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

October 28, 2005

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

SUBJECT: NORTH ANNA POWER STATION - NRC INTEGRATED INSPECTION REPORT NOS. 05000338/2005004 AND 05000339/2005004

Dear Mr. Christian:

On September 30, 2005, the United States Nuclear Regulatory Commission (NRC) completed an inspection at your North Anna Power Station, Units 1 and 2. The enclosed integrated inspection report documents the inspection findings, which were discussed on September 22, 2005, with Mr. Jack Davis and other members of your staff.

The inspections examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based upon the results of this inspection, six self-revealing findings of very low safety significance (Green) were identified. Five of these were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they were entered into your corrective action program, the NRC is treating these five findings as non-cited violations (NCVs) consistent with Section VI.A of the NRC Enforcement Policy. A self-revealing violation whose significance determination is to be determined was also identified. In addition, one licensee-identified violation, which was determined to be of very low safety significance (Green), is listed in Section 4OA7 of this report. If you contest any non-cited violation in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the North Anna Power Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if any, will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of

NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at *http://www.nrc.gov/reading-rm/adams.html* (the Public Electronic Reading Room).

Sincerely,

/RA/

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

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

Enclosures: Inspection Reports 05000338/2005004 and 05000339/2005004

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REGION II

Docket Nos.: 50-338, 50-339

License Nos.: NPF-4, NPF-7

Report Nos.: 05000338/2005004, 05000339/2005004

Licensee: Virginia Electric and Power Company (VEPCO)

Facilities: North Anna Power Station, Units 1 & 2

Location: 1022 Haley Drive
Mineral, Virginia 23117

Dates: July 1, 2005 - September 30, 2005

Inspectors: J. Reece, Senior Resident Inspector
G. Wilson, Resident Inspector
W. Loo, Senior Health Physicist, Sections 2PS1, 4OA5
R. Hamilton, CHP Senior Health Physicist, Sections 2OS1, 4OA1, 4OA5
A. Nielsen, CHP Health Physicist, Section 2OS3
F. Wright, Senior Health Physicist, Section 2PS3
L. Miller, Senior Emergency Preparedness Inspector, Sections 1EP2-1EP5, and 4AO1
M. Scott, Senior Reactor Inspector, Section 1R12
M. Maymi, Reactor Inspector, Section 1R12

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

Enclosure

SUMMARY OF FINDINGS

IR 05000338/2005-004, IR 05000339/2005-004; 07/01/2005 - 09/30/2005; North Anna Power Station Units 1 & 2. Routine Integrated Resident and Regional Report. Maintenance Effectiveness - Biennial Assessment. Emergency Preparedness Baseline. Radiation Safety.

The report covered a three-month period of inspection by the resident inspectors, health physicists, a senior emergency preparedness inspector, and reactor inspectors from the region. Six self-revealing Findings were identified. Five of these were determined to be Non-cited Violations (NCVs). A self-revealing violation whose significance determination is to be determined was also identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

Green. A self-revealing non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, was identified regarding a failure to promptly identify and correct deficiencies which caused anomalies in the Unit 2 channel 1 over-temperature delta-temperature (OTDT) instrumentation. The anormalies occurred during a lightning storm on July 29, 2003 and the licensee took no corrective actions to correct the condition. As a result, it was not until a Unit 2 automatic reactor trip from an OTDT signal on August 5, 2005, during a lightning storm, that the licensee identified an installation deficiency associated with a 1989 modification. A similar Unit 2 automatic reactor trip from an OTDT signal occurred during a lightning storm on September 17, 1998.

The finding had an impact on safety based on the deficiencies resulting in two reactor trips and a third documented "near miss" event. The finding was more than minor because it affected the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and the cornerstone attribute of design control. The finding is of very low safety significance because it did not contribute to the likelihood of a primary or secondary system loss of coolant accident, a loss of mitigation equipment functions or the likelihood of a fire or flood event. This finding contains aspects relating to the cross-cutting area of problem identification and resolution. (Section 1R14.1)

Green. A self-revealing finding was identified for untimely corrective action resulting in a rapid reduction of power on Unit 1 due to a severe oil leak on the valve actuator for 1-EH-TV-100, main turbine auto stop oil interface valve. A similar problem on this valve resulted in a manual reactor trip on April 19, 2003. Subsequent evaluations from a Unit 2 similar issue determined that torque values as specified by procedure for the valve actuator diaphragm bolts were below the values as recommended by the vendor, but untimely corrective actions resulted in a rapid Unit 1 down-power on August 5, 2005.

This finding had a credible impact on safety due to the challenge of plant control systems from the rapid reduction of power. The finding is consequently more than minor based on the impact to the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant stability and the cornerstone attribute of equipment reliability. This finding contains aspects relating to the cross-cutting area of problem identification and resolution. (Section 1R14.2)

Green. On July 22, 2005, a self-revealing non-cited violation of Technical Specification 5.4.1.a was identified for a failure to follow a surveillance procedure which resulted in placing an incorrect bistable in a trip condition on Unit 2. Only unexpected control room alarms occurred as a result of the performance deficiency since no other logic channel's bistables were in trip.

