



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

April 30, 2001

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

**SUBJECT: NORTH ANNA POWER STATION - NRC INTEGRATED INSPECTION
REPORT NOS. 50-338/00-06, 50-339/00-06**

Dear Mr. Christian:

On March 31, 2001, the NRC completed an inspection at your North Anna Power Station, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on April 17, 2001, with Mr. D. Heacock 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 North Anna 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

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Sincerely,

/RA/

Kerry D. Landis, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Docket Nos.: 50-338, 50-339
License Nos.: NPF-4, NPF-7

Enclosure: Inspection Reports

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

cc: w/encl.:

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-338, 50-339

License Nos.: NPF-4, NPF-7

Report Nos.: 50-338/00-06, 50-339/00-06

Licensee: Virginia Electric and Power Company (VEPCO)

Facilities: North Anna Power Station, Units 1 & 2

Location: 1022 Haley Drive
Mineral, Virginia 23117

Dates: December 31, 2000 through March 31, 2001

Inspectors: M. Morgan, Senior Resident Inspector
J. Canady, Resident Inspector
R. Carrion, Health Physicist, RII (Sections 2OS1, 2OS2, 4OA1.8 and 4OA1.9)
J. Dodson, Health Physicist, RIV (Section 2PS1)
L. Garner, Senior Project Engineer, RII (Sections 1R06 and 1R07)
S. Vias, Senior Reactor Inspector, RII (Section 1R08)
G. Wiseman, Senior Reactor Inspector, RII (Sections 4OA3.6 and 4OA3.7)
F. Wright, Senior Health Physicist, RII (Sections 2OS1 and 2OS2)

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

Enclosure

SUMMARY OF FINDINGS

IR 05000338-00-06, IR 05000339-00-06, on 12/31/2000-3/31/2001, Virginia Electric and Power Co., North Anna Power Station Units 1 & 2. Event Followup.

The inspection was conducted by resident inspectors, a regional senior project engineer, two senior reactor inspectors (one performed an in-office review), a region IV-based health physicist, a region-based health physicist, and a region-based senior health physicist.

A. Inspector Identified Finding

Cornerstone: Mitigating Systems

GREEN. A non-cited violation was identified for the licensee's failure to meet the requirements of 10 CFR 50, Appendix R, Section III.G.2. Specifically, the licensee's safe shutdown analyses for fire in the emergency switchgear room and in the cable vault and tunnel did not evaluate the impact that fire induced failures on the main feedwater system cables routed in the fire areas may have on the facility with regard to post-fire safe shutdown.

Fire damage to these unprotected circuits could produce transient plant operations that were not considered in the licensee's analysis. However, because of system and operator response capabilities and the relatively minor increase in auxiliary feedwater component failure rates resulting from fire damage to these unprotected circuits, the safety significance of this issue was very low. (Section 4OA3.6)

B. Licensee Identified Violations

Violations of very low significance which were identified by the licensee have been reviewed by the inspectors. The licensee has entered these issues in their corrective action program. These violations are listed in Section 4OA7 of this report.

Report Details

Unit 1 operated at or near full power during the entire reporting period.

Unit 2 began the inspection period at full power. On January 12, the unit began a coastdown for a scheduled refueling outage (RFO). On January 19, the unit was shutdown due to technical specifications (TS) limits for identified reactor coolant system (RCS) leakage. On January 22, after repairs were completed, the unit was returned to service. On March 11, the unit was shutdown for the RFO. The inspection period ended with outage activities in progress.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

a. Inspection Scope

The inspectors reviewed the systems or components identified below to determine if they were correctly aligned in accordance with the referenced document:

- Unit 2 A charging pump recirculation flow path valves, (2-OP-8.1, "Chemical Volume Control System," Revision 31);
- Unit 2 B charging pump recirculation flow path valves, (2-OP-8.1, "Chemical and Volume Control System," Revision 31); and,
- Unit 1 B and Unit 2 B component cooling pump valves and breakers, (1-OP-51.1, "Component Cooling System," Revision 25 and drawing 11715-FM, sheets 1 and 2);

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors assessed, using "NAPS Appendix R Report," Revision 18 and Virginia Power Administrative Procedure (VPAP)-2401, "Fire Protection Program," Revision 15, fire protection program implementation. The inspectors checked the control of transient combustibles and the condition of the fire detection and fire suppression systems for the following area:

- Unit 1 Cable Vault Tunnel;
- Unit 1 and Unit 2 Emergency Diesel Generators Rooms;
- Unit 1 and Unit 2 Emergency Switchgear Areas (specifically, alarm systems);
- Unit 1 and Unit 2 Inside Protected Area Yard Transformers;
- Unit 1 and Unit 2 Auxiliary Building charging pump cubicles; and,
- Unit 2 A Main Transformer (Annual Fire Drill Observation).

During the annual fire drill, the inspectors evaluated the simulated use of fire protection equipment and procedures, fire brigade communications and dress out. The inspectors also attended the post drill critique.

An electrical fire in an on-site trailer (the temporary laundry facility) was immediately extinguished by personnel in the trailer. The inspectors observed the fire brigade respond to the fire site and assessed their followup actions to ensure the fire was out and that other fire-related problems did not exist. The inspectors also reviewed related Plant Issue N-2001-0975.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed the following procedures and Updated Final Safety Analysis Report (UFSAR) sections to understand the plant's design features to mitigate internal and external flooding events:

- 0-AP-39.1, "Turbine Building Flooding," Revision 6;
- 0-AP-39.2, "Auxiliary Building Flooding," Revision 4;
- 2-EPM-0801-01, "Testing The Flood Control System," Revision 3; and,
- UFSAR sections 2.4.1 - 2.4.10, 3.1.2, 3.4, 9.3.3.2, 9.5.1.3.1.6, and 10.4.2.3, Revision 36.

