * 1E-3 = 5.5E-8$ which is an issue of very low safety significance.

10 CFR 50, Appendix B, Criterion XVI, requires, in part, that measures be established to assure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, and nonconformances are promptly identified and corrected and that in the case of 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, Plant Issue S-2000-0863 did not adequately identify, correct, and preclude repetition of a condition that would result in both fans tripping on low suction pressure during automatic actuation following an accident and resulted in the auxiliary ventilation exhaust filter trains being inoperable in the automatic mode of operation as required by TS 3.22, "Auxiliary Ventilation Exhaust Filter Trains," for a period of approximately eleven months. The failure to meet the requirements of 10 CFR 50 Criterion XVI is identified as a violation of NRC requirements. However, this issue is considered an NCV (50-280, 281/00005-01) consistent with Section VI.A.1 of the NRC Enforcement Policy. The licensee entered this issue in the corrective action system as Plant Issue S-2000-2180 and initiated a Category 1 Root Cause Evaluation. The associated Licensee Event Reports (LERs) 50-280, 281/00001-01, "Filtered Exhaust Fan Failure Results in Technical Specifications Violation," and 50-280, 281/00003-00, "Both Filtered Exhaust Fans Inoperable Due To Operation Close To Trip Setpoint," are closed.

4OA3 Event Follow-up

- .1 (Closed) LER 50-280/2000-004-00, "Reactor Trip on Lo Lo Steam Generator Level Due to Human Error."

a. Inspection Scope

The inspectors reviewed the circumstances associated with an automatic reactor trip due to a loss turbine electrical hydraulic controls that resulted in a steam generator lo lo level reactor trip.

The inspectors independently reviewed the response of risk significant structures, systems and components to the event by using operator logs, plant computer data, alarm logs and/or strip charts, and operator statements. The inspectors also evaluated the licensee's post trip/readiness review for restart. This event is captured in the licensee's corrective action program in Plant Issue S-2000-2473.

b. Findings

No findings of significance were identified.

4OA5 Other

- .1 Radiological Controls for the Independent Spent Fuel Storage Installation

a. Inspection Scope

The inspectors reviewed implementation of selected elements of the licensee's radiological control program for the Independent Spent Fuel Storage Installation (ISFSI). Controls were evaluated for conformance with the ISFSI Technical Specifications (TS) for dose rates from the spent fuel storage casks and for monitoring radiation dose levels at the ISFSI boundary fence. The inspectors verified that the general area gamma and neutron dose rates at one cask storage pad and one pad security fence were well within the TS limits and were consistent with the dose rates recorded during the most recent quarterly surveillance completed in October 2000. The inspectors also verified by direct observation that two thermoluminescent dosimeters (TLDs) were in place on each side of the ISFSI boundary fence as required by TS.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings

- .1 Exit Meeting Summary

The inspectors presented the inspection results to Mr. Richard Blount and other members of the licensee's staff on December 20, 2000. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

NRC

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

Licensee

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R. Allen, Superintendent, Maintenance
R. Blount, Site Vice President
M. Crist, Director, Nuclear Oversight
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T. Sowers, Director, Nuclear Operations and Maintenance
B. Stanley, Supervisor, Licensing
T. Steed, Superintendent, Radiological Protection
J. Swientoniewski, Superintendent, Operations

ITEMS OPENED AND CLOSED

Opened and Closed During this Inspection

50-280, 281/00005-01	NCV	Failure to adequately resolve a condition adverse to quality, the auxiliary ventilation exhaust filter fans tripping on low suction pressure (Section 4OA2.1)
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Closed During this Inspection

50-280, 281/00001-01	LER	Filtered Exhaust Fan Failure Results in Technical Specifications Violation (Section 4OA2.1)
50-280, 281/00003-00	LER	Both Filtered Exhaust Fans Inoperable Due To Operation Close To Trip Setpoint (Section 4OA2.1)
00-2-001	NOED	Notice of Enforcement Discretion (NOED) For Virginia Power and Light Company, Surry Unit 1 (Section 4OA2.1)
50-280/00004-00	LER	Reactor Trip on Lo Lo Steam Generator Level Due to Human Error (Section 4OA3.1)

ATTACHMENT 2

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness

Radiation Safety

- Occupational
- Public

Safeguards

- Physical Protection

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and

increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.