The inspectors determined that the finding is more than minor because it could reasonably be viewed as a precursor to a more significant event. If another channel in the logic had already been tripped, the plant would have been adversely affected. The finding is of very low safety significance (Green) because it did not involve any loss of coolant accident initiators, did not contribute to both a reactor trip or mitigating system unavailability, nor increase the likelihood of a fire. This finding contains aspects relating to the cross-cutting area of human performance. (Section 1R22.1)

Cornerstone: Mitigating Systems

Green. A self-revealing non-cited violation of Technical Specification 5.4.1.a was identified for an inadequate procedure which resulted in the loss of two Unit 1 safety-related 480V buses on May 1, 2005.

The finding had a credible impact on safety due to the loss of two safety-related 480V buses resulting in the loss of power to multiple B train components two minutes after a containment depressurization signal during a design basis accident. The finding is more than minor due to the impact on two cornerstones, Mitigating Systems and Barrier Integrity. A Phase II evaluation of the significance determination process concluded the finding was of very low safety significance (Green) because only the B train was affected, a two minute time delay allowed safety-related component reposition, and emergency procedures identified appropriate operation action for manual component operation following the fault. This finding contains aspects relating to the cross-cutting area of human performance. (Section 1R12)

Green. A self-revealing non-cited violation of 10 CFR 50, Appendix B, Criterion III, was identified for inadequate design controls. During the development of a service water (SW) expansion joint modification, which was implemented in December 2003, the licensee failed to verify the design adequacy of adjacent pipe support and restraints. The design failed to incorporate normal system pressure loads in the design. As a result, on June 14, 2005, during inspections of the SW expansion joints, the licensee noted severe damage on adjacent pipe support and restraints. Both the Unit 1 and Unit 2 'A' and 'B' trains of SW were affected. The SW system was determined to operable but degraded.

This finding had a credible impact on safety based on a design control error which impacted both trains of the SW system which is a link between the transfer of reactor decay heat to the plant's ultimate heat sink. The finding is more than minor due to the impact on the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage) and the cornerstone attribute of design control of plant modifications. The finding is of very low safety significance because the design deficiency was confirmed not to result in loss of function per Generic Letter 91-18. This finding contains aspects relating to the cross-cutting area of human performance. (Section 1R04.2)

TBD. A self-revealing violation of 10 CFR 50, Appendix B, Criterion XVI was identified for inadequate corrective action resulting in a flood potential for the Unit 1 and 2 safeguards instrument rack rooms. Corrective actions in October 2004, associated with water from a capped floor drain outside the air conditioning chiller room (ACCR) failed to identify that back-flow preventers where not installed in the floor drains between the ACCR and the air conditioning fan room (ACFR). As a result, the lack of floor drain back-flow preventers was not discovered until July 9, 2005, when water was unexpectedly transferred between with the ACCR and ACFR. The back-flow preventers are necessary to prevent leakage in the ACCR from bypassing the flood wall protecting the ACFR and adjoining safeguards instrument rack room from flooding.

The inspectors determined that the finding had a credible impact of safety based on the potential for flooding to impact the instrument rack room which contains both trains of Solid State Protection System cabinets used for engineered safeguards . The finding, if left uncorrected, would result in a more significant safety concern and is consequently more than minor. The finding involves a Phase III evaluation for the significance determination process due to the loss or degradation of equipment specifically designed to mitigate a flooding event and the impact on two trains of a safety system. This finding is unresolved pending completion of the significant determination assessment and involves aspects of the cross-cutting area of problem identification and resolution. (Section 1R06)

Cornerstone: Barrier Integrity

Green. A self-revealing non-cited violation of Technical Specification 5.4.1.a was identified for a failure to follow a maintenance procedure. On February 19, 2005, the Unit 2 'B' quench spray pump motor breaker overload setpoints were not set in accordance with procedures. As a result, the pump tripped while starting on August 19, 2005.

The finding had a credible impact on safety due to the starting failure of one of the components required to reduce containment pressure following a design basis accident. The finding was more than minor because it affected the Barrier Integrity cornerstone objective to provide reasonable assurance that the containment physical design barriers protect the public from radio nuclide releases caused by accidents or events, and the respective cornerstone of human performance. The finding was determined to be of

very low safety significance because it did not impact design deficiencies, result in a loss of system safety functions, exceed related TS outage times, nor involved a seismic, flooding, or severe weather initiating event. This finding contains aspects relating to the cross-cutting area of human performance. (Section 1R22.2)

B. Licensee-Identified Violation

One violation of very low safety significance was identified by the licensee, and has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and corrective action tracking numbers are listed in Section 4OA7 of this report.

CONTENTS

REPORT DETAILS

Summary of Plant Status

Unit 1 and Unit 2 began the inspection period at 100 percent power, and remained at or near 100 percent power for the entire reporting period except for minor power reductions to perform required periodic testing and the following events:

- Unit 1 experienced a rapid down-power event on August 5, 2005, due to severe oil leakage on 1-EH-TV-100, and
- Unit 2 experienced an over-temperature delta-temperature (OTDT) automatic reactor trip during a lightning storm on August 5, 2005.

3. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors conducted three equipment alignment partial walkdowns to evaluate the operability of selected redundant trains or backup systems, listed below, with the other train or system inoperable or out of service. The inspectors reviewed the functional system descriptions, Updated Final Safety Analysis Report (UFSAR), system operating procedures, and Technical Specifications (TS) to determine correct system lineups for the current plant conditions. The inspectors performed walkdowns of the systems to verify that critical components were properly aligned and to identify any discrepancies which could affect operability of the redundant train or backup system.

- Unit 1 1H Emergency Diesel Generator (EDG) during planned maintenance on the 1J EDG;
- Unit 2 Auxiliary Feedwater 2-FW-3A, during planned maintenance on 2-FW-3B; and,
- Unit 2 Quench Spray 2-QS-P-1A during emergent work on 2-QS-P-1B.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors performed a detailed walkdown and inspection of the Unit 2 Service Water (SW) system outside of containment to assess properly alignment and to identify discrepancies that could impact its availability and functional capacity. The inspectors

assessed the physical condition of the pumps, valves, pipe supports, and instrumentation. The inspection also included a review of the alignment and the condition of support systems including fire protection, room ventilation and emergency lighting. Equipment deficiency tags were reviewed and the condition of the system was discussed with engineering personnel. The operating procedures, drawings and other documents utilized and reviewed as part of the inspection are listed in the Attachment.

b. Findings

Inadequate Design Control Results in Degradation of SW Support/Restraints

Introduction. The inspectors identified a self-revealing non-cited violation (NCV) associated with inadequate design control resulting in degradation of SW system support-restraints (S/R).

Description. On June 14, 2005, the licensee was performing a preventative maintenance (PM) inspection of SW expansion joints on plant discharge piping located in the SW tie-in vault and noticed severely bent or degraded SW S/Rs, 1-SW-PH-3.2 on the B train discharge header and 1-SW-PH-4.2 on the A train discharge header. Both trains are shared between Units 1 and 2. An extent of condition walkdown was performed and one additional S/R, 1-SW-PH-E85.2, was identified with structural damage and documented in Plant Issue N-2005-2225. The inspectors reviewed and verified the resultant functional evaluation which concluded that a generic letter (GL) 91-18 (operable but degraded) condition existed for A and B SW trains. The licensee performed a root cause evaluation which determined that a design analysis failure occurred during a modification (Design Change 02-006) which was implemented in December, 2003, and converted the metal expansion joints to a design using rubber as the flexible component. The additional pressure component of piping loads associated with the new rubber design was not translated by engineering personnel to the modification process resulting in S/R's too weak to handle the loads associated with normal system operation. The human performance aspects of the design failure analysis is a noncompliance with 10 CFR 50, Appendix B, Criterion III, which states in part that measures shall provide for verifying or checking the adequacy of design.

Analysis. This finding had a credible impact on safety based on a design control error which impacted both trains of the SW system which is a link between transfer of reactor decay heat to the plant's ultimate heat sink. The inspectors reviewed Inspection Manual Chapter (IMC) 0612 and determined the finding is more than minor due to the impact on the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage) and the cornerstone attribute of design control of plant modifications. The inspectors referenced IMC 0609 for the Significant Determination Process (SDP) and determined that the finding is Green or very low safety significance because the design deficiency was confirmed not to result in loss of function per GL 91-18. This finding contains aspects relating to the cross-cutting area of human performance.

Enforcement. 10 CFR 50, Appendix B, Criterion III, requires in part that measures shall provide for verifying or checking the adequacy of design. Contrary to the above, inadequate verification of a modification, Design Change 02-006, implemented in December, 2003, to replace SW metal expansion joints with a rubber design resulted in an operable but degraded condition due to damaged SW system S/R's discovered on June 14, 2005. This finding is of very low safety significance or Green, is in the licensee's corrective action program (CAP) as Plant Issue N-2005-2229, and is characterized as a NCV, consistent with Section VI.A of the NRC's Enforcement Policy: NCV 05000338, 339/2005004-01, Inadequate Design Control Resulting in Degraded Service Water Support-Restraints.

1R05 Fire Protection

.1 Fire Drill

a. Inspection Scope

During a fire protection drill on August 31, 2005, at the Service Water Pump House, the inspectors assessed the timeliness of the fire brigade in arriving at the scene, the fire fighting equipment brought to the scene, the donning of fire protective clothing, the effectiveness of communications, and the exercise of command and control by the scene leader. The inspectors also assessed the acceptance criteria for the drill objectives and reviewed the licensee's CAP for recent fire protection issues. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Fire Area Tours

a. Inspection Scope

The inspectors conducted tours of the eleven areas listed below and important to reactor safety to verify the licensee's implementation of fire protection requirements as described in Virginia Power Administrative Procedure (VPAP)-2401, "Fire Protection Program." The inspectors evaluated, as appropriate, conditions related to: (1) licensee control of transient combustibles and ignition sources; (2) the material condition, operational status, and operational lineup of fire protection systems, equipment, and features; and (3) the fire barriers used to prevent fire damage or fire propagation.