The inspectors performed walkdowns of the following areas to ensure that the flood protection features were consistent with the UFSAR description:

- service water impoundment;
- yard storm drains;
- Unit 1 and 2 auxiliary feedwater / quench spray tunnel;
- Unit 1 and 2 electrical switchgear rooms; and,
- Unit 1 and 2 cable vaults.

During these walkdowns the inspectors also assessed, as appropriate, the material condition of culverts, dikes, flood barriers, doors, floor drains, sumps, sumps level switches and sump pumps. Corrective action documents were reviewed to ensure that observed material deficiencies were being identified for correction.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors selected the Unit 1 and 2 turbine driven auxiliary feedwater (TDAFW) pump lube oil coolers to evaluate licensee actions to ensure that they would support operation of the TDAFW system during accident conditions. These heat exchangers were chosen due to the risk significance of the TDAFW system. To verify that the lube oil coolers were being properly maintained and tested, and that adverse conditions were being identified and corrected, the inspectors reviewed the following documents:

- 2-MPM-0102-01, "Unit 2 Auxiliary Feed Pump Preventive Maintenance," Revisions 4 and 5;
- 1-PT-71.1Q, "1-FW-P-2, Turbine Driven Auxiliary Feedwater Pump, and Valve Test," Revision 31;
- 2-PT-71.1Q, "2-FW-P-2, Turbine Driven Auxiliary Feedwater Pump, and Valve Test," Revision 29;
- Plant Issue N-2001-0656, mud type material found in TDAFW pump lube oil cooler tubes;
- Engineering Transmittal (ET) SE-97-053, "Cooling Water Flow Rate For The TDAFW Pump Lube Oil Cooler," Revision 0; and,
- Calculation ME-0579, "Minimum Delivered (Design Basis) AFW Flow and Acceptance Criteria for AFW Pump Operability Verification Testing," Revision 2.

Lube oil cooler flow data from the six quarterly completed 1-PT-71.1Q procedures (February 16, 2000 - January 17, 2001) and the five quarterly completed 2-PT-71.1Q procedures (January 5, 2000 - December 6, 2000) was reviewed to determine if flow met requirements specified in procedures and calculations.

b. Findings

One licensee identified violation is described in section 4OA7.

1R08 Inservice Inspection (ISI) Activities

a. Inspection Scope

The inspectors evaluated ISI activities during the Unit 2 refueling outage to determine the effectiveness of the licensee's American Society of Mechanical Engineers (ASME) Section XI ISI program. This was the third outage of the third period of the second interval. The inspectors reviewed procedures, documents, and selected ISI records and observed the ISI work activities listed below:

- NAPS U2 Inservice Inspection Program Second Interval Status, 10/30/2000;
- S/G Monitoring Program Pre-Outage Assessment, North Anna Unit 2 - Spring 2001, 2/12/01;
- QA Surveillance Plan for Eddy Current - OQA-EC-SIP-1, R/5;
- North Anna Power Station Units 1 & 2, Annual Steam Generator Inservice Inspection Summary Report, 2/26/01;

- Eddy Current Acquisition Procedure, MRS-SSP-1120-VP, R/1;
- North Anna Data Analysis Information Manual;
- Eddy Current Analysis Orientation and Training Program, 2/2000;
- Site Specific Data Analysis Guidelines NAPS-SGPMS-001, R/4, 1/14/01;
- Radiographic films:
 - 3"- CH - 377-1502-Q2, welds #47W, 14, 35, & 13
 - 16"- WFPD - 424-601C-Q2, weld #75;
- VT-3 examinations of support hangers in containment:

Line: 2-CH-496-1502-Q1	Hanger: R-23 Rigid vertical
2-CH-494-1502-Q1	R-18 Rigid vertical
2-CH-492-1502-Q1	SH-33 Spring;
- UT examination of S/G 'A' FW Nozzle, Weld # 16" WFPD-424-601C-02;
- NA U2 ISI Database verse the Controlled WMKS ISI Isometric Drawings;
- Virginia Power Containment Inservice Inspection Basis Document, R/0 1/19/01;
- Code Relief Requests.

The above observations and records were evaluated for compliance with the TS and Section XI of the ASME Boiler and Pressure Vessel Code, 1986 Edition, with no Addenda and licensee procedure North Anna Site Engineering Services (NASES) 6.05, "ASME Section XI NDE Examination Program." The inspectors evaluated that indications or defects, if present, were properly dispositioned. Qualification and certification records for examiners were reviewed to verify compliance with procedure NDE 4.4 "Virginia Power Written Practice for Certification of Nondestructive Examination Personnel to CP-189." Calibration records for equipment used during these activities were also reviewed for compliance with procedure NDE-UT-802, "Ultrasonic Examination of Ferric Piping Welds. The inspectors reviewed Corrective Action Plant Issues Database with respect to ISI/NDE issues to verify that the licensee was identifying and correcting ISI/NDE issues. Special visual examinations for boron deposits were conducted in the area of the reactor vessel head and the main loop connections to the reactor vessel, due to recent problems reported at other reactors. The inspectors observed acquisition and analysis of the 2nd 10-yr reactor vessel ISI data and verified compliance to the "NA U2 Year 2001 Reactor Vessel Examination, Program Plan," Revision 3. Discussions were held with regards to the eddy current testing techniques and analysis of the steam generator low row u-bend tubes due to problems reported at other facilities.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

On January 31, the inspectors observed licensed operator requalification simulator training sessions for two groups of operators/supervisors. The sessions involved: loss of instrument air; failure of a pressurizer transmitter; turbine lube oil failures; high main turbine vibration problems; and a loss of all AC power. The inspectors also attended the

critiques which followed each session. The inspectors evaluated performance in the following areas:

- knowledge of regulatory and specific plant technical issues;
- phonic alphabet and use of “three-way” communications;
- problem-solving and decision-making skills of supervisory personnel;
- supervisory “command and control” techniques;
- crew involvement in the exercise; and,
- critique adequacy.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

The inspectors reviewed implementation of the Maintenance Rule (10 CFR 50.65) using VPAP 0815, “Maintenance Rule Program,” Revision 11, and ET CEP-97-0018, “North Anna Maintenance Rule Scoping and Performance Criteria Matrix,” Revision 12. The reviews focused on the characterization of failures, the appropriateness of the a(1) or a(2) classification, and the appropriateness of either the associated a(2) performance criteria or the a(1) goals and corrective actions. The plant issues and associated equipment issues reviewed were:

- N-2001-0150 - Preventable Failure of the Unit 1 Annunciators;
- N-2000-2441 - Unit 2 B Main Control Room Chiller Trip;
- N-2001-0208 - Unit 2 B Main Control Room Chiller Out of Service;
- N-1999-2521 and N-1999-2536 - Corrective Actions (A Main Condenser Dumps);
- N-2000-2146 - Stack A Particulate Monitor Alarms (Radiation Monitor 1-VG-RM-104);
- N-2000-1057 - Corrective Actions (B Main Condenser Dumps); and
- N-2000-1061 - 1H Emergency Diesel Generator Failure to Start (Hydraulic Lock).

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 scheduled or emergent work activities to assess the management of plant risk. The inspectors evaluated if the assessments of risk were performed in accordance with requirements of 10CFR50.65 (a)(4) and plant procedures. Additionally, the inspectors reviewed the licensee’s actions to minimize the probability of initiating events, maintain the functional capability of mitigating systems, and maintain

barrier integrity. The risk impact of performing the following work activities was assessed:

- Work Order 00432184-01, Greasing Unit 1 (1-IA-C-01) Instrument Air Compressor Motor Bearings;
- Work Orders 00438457, 00442739, and 00432476; Annual Preventive Maintenance on Unit 2 Service Air Compressors;
- Work Order 00433044-01, Replacing Overload Relays/Heaters for the Unit 1 Instrument Air Compressors;
- Work Orders 00445660-01, -02 and -03, Troubleshoot and Repair the 1J Emergency Diesel Generator for Load Swing Problems;
- Work Activities Associated with Unit 2 Vessel Head Removal (Plant Issue N-2001-0748) - Inspection Focused On (Level III) Risks/Effects From Failed Fuel Element Gases; and
- Projected Work Activities Associated with Quench Spray/Recirculation Spray System Motor-Operated Valves (MOVs) - Obtained By Review of Licensee-Identified MOV Risk Ranking Documentation.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Plant Evolutions

a. Inspection Scope

On January 19, the inspectors observed plant personnel performance during a Unit 2 shutdown due to TS limits on RCS identified leakage. Activities observed and evaluated included: activities to identify the leakage source, the pre-shutdown brief, the maintenance repair and planning meeting, and operator activities during the shutdown such as procedure use. The inspectors also reviewed operator logs and the related Plant Issue N-2001-0122.

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 reviewed operability evaluations were described in the following plant issues:

- N-2001-2468-E1 - Rebaseline on all Service Water Pumps;
- N-2001-0082-E1 - Operability Determination of 1H EDG by Shift Supervisor;

- N-2001-0211-E1 - Type HK and K-Line Circuit Breakers - Part 21 Response;
- N-2001-0360-E1 - Unit 2 Main Turbine Generator Exciter Voltage Control Spike;
- N-2001-0564-E1 - Small Loss of Lube Oil During Testing (2H EDG); and,
- N-2001-0569-E-1 - Loss of Unit 2 Control Bank B Step Counter During Shutdown.

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds (OWAs)

a. Inspection Scope

The inspectors reviewed the OWA database to determine the significance and current status of OWAs. The inspectors reviewed operator OWA 00-OWA-A01, monitoring of the central area exhaust damper accumulators following a design basis accident with loss of instrument air. The inspectors discussed the OWA with operations personnel to ensure that it did not distract from the use of emergency operating procedures and that they were familiar with the associated standing order No. 229, Revision 0.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following post-maintenance test (PMT) activities and procedures associated with repair/replacement of the following components to determine that the procedures and test activities were adequate to verify operability and functional capability of the equipment:

- Unit 2 C Charging Pump maintenance (2-PT-14.3, "Charging Pump 2-CH-P-1C," Revision 33);
- Unit 2 B Charging Pump maintenance (2-PT14.2, "Charging Pump 2-CH-P-1B," Revision 34, and 2-PT-213.2 B.1, "Valve Inservice Inspection for SW Supply Check Valves to 2-CH-P-1B Lube Oil and Gear Box Coolers," Revision 11-P1);
- Unit 2 A Outside Recirculation Spray Pump maintenance (2-PT-64.1.1, "Outside Recirculation Spray Pump 2-RS-P-2A," Revision 14);
- Unit 1 J Emergency Diesel Generator maintenance (1-PT-82.3B, "1J Diesel Generator Test (Simulated Loss of Off-site Power in Conjunction with an ESF Actuation Signal)," Revision 24);
- Unit 2 C Charging Pump maintenance (2-PT-14.3, "Charging Pump 2-CH-P-1C," Revision 33, second repair since the initial January 8 repair); and,
- Unit 2 B Component Cooling Heat Exchanger outlet isolation valve repair activities (0-MCM-0400-24, "Repair of Safety-Related and Non-Safety-Related Gate and Globe Valves," Revision 4).

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

The inspectors reviewed the licensee's Unit 2, Spring 2001, outage risk control plan. The review focused on risk considerations, industry experience, and the licensee's response strategies for losses of key safety functions. The inspectors observed the power reduction to when the generator was taken offline on March 11. During the refueling outage, the inspectors observed, reviewed and evaluated, as applicable, various activities such the 18 month 2H EDG 24 hour surveillance, routine outage reports and maintenance rule related activities.