- Auxiliary Building (includes Z-18 and Z-20) (fire zone 11a / AB);
- Quench Spray Pump House and Safeguards Area Unit 2 (includes Z-16-2) (fire zone 15-2a / QSPH-2);
- Fuel Building (fire zone Z-18 / FB);
- Main Control Room (fire zone 2a / CR);

- Cable Vault and Tunnel Unit 2 (includes Control Rod Drive Room and Z-27-1) (fire zones 3-2a / CV & T-2);
- Cable Vault and Tunnel Unit 1 (includes Control Rod Drive Room and Z-27-1) (fire zone 3-1a / CV & T-1);
- Service Water Pump House (fire zone 12a / SWPH);
- Safeguards Area Unit 2 (fire zone Z-16-2 / SA-2);
- Safeguards Area Unit 1 (fire zone Z-16-1 / SA-1);
- Casing Cooling Tank & Pump House Unit 1 (fire zone Z-41-1 / CCT & PH-1); and,
- Casing Cooling Tank & Pump House Unit 2 (fire zone Z-41-2 / CCT&PH-2).

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed internal flood protection measures for the Unit 1 and 2 air conditioning chiller rooms (ACCRs) and adjacent air conditioning fan rooms (ACFRs). Flooding in the ACCRs and ACFRs could impact risk-significant components in the instrument rack rooms adjacent to the ACFRs if flood mitigation features were degraded. ACCR and ACFR protection features were observed to verify that they were installed and maintained consistent with the plant design basis. The inspectors reviewed the instrumentation and associated alarms for the rooms above to verify that the instrumentation was periodically calibrated and that the respective alarms were appropriately integrated into plant procedures. The inspectors also reviewed licensee instructions in the event of severe flooding and evaluated the availability of systems, structures and components (SSCs) for safe shutdown under worst case water levels. Documents reviewed are listed in the Attachment.

b. Findings

Inadequate Corrective Action Results in Safeguards Instrument Rack Room Flood Problem

Introduction. The inspectors identified a self-revealing violation associated with inadequate corrective action. Back-flow preventers were not installed in floor drains that resulted in a flood potential for the Unit 1 and 2 Safeguards Instrument Rack Rooms. The safety significance is under evaluation and thus the item is classified as an unresolved item (URI).

Discussion. On July 9, 2005, back flush of control room chiller service water strainers 2-HV-S-1A and 1B as directed by engineering transmittal, ET N-05-0034, “Operability of 2-HV-P-22C, Service Water Pump for 2-HV-E-4C,” was performed in the Unit 2 ACCR. During this work activity, the licensee observed water discharging from the floor drains in the adjacent ACFR, and initiated Plant Issue N-2005-2565 to evaluate the absence of

back-flow preventers in the floor drains. The licensee initiated a flood watch, declared the flood walls between the ACCR and adjacent ACFR on Units 1 and 2 inoperable, and entered a Yellow 6 day maintenance rule risk condition based on the unavailability of the flood walls to perform their function. The respective ACFR on both units are adjacent and open to the safeguards instrument rack rooms, which contain the solid state protection system (SSPS) and process instrumentation and are at a 2 feet lower elevation. Each instrument rack room has a sump with two pumps rated at 40 gpm each. On Unit 2 the sump pumps' discharge line is hard-piped directly to the ACCR sump. However, on Unit 1 the sump pumps' discharge line is routed to a drain funnel interconnected to the floor drain system of the adjacent ACFR. The licensee determined that this funnel did not have a back-flow preventer installed and initiated Plant Issue N-2005-2597. A subsequent calculation, ME-0782, was performed by the licensee to evaluate the consequences of a service water line break in either the Unit 1 or 2 ACCRs. The calculation concluded that the peak flow rate from the Units 1 and 2 ACCRs to adjacent ACFRs via the floor drain piping was 182.9 gpm and 169.4 gpm respectively.

The inspectors reviewed the licensee's corrective action database and determined that on October 15, 2004, Plant Issue N-2004-4554 was initiated due to water discharge from a capped floor drain outside of the ACCR. An 'other' evaluation was assigned to engineering to review this condition for impact on the flood protection assumed for the ACCR and connecting areas as applicable. This evaluation did not identify and correct the absence of back-flow preventers in the adjacent ACFR floor drains. The inspectors also identified that Plant Issue N-1999-3405, which documented operational experience from Three Mile Island regarding check valves missing from floor drains and the impact on flood protection, did not result in the identification and correction of this problem. The inspectors concluded that the inadequate corrective actions for Plant Issue N-2004-4554 is contrary to the requirements of 10 CFR 50, Appendix B, Criterion XVI, which requires that the establishment of measures to assure conditions adverse to quality are promptly identified and corrected.

Analysis. The inspectors determined that the finding had a credible impact on safety based on the potential for flooding to impact both trains of SSPS cabinets used for engineered safeguards. The inspectors referenced IMC 0612 and determined that if left uncorrected this finding would result in a more significant safety concern and is consequently more than minor. Based on a review of IMC 0609 for the SDP, the inspectors determined the finding would require a Phase III evaluation due to the loss or degradation of equipment specifically designed to mitigate a flooding event and the impact on two trains of a safety system. This finding is an URI pending completion of the significance determination assessment and contains aspects relating to the cross-cutting area of problem identification and resolution.

Enforcement. 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, requires the establishment of measures to assure conditions adverse to quality are promptly and identified and corrected. Contrary to the above, prompt identification and correction of deficiencies relating to Plant Issue N-2004-4554 failed to identify and correct the absence of back-flow preventers in the Unit 1 and 2 ACFRs. This violation is characterized as an URI pending significance determination, and is identified as URI 05000338,

339/2005004-02, Inadequate Corrective Action Results in Safeguards Instrument Rack Room Flood Problem. This finding is in the licensee's CAP as Plant Issue N-2005-2565.

1R11 Licensed Operator Requalification Program

a. Inspection Scope

The inspectors observed an annual licensed operator requalification simulator examination on September 13, 2005. The scenerio, Simulator Examination Guide SXG-56, involved a loss of instrument air, followed by increased primary plant leakage, a loss of bearing cooling pumps with subsequent reactor trip, and a small break loss of cooling accident (LOCA).

The scenario required classifications and notifications that were counted for NRC performance indicator input. The inspectors observed crew performance in terms of communications; ability to take timely and proper actions; prioritizing, interpreting, and verifying alarms; correct use and implementation of procedures, including the alarm response procedures; timely control board operation and manipulation, including high-risk operator actions; and oversight and direction provided by the shift supervisor, including the ability to identify and implement appropriate TS actions. The inspectors observed the post training critique to determine that weaknesses or improvement areas revealed by the training were captured by the instructors and reviewed with the operators.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

.1 Periodic Evaluation (Biennial)

a. Inspection Scope

The inspectors reviewed the licensee's Maintenance Rule periodic assessments, "2003 Maintenance Rule Periodic Assessment Report [NAPS-SA-03-03, dated 6/11/04]" and "2005 Maintenance Rule Periodic Assessment Report [NAPS-SA-03-37, dated 8/15/05]" while on-site the week of August 15, 2005. These reports were issued to satisfy paragraph (a)(3) of 10 CFR 50.65, and covered the 18 month periods ending August 31, 2003, and ending February 28, 2005, respectively, for Units 1 and 2. The inspection was to determine the effectiveness of the assessment and that it was issued in accordance with the time requirement of the Maintenance Rule (MR) and included evaluation of: balancing reliability and unavailability, (a)(1) activities, (a)(2) activities, and use of industry operating experience. To verify compliance with 10 CFR 50.65, the inspectors reviewed selected MR activities covered by the assessment period for the following maintenance rule component and attendant systems: Control Room Bottled Air, Control Room Chilled Service Water Motors, High Head Safety Injection pump seals; Service

Water Spray Arrays, Reactor Water Storage Tank Chillers. Specific procedures and documents reviewed are listed in the Attachment to this report.

During the inspection, the inspectors reviewed selected plant work order data, assessments, modifications, the site guidance implementing procedures, discussed and reviewed relevant corrective action [plant] issues, reviewed generic operations event data, attendant MR related meeting minutes, probabilistic risk reports, and discussed issues with system engineers. Operational event information was evaluated by the inspectors in its use in MR functions. The inspectors selected work orders and other corrective action documents on systems recently removed from 10 CFR 50.65 a(1) status and those in a(2) status for some period to assess the justification for their status. The inspectors toured and inspected repaired components. The documents were compared to the site's MR program criteria, and the MR a(1) evaluations and rule related data bases.

b. Findings

No findings of significance were identified.

.2 Quarterly Sample

a. Inspection Scope

For the two equipment issues listed below, the inspectors evaluated the licensee's effectiveness of the corresponding preventive and corrective maintenance. The inspectors performed walkdowns of the accessible portions of the systems, performed in-office reviews of procedures and evaluations, and held discussions with system engineers. The inspectors compared the licensee's actions with the requirements of the Maintenance Rule (10 CFR 50.65) using VPAP 0815, "Maintenance Rule Program," and Engineering Transmittal CEP-97-0018, "North Anna Maintenance Rule Scoping and Performance Criteria Matrix." The inspectors also completed review of unresolved item (URI) URI 05000338/20050003-01 which is documented in NRC Integrated Inspection Report Nos. 05000338/2005003. Other documents reviewed are listed in Attachment.

- The mechanical seals on pump 2-CH-P-1C were recently replaced with new seals associated with Work Order (WO) 523899 for 20 ml/min outboard end bell leak on 2-CH-P-1C; and,
- The Refueling Water Storage Tanks (RWST) mechanical chillers have had multiple issues associated with the reliability of these chillers.

b. Findings

(Closed) URI 05000338/20050003-01, Inadequate Maintenance of a Procedure Results in Loss of Safety Related 480V Buses.

Introduction. A Green, self-revealing NCV was identified for failure to comply with TS 5.4.1 which resulted in the loss of two safety-related 480V buses on Unit 1.

Description. URI 05000338/2005003-01 documented a noncompliance with TS 5.4.1 which involved an inadequate maintenance procedure that resulted in the loss of two safety-related 480 volt buses, 1J1-2N and 1J1-2S on May 1, 2005. The lack of adequate instructions for breaker wiring resulted in a termination screw for the 'B' phase field cable connection to a thermal overload relay penetrating the adjacent insulation on the 'C' phase field cable connection. The resulting fault caused a flashover event within the breaker cubicle and resulted in the upstream feeder breaker tripping on overcurrent with the subsequent loss of the 480V buses.