As part of emergent work inspections, the inspectors reviewed repair activities for safety injection (SI) accumulator cracks discovered at the beginning of the refueling outage. This discovery was documented in the licensee's corrective action program as Plant Issue N-2001-0586. Other degradations with the potential to contribute to leakage were documented in Plant Issues N-2001-0632 and N-2001-0671.

The inspectors also reviewed level 3 visual examination video tapes associated with the vessel ISI inspection on March 27. The purpose of the review was to identify possible signs of damage to the core barrel, locking pins, or vessel walls after the licensee had experience difficulty in lifting the lower internals from the vessel.

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-PT-71.3Q, "2-FW-P-3B Motor Driven AFW Pump and Valve Test," Revision 22;
- 2-PT-36.9.1J, "Degraded Voltage/Loss of Voltage Functional Test:2J," Revision 5;
- 2-PT-71.2Q, "2-FW-P-3A Motor Driven AFW Pump and Valve Test," Revision 20;
- 2-PT-83.7H, "2H EDG 24-Hour Run," Revision 6;
- 2-PT-33.10, "Reactor Trip System Channel Functional Test for Reactor Coolant Pump Bus 2A Under Frequency," Revision 6; and,

- 1-PT-36.1B, "Train B Reactor Protection and ESF Logic Channel Functional Test," Revision 35.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed temporary modification packages associated with the Unit 2 vital bus 2-IV inverter (number 1136) and the Unit 1 auxiliary service water pump discharge pressure indication (number 1694). The review focused on the 10 CFR 50.59 screening adequacy and impact of the temporary modification on system operability/availability.

The inspectors also reviewed proposed changes to UFSAR Chapter 15 "Safety Analysis." Members of the safety analysis change group from Innsbrook were interviewed in order to assess background information and the basis for the proposed chapter 15 changes. The review/interviews focused on the basis for changes and technical "soundness" of such proposed changes. It also focused on impacts of the proposed changes (including calculation changes) on the overall safety analysis for the units.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

On February 28, the inspectors observed an emergency preparedness drill which the licensee used for emergency preparedness performance indicator (PI) data. Activities in the technical support center, the local emergency operation facility, and the simulator control room were evaluated. The evaluation included communication effectiveness, implementation of the emergency plan, emergency action level determinations and protective action recommendations. The inspectors attended the drill critique to determine its adequacy for identifying deficiencies and weaknesses.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas

a. Inspection Scope

To evaluate the licensee's control of access to radiologically significant areas, the inspectors performed plant walkdowns of radiologically controlled areas; reviewed selected radiation work permits; observed pre-job briefings and work-in-progress; interviewed workers about their knowledge of radiation work practices; and observed postings and control of access to radiological control areas, high radiation areas, and extra high radiation areas. In addition, the inspectors interviewed the shift health physics supervisor with respect to control of keys to locked high radiation and very high radiation areas and reviewed procedure C-HP-1032.061, "High Radiation Area Key Control," Revision 0. Selected plant issues associated with health physics were reviewed and evaluated for assignment, closeout timeliness and trending. Licensee activities were evaluated against TS and 10 CFR Part 20 requirements.

Audit Report 00-07, "Radiological Protection / Process Control Program," dated September 6, 2000, was reviewed and the findings evaluated for significance and timely correction.

b. Findings

No findings of significance were identified.

2OS2 As Low As Is Reasonably Achievable (ALARA) Planning and Controls

a. Inspection Scope

The inspectors reviewed policies, procedures, and records regarding plant ALARA activities. Specific program elements reviewed included: plant collective exposure history, current exposure dose trends, annual and outage dose goals, radiation exposure tracking, and source term reduction initiatives. To assess the licensee's performance in maintaining radiation exposures ALARA, the inspectors reviewed the 2000 Annual ALARA Report, a summary of personnel radiation exposures and radiation protection activities from the Unit 1 Refueling and 10-Year ISI Outage Report. The latter report primarily addressed routine refueling and maintenance activities during the Spring 2000 Unit 1 refueling outage (RFO). The inspectors also reviewed the Outage ALARA Guide, written as an aid for all workers and supervision in maintaining personnel radiation exposures ALARA during the Unit 2 RFO in March 2001, and the 50-Rem Outage Action Plan for that outage, which listed suggestions to reduce personnel exposure from that of the previous Unit 1 RFO, which established a licensee record. The inspectors reviewed licensee ALARA activities related to the Unit 2 refueling outage, which was in progress during the inspection, and evaluated its implementation against plant procedures, TSs, and 10 CFR requirements. Specific program elements

evaluated included: pre-job work and ALARA briefings; knowledge of radiological hazards faced by health physics technicians and workers assigned to work in radiologically-significant areas; source term reduction program via shutdown chemistry (i.e., crud burst and subsequent removal of radioactive particulates from the reactor coolant system via filters and demineralizers); and minimization of radiation worker exposure by teledosimetry controls. Exposure to declared pregnant workers for calendar year 2000 and year-to-date 2001 was discussed with the ALARA coordinator and licensee program implementation was evaluated. The effectiveness of problem identification and resolution of selected ALARA-related issues identified by the licensee during the past several months was also evaluated by the inspectors through the review of selected plant issues and self-assessments.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

a. Inspection Scope

The inspectors interviewed cognizant personnel and walked down the major components of the gaseous and liquid release systems to observe ongoing activities, equipment material condition, and the system configuration, as compared to the description in the UFSAR. The following items were reviewed and compared with regulatory requirements:

- 1999 Radiological Effluent Release Report;
- Changes to the Offsite Dose Calculation Manual and to the radioactive waste system design and operation;
- Anomalous results, if any, reported in the Radiological Effluent Release Report;
- Effluent radiological occurrence performance indicator incidents;
- Sample collection and analysis of the process vent gaseous effluent release point;
- Selected radioactive effluent release permits and associated projected doses to members of the public (00-MGR-02, 00-MGE-44, 00-MGR-76, 00-MGR-100, 00-MGR-105, 00-MGR-111, 01-VV-03, 00-WGDT-01 thru 07, 99-RXC-02 through 05, 00-RXC-01 through 05, 00-CE-03, 00-CE-03, 00-MLBATCH-01, 00-LBATCH-01);
- Compensatory sampling and radiological analyses conducted when effluent monitors were declared out-of-service;
- Monthly, quarterly, and annual dose calculations;
- Air cleaning system surveillance test results (1-HV-FL-3A, 1-HV-FL-3B, 1-HV-FL-8, 1-HV-FL-9, 2-HV-FL-8, 2-HV-FL-9);
- Records of instrument calibrations performed since the last inspection for each point of discharge effluent radiation monitor and flow measurement device;

- Effluent radiation monitor alarm setpoint values;
- Calibration and quality control records of counting room instrumentation associated with effluent monitoring and release activities;
- Audits (Nuclear Oversight Audit 99-13) and self assessments (C-HP-1091.273, "Radioactive Effluent Control Program Evaluation," 5/2/2000) related to the radioactive effluent treatment and monitoring program; and
- Selected plant issue reports related to the radioactive effluent treatment and monitoring program (N-1999-2765, 2886, 2902, N-2000-0695, 1010, 1243, 1370, 1925, 2231, 2467, 2591, 2611, 2623, 2655, 2681, 2776, N-2001-0039, 0060, 0071, 0104, 0117, and 0168).

b. Findings

No findings of significance were identified.

2PS2 Radioactive Material Processing and Transportation

.1 Radioactive Waste Processing

a. Inspection Scope

During the week of March 12, 2001, radiation protection program activities for the characterization, temporary storage, and preparation of radioactive waste (radwaste) for subsequent transport to licensed processing or burial facilities were evaluated. Representativeness of radioactive waste stream samples used for waste classification was verified. The adequacy and accuracy of licensee and vendor radiochemical sample analysis results used to determine scaling factors and calculations to account for difficult-to-measure radionuclides for selected calendar year 2000-2001 dry active waste (for Unit 1, Unit 2, and common), Auxiliary Building sludge, primary system resin, and liquid waste resin streams were reviewed and discussed. During tours of the liquid radioactive waste processing and on-site storage facilities, the inspectors observed and evaluated material condition and housekeeping; reviewed and verified radwaste inventories; and evaluated controls for selected radioactive waste containers and storage areas. In addition, walk-downs of the liquid radwaste system elements abandoned in place were conducted. Also, the inspectors observed the transfer of radioactive sludge from fluid waste treatment tank 1-DC-TK-2 into a liner/shipping cask in preparation for shipment to a processor prior to final disposal, including pre-job and ALARA briefings.

The liquid radioactive waste processing equipment and storage areas were verified against UFSAR and Process Control Program (PCP) details. Program guidance and implementation were evaluated against 10 CFR Parts 20 and 61, and the TSs.

b. Findings

No findings of significance were identified.

.2 Transportation Activitiesa. Inspection Scope

Radiation protection program activities associated with packaging, and transportation of radioactive material/waste were reviewed. Shipping papers and supporting documentation were reviewed and evaluated for accuracy and completeness. Records of the following radioactive waste or radioactive material shipments were reviewed and discussed.

- 00-04, Radioactive Material, LSA, not otherwise specified (n.o.s.), 7, UN2912, De-watered Bead Resin, 12/7/00;
- 00-4005, Radioactive Material, Excepted Package - Limited Quantity, 7, UN2910, 10/17/00;
- 00-2028; 10 packages of Radioactive Material, Surface Contaminated Object (SCO), 7, UN2913, Fissile Excepted; 10 packages of Radioactive Material, Excepted Package - Limited Quantity, 7, UN2910, Fissile Excepted;
- 00-03, Radioactive Material, LSA, n.o.s., 7, UN2982, Fissile Excepted, RQ - Radionuclides, De-watered Primary Bead Resin, 06/20/00; and,
- 01-5000, Radioactive Material, LSA, n.o.s., 7, UN2982, RQ - Radionuclides, De-watered Primary Bead Resin, 1/22-30/01.

Transportation activities were evaluated against 10 CFR Parts 20 and 71, and 49 CFR Parts 170 -189 requirements.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES40A1 Performance Indicator (PI) Verification.1 RCS Leakage PI (Barrier Integrity)a. Inspection Scope

The inspectors performed a periodic review of the RCS Leakage PI for Units 1 and 2. Specifically, the inspectors reviewed the performance indicator data from the third quarter of 2000 through the first quarter of 2001. Documents reviewed included applicable daily operator logs and leak rate calculations.

Additionally, the inspectors reviewed the PI data for the RCS identified leakage associated with the Unit 2 TS shutdown on January 19. It was determined from this

review that the maximum TS calculated monthly RCS leakage was at the TS limit of 10.0 gpm.

b. Findings

No findings of significance were identified. The leakage resulted in a Unit 2 White RCS leakage PI per the guidance in NEI 99-02.

.2 RCS Specific Activity PI (Barrier Integrity)

a. Inspection Scope

The inspectors performed a periodic review of the RCS Specific Activity PI for Units 1 and 2. Specifically, the inspectors reviewed PI data from the second quarter of 2000 through the first quarter of 2001. Documents reviewed included unit operating reports, chemistry sample records, and licensee chemistry department self-assessment reports. As part of this inspection, the inspectors also discussed the PI with chemistry department personnel and managers, and the PI input personnel and coordinators.

b. Findings

No findings of significance were identified.