Analysis. The inspectors referenced IMC 0612 and determined that the finding is more than minor because it affected the reactor safety Mitigating Systems cornerstone objective to ensure availability, reliability and capability of systems that respond to initiating events to prevent core damage and the Barrier Integrity cornerstone objective to provide reasonable assurance that physical design barriers such as containment protect the public from radio nuclide releases caused by accidents or events. The attribute of procedure quality was affected for each aforementioned cornerstone. The inspectors referenced IMC 0609, for the SDP and determined that a Phase II analysis was required because the finding affected two cornerstones. This analysis reviewed accidents resulting in high containment pressure which would initiate a Containment Depressurization Actuation (CDA) signal which, after a two minute time delay, would close the affected breaker (to start a radiation monitor sample pump) resulting in the fault. The analysis also reviewed the emergency procedures (EP) involving those components which reposition prior to the fault due to the time delay as well as the components which must be locally, manually controlled after the fault. Completion of the applicable SDP worksheets of the Risk-Informed Inspection Notebook for North Anna Power Station resulted in a risk of very low significance (Green) because only the B train was affected, a two minute time delay allowed safety-related component reposition, and emergency procedures identified appropriate operation action for manual component operation following the fault. This finding contains aspects relating to the cross-cutting area of human performance.

Enforcement. TS 5.4.1 requires that written procedures shall be established, implemented, and maintained covering the activities in the applicable procedures recommended by Regulatory Guide (RG) 1.33, Revision 2, Appendix A, February 1978, of which part 9.e. specifies general procedures for the control of maintenance work. Contrary to the above, on December 28, 2004, maintenance procedure 0-EPM-0304-01 was not adequate, in that, it failed to provide sufficient instructions to preclude faulty retermination of wiring in breaker 1-EE-BKR-1J1-2N-B5. This led to an electrical fault and the loss of 1J1-2N and 1J1-2S MCCs on May 1, 2005. This violation is considered a Non-cited Violation (NCV), consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000338/2005004-03, Inadequate Maintenance of a Procedure Results in Loss of Safety Related 480V Buses. This issue is in the licensee's CAP as Plant Issue N-2005-1615.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors evaluated, as appropriate, for the six activities listed below: (1) the effectiveness of the risk assessments performed before maintenance activities were conducted; (2) the management of risk; (3) that, upon identification of an unforseen situation, necessary steps were taken to plan and control the resulting emergent work activities; and (4) that maintenance risk assessments and emergent work problems were adequately identified and resolved. The inspectors verified that the licensee was complying with the requirements of 10 CFR 50.65 (a)(4) and the data output from the licensee's safety monitor associated with the risk profile of Units 1 and 2.

- Yellow maintenance rule 6-day window entered twice due to Control Room Chiller area, Fan area, and SSPS Rack Room area flood concerns documented by Plant Issue N-2005-2565;
- Maintenance rule risk evaluation for unplanned Unit 1 down power with concurrent Unit 2 reactor trip on August 8, 2005;
- Maintenance rule risk evaluation for unplanned work on 2-QS-P-11B concurrent with the components 2-CW-P-2A, 2-SW-MOV-221A, 2-HV-E-4A, 1-EE-BKR-15J11 and 15D1 and 15D3, including rack work, switchyard and RSSTs;
- Maintenance rule risk evaluation for planned restoration of "A" RSST to underground line concurrent with the maintenance on 2-CW-P-2A, 2-SW-MOV-221A, 1-EP-BKR-15A1, 1-FP-P-1, 2-CC-P-1B, 2-EP-BKR-25A1, SWYD, rack work, B RSSTs on overhead lines, 0-EPM-1805-02, 0-PT-100.2, and 2-PT-44.7;
- Maintenance rule risk evaluation for unplanned work on 2-EE-E6-2H concurrent with the components 1-SW-P-4, 2-SW-MOV-221A, 1-CC-P-1A, 1-EE-BKR-15H12 and 2-MS-PCV-201A; and,
- Maintenance rule risk evaluation for unplanned work on 2-EE-EG-2J, concurrent with the components 2-CW-P-2A, 2-SW-MOV-221A, rack work, switchyard work, and 1-PT-32.1.1.

b. Findings

No findings of significance were identified.

1R14 Operator Performance During Non-Routine Evolutions and Events

a. Inspection Scope

The inspectors reviewed operator logs and plant computer data for the two events listed below to determine if plant and operator responses were in accordance with plant design, procedures, and training. The inspectors also evaluated performance and equipment problems to ensure that they were entered the licensee's CAP.

- The inspectors evaluated the response of the Unit 1 and 2 control room operators on August 5 and 6, 2005, during an unplanned down power of Unit 1 for diaphragm replacement on 1-EH-TV-100, and,

- The inspectors evaluated the response of the Unit 2 control room operators on August 5 and 6, 2005, following an automatic reactor trip which occurred during the Unit 1 down power event above.

b. Findings

.1 Inadequate Corrective Actions Results in a Reactor Trip

Introduction. A Green, self-revealing NCV was identified for a failure to identify and correct deficiencies associated with reactor coolant instrumentation resulting in a reactor trip.

Description. On August 5, 2005, a Unit 2 automatic reactor trip occurred due to actuation of an OTDT reactor protection signal. A subsequent evaluation determined that a lightning strike during a storm in progress at the time of the trip caused a transient in Channel 1 and 2 reactor coolant temperature circuitry resulting in the automatic OTDT trip signal. The inspectors verified that a reactor trip due to the same actuation signal occurred during a lightning storm on September 17,1998. The subsequent root cause evaluation concluded that the event was attributed to an external casual factor since it was an event (lightning storm) outside the control of the company. Additionally, on July 29, 2003, during a lightning storm a transient was observed on Unit 2 channel 1 OTDT instrumentation. However, a request for engineering assistance to investigate the transient was not approved based on the conclusion of "extremely dry soil conditions affecting the grounding grid that year." Following the August 5, 2005, event the licensee performed a more rigorous root cause evaluation and investigation that identified ungrounded spare T-hot and T-cold narrow range resistance temperature detector (RTD) shields that share the same thermowell in the reactor coolant system and same containment electrical penetration as the active narrow range RTDs. Therefore, an electrical transient induced by lightning in the spare, unshielded RTD elements was consequently introduced into the active RTD elements, entered the narrow range temperature reactor protection circuitry and resulted in the OTDT reactor trip. The inspectors verified that these RTD shields were required to be grounded to the terminal boards associated with protection channels 1 & 2 per a modification, DCP 89-41, implemented in 1989, and properly completed on Unit 1. The inspectors concluded that the failure to identify and correct the deficiencies associated with the July 29, 2003, event was contrary to the requirements of 10 CFR 50, Appendix B, Criterion XVI, which requires the establishment of measures to assure conditions adverse to quality are promptly identified and corrected.

Analysis. The inspectors determined that the finding had a credible impact on safety based on the deficiencies resulting in a reactor trip and a documented 'near-miss' event. The inspectors reviewed IMC 0612 and concluded the finding was more than minor because it affected the Initiating Events cornerstone objective to limit the likelihood of

those events that upset plant stability and the cornerstone attribute of design control. The inspectors referenced IMC 0609 for the SDP and concluded the finding is of very low safety significance (Green) because it did not contribute to the likelihood of a primary or secondary system LOCA, a loss of mitigation equipment functions, or the likelihood of a fire or flood event. This finding contains aspects related to the cross-cutting area of problem identification and resolution.

Enforcement. 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, requires the establishment of measures to assure conditions adverse to quality are promptly and identified and corrected. Contrary to the above, prompt identification and correction of deficiencies relating to modification, DCP 89-41 was not performed following the aforementioned Unit 2 reactor coolant instrumentation transient occurring on July 29, 2003, which resulted in a Unit 2 automatic reactor trip from actuation of an OTDT reactor protection signal on August 5, 2005. This finding is of very low safety significance or Green, is in the licensee's CAP as Plant Issue N-2005-3016, and thus is characterized as an NCV, consistent with Section VI.A of the NRC's Enforcement Policy: NCV 05000339/2005004-03, Failure to Identify and Correct Deficiencies in Instrumentation Results In Reactor Trip.

.2 Unit 1 Rapid Power Reduction Due to Loss of Turbine Auto Stop Oil Pressure

Introduction: A Green, self-revealing finding was identified for not performing Unit 2 corrective actions in a timely manner on Unit 1. This resulted in the Unit 1 rapid reduction of power from 100% to ~8% (main turbine off-line) on August 5, 2005.

Description: On August 5, 2005, the licensee rapidly reduced power on Unit 1 due to severe oil leakage on the actuator for valve, 1-EH-TV-100 (Main Turbine Auto Stop Oil Interface Valve). Subsequent evaluations determined that the torque specifications of 12-13 ft-lbs as specified in maintenance procedure 0-MCM-1412-01,"Main Turbine Interface Valve Diaphragm Replacement," did not provide adequate clamping force between the diaphragm and actuator cover flange faces which resulted in diaphragm movement and oil leakage from the actuator. The inspectors determined that an actuator oil leak from the same valve resulted in a manual reactor trip due to low electro-hydraulic or auto stop oil pressure on April 19, 2003. The inspectors reviewed the root cause evaluation from that event and concluded that the licensee did not contact the vendor for specific torque values. The inspectors also reviewed a December 2004, event involving similar leakage on the Unit 2 equivalent valve. In this case, the resultant evaluation concluded that the interface valve diaphragm torque values should have been 20 ft-lbs per vendor technical manual 59-264-00006, "Fisher Instruction Manual, Types 655 and 655R Actuators for Self-Operated Control." However, the inspectors determined that associated corrective actions for Unit 1 had not been implemented prior to the August 5, 2005, rapid down-power event.