.3 Unplanned Scrams per 7000 Critical Hours PI (Initiating Events)

a. Inspection Scope

The inspectors performed a periodic review of the Unplanned Scrams per 7000 Critical Hours PI for Units 1 and 2. Specifically, the inspectors reviewed PI data from the third quarter of 2000 through the first quarter of 2001. Documents reviewed included applicable operating reports, licensee self-assessment reports and event reports. As part of this inspection, the inspectors also discussed the PI with the PI input personnel and coordinators.

b. Findings

No findings of significance identified.

.4 Scrams With Loss of Normal Heat Removal PI (Initiating Events)

a. Inspection Scope

The inspectors performed a periodic review of the Scrams With Loss of Normal Heat Removal PI for Units 1 and 2. Specifically, the inspectors reviewed PI data from the third quarter of 2000 through the first quarter of 2001. Documents reviewed included unit operating reports and licensee self-assessment reports. As part of this inspection, the inspectors also discussed the PI with the PI input personnel and coordinators.

b. Findings

No findings of significance identified.

.5 Unplanned Power Changes per 7000 Critical Hours PI (Initiating Events)

a. Inspection Scope

The inspectors performed a periodic review of the Unplanned Power Changes per 7000 Critical Hours PI for Units 1 and 2. Specifically, the inspectors reviewed PI data from the third quarter of 2000 through the first quarter of 2001. Documents reviewed included unit operating reports and licensee self-assessment reports. As part of this inspection, the inspectors also discussed the PI with the PI input personnel and coordinators.

b. Findings

No findings of significance identified.

.6 Safety System Unavailability PI (Mitigating Systems)

a. Inspection Scope

The inspectors performed a periodic review of the Safety System Unavailability PI for Units 1 and 2. Included in the review was unavailability associated with Emergency AC Power Systems, High Pressure Injection Systems, Auxiliary Feedwater Systems, and Residual Heat Removal Systems. Specifically, the inspectors reviewed PI data from the third quarter of 2000 through the first quarter of 2001. Documents reviewed included unit operating reports, licensee maintenance rule unavailability data comparisons, and licensee self-assessment reports. As part of this inspection, the inspectors also discussed the PI with the PI input personnel and coordinators.

b. Findings

No findings of significance identified.

.7 Safety System Functional Failures PI (Mitigating Systems)

a. Inspection Scope

The inspectors performed a periodic review of the Safety System Functional Failures PI for Units 1 and 2. Specifically, the inspectors reviewed PI data from the third quarter of 2000 through the first quarter of 2001. Documents reviewed included applicable unit operating reports, licensee maintenance rule functional failure data comparisons, and licensee self-assessment reports. As part of this inspection, the inspectors also discussed the PI with the PI input personnel and coordinators.

b. Findings

No findings of significance identified.

.8 Occupational Exposure Control Effectiveness PI (Occupational Radiation Safety)

a. Inspection Scope

The inspectors reviewed licensee condition reports for the previous 12 quarters (1st quarter 1998 through 4th quarter 2000) for high radiation area, very high radiation area, and unplanned exposure occurrences to assess whether non-conformances were properly classified as PIs. The licensee's database, which contains radiologically-controlled area (RCA) exit transactions with exposures greater than 100 mrem, was reviewed by the inspectors to determine whether the exposures were within RWP limits and whether any met this criteria for a PI.

b. Findings

No findings of significance were identified.

.9 RETS/ODCM Radiological Effluent Occurrences PI (Public Radiation Safety)

a. Inspection Scope

The inspectors reviewed licensee condition reports for liquid or gaseous effluent releases that were reported to the NRC and licensee event reports for the past four quarters (calendar year 2000) and the 1999 Annual Radioactive Effluent Release Report to assess whether all radiological effluent release occurrences in excess of limits were counted as PIs.

b. Findings

No findings of significance were identified.

40A3 Event Follow-up

.1 Event Review - RCS Leak

a. Inspection Scope

The licensee declared a Notice of Unusual Event on January 19, 2001, based upon the Unit 2 RCS identified leakage rate. The inspectors evaluated the licensee's entry into and exit from the emergency action level based upon guidelines contained in attachment 1 of the emergency plan implementing procedure EPIP-1.01, "Emergency Action Level Table (TAB B) Reactor Coolant System Event," Revision 33. The inspectors reviewed the accuracy and timeliness of the notifications made to the NRC, state, and county governments. The inspectors also evaluated if the licensee performed the shutdown and repairs to the C RCS loop bypass valve within the TS allowed times. The inspectors reviewed the associated Plant Issue N-2001-0122.

b. Findings

No findings of significance were identified.

.2 Event Review - Partial Loss of Unit 1 Control Room Annunciators

a. Inspection Scope

The licensee declared an Notice of Unusual Event on January 23, 2001, due to an unplanned loss of greater than 75% of the Unit 1 control room annunciators. The inspectors evaluated the licensee's entry into and exit from the emergency action level based upon guidelines contained in attachment 1 of the emergency plan implementing procedure EPIP-1.01, "Emergency Action Level Table (TAB A.11) Unplanned Loss of Most or All Safety System Annunciators for Greater Than 15 Minutes," Revision 33. The inspectors also reviewed the accuracy and timeliness of the notifications made to the NRC, state, and county governments. The inspectors observed the licensee's troubleshooting activities, assessed their follow-up corrective actions, and reviewed the related Plant Issue N-2001-0150.

b. Findings

No findings of significance were identified.

.3 Event Review - Entry Into TS 3.0.3

a. Inspection Scope

On January 25, the licensee entered into TS 3.0.3 as a result of drifting individual rod position indications. The inspectors evaluated the licensee's action associated with preparations to commence a shutdown as required by the TS; however, the problem was corrected before the shutdown began. The inspectors reviewed the related Plant Issue N-2001-0185.

b. Findings

No findings of significance were identified.

.4 Event Review - Copper Electrical Lug Replacement

a. Inspection Scope

In January 1999, the licensee discovered a damaged "Raychem-type" covered lead to the Unit 1 B High Head Safety Injection/Charging pump (Plant Issue N-1999-0017). The cause of the problem was the use of a copper lug on an aluminum power lead. As part of their corrective actions, the licensee planned to inspect and if necessary replace any copper lug on aluminum lead configurations on Unit 2. The inspectors noted that similar Unit 2 connections were in fact inspected/replaced while Unit 2 was in its refueling outage. The inspectors reviewed work orders 00403402-01 and 00400866-02 and interviewed supervisory and craft personnel as part of this confirmation.

b. Findings

No findings of significance were identified.

.5 Event Review - Top Nozzle Separation From Spent Fuel Assembly

a. Inspection Scope

On March 24 a top nozzle separated from a fuel assembly which then fell approximately eleven and one half feet into its designated spent fuel rack location. The separated top nozzle and burnable poison rod assembly remained attached to the refueling tool. Based upon visual inspections and prior industry events, the licensee suspected that the top nozzle thermal sleeves torn apart at the rolled connections between the top nozzle thermal sleeves and the bottom guide thimble tubes. Follow up evaluations by the licensee revealed no evidence of damage to the fuel rack or the spent fuel pool liner. At the end of the report period, the licensee had suspended all fuel movement activities for similarly designed and manufactured fuel assemblies until a category 1 root cause evaluation of the event was completed. The inspectors examined digital pictures of the failed assembly and discussed the circumstances surrounding this event and similar events at other nuclear facilities with operations, engineering and management personnel.

b. Findings

No findings of significance were identified.

.6 (Closed) Unresolved Item (URI) 50-338, 339/00007-02: Compliance with Appendix R and Risk Significance of Fire Induced Failures on Unprotected Cable Routing of the PORVs (pressurizer power operated relief valves), Block Valves, and MFW (main feedwater) Cables Inside the Emergency Switchgear Room and in the Cable Vault and Tunnel.

This URI involved a deficiency in the licensee's safe shutdown analysis for a fire in the emergency switchgear room and in the cable vault and tunnel. The licensee's safe shutdown analysis did not evaluate the impact that fire induced failures on non-safety related systems may have on their facility with regard to post-fire safe shutdown. This could result in an increased probability that the post-fire alternate safe shutdown systems could be adversely affected by fire-induced failures on non-safety related systems located in the same fire area. The URI was opened pending NRC review of the risk significance of this issue.

During the fire protection baseline inspection, the inspectors questioned whether the cable routing of the circuits for post-fire safe shutdown equipment (the power operated relief valves and block valves) may be adversely affected since the circuits for the equipment were not routed independent of the fire areas and were not protected with fire barrier wraps. This equipment was used in the fire contingency action procedures in addition to Appendix R equipment that was analyzed for independence. This issue was in the licensee's corrective action program as Plant Issue Resolution N-2000-1593-R2. The licensee responded by providing the inspectors documentation of a NRC approved

technical exemption to Appendix R, Section III.G.2 dated November 6, 1986. The exemption was requested for protection of the low current circuits for the power operated relief valves and block valves routed in dedicated steel conduits within these fire areas. Based on an in-office review of the exemption documentation, the inspectors determined that no licensee performance issues existed for the power operated relief valves and block valve circuits. This issue did not constitute a violation of NRC requirements.

Additionally, during the baseline inspection, the inspectors identified that unprotected circuits for the power and control of pumps and valves associated with the main feedwater system were also routed through the emergency switchgear room and cable vault and tunnel. The routing of the main feed water system cables and circuits was not specifically traced by the licensee as part of the safe shutdown analysis. This performance issue was included in the URI and a Phase III risk evaluation was performed of the possible ramifications that inadvertent operation of the main feed water system during a fire could have on safe shutdown equipment used to comply with Appendix R.

For the fire areas reviewed in the baseline inspection, the NRC assessed the significance of this performance issue as being of very low risk significance (Green). Two areas were considered: the emergency switchgear room, and the cable vault and tunnel room. Three interaction modes of the main feedwater system were considered. These were constantly providing feedwater to the steam generators, providing no feedwater to the steam generators and providing intermittent feedwater to the steam generators. The information provided in the licensee's Individual Plant Examination of External Events (IPEEE) was used to determine initiating event frequencies and the dominate accident sequences for fires in these rooms. Providing no feedwater to the steam generators from the main feedwater system was consistent with the assumptions of the safe shutdown analysis and was considered to provide no risk increase. In the situation of providing too much feedwater, the overflow protection system/operator response to the condition would have to fail to cause any impact. In the situation of intermittent operation, there would be additional cycling (with additional failure opportunities) of auxiliary feedwater control valves. Such an increase in valve failure probability would have an extremely minor increase in auxiliary feedwater system failure. The NRC did not evaluate this issue for the other fire areas in the plant since they were not within the scope of this inspection. On that basis, the potential risk significance of this issue as it may apply to other fire areas was not evaluated.

The failure to analyze for the effect on the post-fire safe shutdown capability of fire induced failures on the main feedwater system cables routed through the emergency switchgear room, and cable vault and tunnel is a violation of the requirements of 10 CFR 50, Appendix R, Section III.G.2. Because this violation is of very low safety significance and the problem was entered into the corrective action program (Plant Issue Resolution N-2000-1926-R13), this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is designated as NCV 50-338, 339/00006-02.

- .7 (Closed) URI 50-338, 339/0007-04: Determination of the Risk Significance of Allowing Depressurization of the Steam Generators if the Reactor Coolant Level is not Within the Level Indication in the Pressurizer.

This URI involved a licensee identified deficiency in emergency switchgear room fire contingency action procedure, 1-FCA-2. In response to a fire, the procedure directed the operator to continue depressurization of the steam generators even if the pressurizer level was lost or if voiding occurred in the reactor vessel upper head. This action was not consistent with the 10 CFR Part 50, Appendix R, Section III.L.2 performance goal for a pressurized water reactor, in that, the makeup function be capable of maintaining level within the indicated level of the pressurizer. The URI was opened pending NRC review of the risk significance of this issue.

Based on an in-office review, the inspectors determined that the licensee resolved this condition under Plant Issue Resolution N-2000-0469-R3. This resolution included revision of procedures 1-FCA-2 and 2-FCA-2 to coordinate reactor coolant system cooldown and pressurizer level control. Plant issue resolution documentation also indicated that all the plant operating shifts completed training on the revised procedures on November 21, 2000.

Using the North Anna Individual Plant Examination of External Events, a Phase 3 significance determination evaluation was performed. The evaluation determined that the lack of procedural controls to preclude voiding the pressurizer and blocking natural circulation was a detractive performance shaping factor to operator performance when using the procedure. However, other shaping factors such as operator training and the time available to ensure an adequate cooldown rate counter balanced its negative effects. This evaluation determined that the procedure deficiency had a very low risk significance, based on the low potential associated with using the fire contingency action procedure and because the procedure deficiency would not have prevented the operators from achieving shutdown of the reactor.

However, the failure to have adequate procedural controls for implementation of post-fire safe shutdown capability in the event of a fire constitutes a violation of Technical Specification 6.8.1.a and Regulatory Guide 1.33 Appendix A, Item 6.p which require written procedures be established for plant operations during emergencies such as a fire. Since this issue has already been corrected and was found to be of very low safety significance, the violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy. This issue is identified in Section 4OA7 as NCV 50-338, 339/00006-03.

4OA6 Meetings

Exit Meeting Summary

The inspectors presented the inspection results to Mr. D. Heacock, Site Vice President, and other members of the licensee's staff on April 17, 2001. 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.

4OA7 Licensee Identified Violations: The following findings of very low significance were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as NCVs.

<u>NCV Tracking Number</u>	<u>Requirement Licensee Failed To Meet</u>
50-338, 339/00006-01	Technical Specification 6.8.1.a and Appendix A, Item 9.b of Regulatory Guide 1.33, Revision 2, require that preventive maintenance schedules be developed to specify inspections of equipment. Prior to March 12, 2001, the licensee had not inspected the turbine driven auxiliary feedwater pump lube oil coolers on a specified schedule. The preventive maintenance adequacy and frequency is being addressed as part of the root cause evaluation associated with Plant Issue N-2001-0656.
50-338, 339/00006-03	Technical Specification (TS) 6.8.1.a and Regulatory Guide 1.33, Appendix A, Item 6.p, require written procedures for plant operations during emergencies such as a fire. The licensee failed to have an adequate procedure in the event of a fire in the emergency switchgear room. Reference Plant Issue Resolution N-2000-0469-R3 and URI 50-338, 339/00007-04. (See Section 4OA3.7)

Attachment 1

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Christian, Senior Vice President and Chief Nuclear Officer
J. Breeden, Supervisor, Radiation Analysis and Material Control
J. Crossman, Manager, Licensing
J. Davis, Manager, Station Nuclear Safety and Licensing
E. Dreyer, Supervisor, Health Physics Technical Services
C. Funderburk, Manager, Station Operations and Maintenance
G. Griffith, Supervisor, Instrumentation and Controls
D. Heacock, Site Vice President
E. Hendrixson, Superintendent, Station Engineering
P. Hensley, Supervisor, Water Treatment
L. Jones, Assistant Superintendent, Radiation Protection
P. Kemp, Director, Nuclear Oversight
L. Lane, Superintendent, Operations
T. Maddy, Superintendent, Station Security
W. Matthews, Vice President, Nuclear Operations
R. Page, Plant Radiation Monitoring Engineer
W. Renz, Director, Security and Emergency Preparedness
H. Royal, Superintendent, Nuclear Training
D. Schappell, Superintendent, Site Services
J. Schleser, ALARA Coordinator
R. Shears, Superintendent, Maintenance
A. Stafford, Superintendent, Radiological Protection

ITEMS OPENED AND CLOSED

Items Opened and Closed

50-338, 339/00006-01	NCV	Failure to develop an inspection schedule for the turbine driven auxiliary feedwater pump lube oil coolers (Section 4OA7)
50-338, 339/00006-02	NCV	Failure to analyze for the affect on the post-fire safe shutdown capability of fire-induced failures of the main feedwater system (Section 4OA3.6)
50-338, 339/00006-03	NCV	Inadequate procedural guidance for implementing alternate shutdown for a fire in the emergency switchgear room (Section 4OA3.7 and 4OA7)

Closed

50-338, 339/00007-02	URI	Compliance with Appendix R and Risk Significance of Fire Induced Failures on Unprotected Cable Routing of the PORVs, Block Valves, and MFW Cables Inside the Emergency Switchgear Room and in the Cable Vault and Tunnel (Section 4OA3.6)
50-338, 339/00007-04	URI	Determination of the Risk Significance of Allowing Depressurization of the Steam Generators if the Reactor Coolant Level is not Within the Level Indication in the Pressurizer (Section 4OA3.7)

LIST OF DOCUMENTS REVIEWED

The following list includes documents and records reviewed during the inspection that are not identified in the body of the report for Section 4OA3.6:

- Plant Issue Resolution N-2000-1593-R2.
- Plant Issue Resolution N-2000-1926-R13.
- Letter W. Stewart to H. Denton, "Virginia Electric and Power Company, 10 CFR 50 Appendix R Re-analysis - Phase II," dated October 31, 1984.
- Letter T. Novak to W. Stewart, "Technical Exemption Requests From Appendix R, 10 CFR Part 50/ North Anna Power Station, Units no. 1 and 2," dated November 6, 1986.

Attachment 2

NRCs 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>.