Analysis: This finding had a credible impact on safety due to the challenge of plant control systems from the rapid reduction of power. The inspectors referenced IMC 0612 and determined that the finding was more than minor based on the impact to the Initiating Events cornerstone objective to limit the likelihood of those events that upset plant

stability and the cornerstone attribute of equipment reliability. The inspectors referenced IMC 0609 for the SDP and determined that the finding is Green (very low safety significance) because it did not contribute to the likelihood of a primary or secondary system LOCA initiator or a loss of mitigation equipment functions, and did not increase the likelihood of a fire or internal/external flood. This issue is in the licensee's CAP as Plant Issue N-2005-2984. This finding contains aspects relating to the cross-cutting area of problem identification and resolution.

Enforcement: Since this finding is associated with nonsafety-related secondary plant equipment, no violation of regulatory requirements occurred. Therefore, this finding is identified as a Green finding FIN 05000338/2005004-04, Untimely Corrective Actions for Actuator Oil Leakage on Turbine Interface Valve Results in Rapid Down Power.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed six operability evaluations affecting risk-significant mitigating systems, listed below, to assess, as appropriate: (1) the technical adequacy of the evaluations; (2) whether continued system operability was warranted; (3) whether other existing degraded conditions were considered as compensating measures; (4) whether the compensatory measures, if involved, were in place, would work as intended, and were appropriately controlled; (5) where continued operability was considered unjustified, the impact on TS Limiting Conditions for Operation and the risk significance in accordance with the SDP. The inspectors' review included a verification that the operability determinations were made as specified by Procedure VPAP-1408, "System Operability."

- Plant Issue N-2005-2751, licensee identified problem with oil leaking from 1J EDG exhaust manifold with the diesel in a stand by condition;
- Plant Issue N-2005-2866, during the overspeed test of Station Blackout Diesel per 0-MCM-0710-03 the BIMBA fuel rack air cylinder did not fully extend after the diesel tripped as required by acceptance criteria;
- Plant Issue N-2005-2927, NRC identified problem with loose control rods on SW expansion joints 2-SW-REJ-24A through 2-SW-REF-24H;
- Plant Issue N-2005-3240, Quench Spray pump operable but degraded due to out of tolerance A&C phase instantaneous overcurrent settings on breakers;
- Plant Issue N-2005-2937, Recirculation Spray seal accumulator high level alarms; and,
- Plant Issue N-2005-3527, ESGR HVAC units 2-HV-AC-7, 2-HV-AV-6 and 1-HV-AC-7 have access cover latches that are very loose and can be pulled off with little effort.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed the completed permanent plant modification DCP 04-019, Replacing RSST Underground Cables - Unit 1. The inspectors conducted a walkdown of the installation, discussed the desired improvement with system engineers, and reviewed the 10 CFR 50.59 Safety Review/Regulatory Screening, technical drawings, test plans and the modification package to assess TS implications.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed seven post maintenance test procedures and/or test activities, as appropriate, for selected risk-significant mitigating systems to assess whether: (1) the effect of testing on the plant had been adequately addressed by control room and/or engineering personnel; (2) testing was adequate for the maintenance performed; (3) acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing basis documents; (4) test instrumentation had current calibrations, range, and accuracy consistent with the application; (5) tests were performed as written with applicable prerequisites satisfied; (6) jumpers installed or leads lifted were properly controlled; (7) test equipment was removed following testing; and (8) equipment was returned to the status required to perform its safety function. The inspectors verified that these activities were performed in accordance with licensee procedure VPAP-2003, “Post Maintenance Testing Program.”

- Procedure 2-PT-14.2, “Charging Pump 2-CH-P-1B” per WO 487833 and Plant Issue N-2005-2472;
- Procedure 0-MCM-0701-20, “Repair of EDG Pre-lube and Standby Lube Oil Pumps” per WO 604135;
- Procedure 2-PT-64.4A, “Casing Cooling Pump (2-RS-P-3A) Test” per WO 602353;
- Procedure 0-ICM-XX-AOV-001, “AOV Inspection and Diagnostic Testing” per WO 606826 for work on 2-FW-FCV-2499;
- Procedure 0-MCM-0701-34, “Removal and Installation of EDG Exhaust Manifold,” and 2-PT-82H, “2H EDG Slow Start Test” per WO 722151;
- Procedure 0-EPM-03202-02 and 0-EPM-302-4, “BBC / ITE 480 Volt K-Line Breaker and Associated Switchgear Cubicle Maintenance” per WOs 528002-05, 515205-01, and 528002-03; and,
- Procedure 1-PT-74.2A, “Component Cooling Pump 1-CC-P-1A Test” per WO 722256

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the nine surveillance tests listed below, the inspectors examined the test procedure, witnessed testing, and reviewed test records and data packages, to determine whether the scope of testing adequately demonstrated that the affected equipment was functional and operable, and that the surveillance requirements of the TS were met:

- 1-PT-63.1A, "Quench Spray System ' A' Subsystem (1-QS-P-1A)," an inservice test,
- 2-PT-71.2Q, "Unit 2 Motor Driven Auxiliary Feedwater (2-FW-P-3A) Pump Test;"
- 1-PT-52.2, "Reactor Coolant System Leak Rate (Hand Calculation) VPAP-0502 - Procedure Process Control;"
- 2-PT-82J, "2J Diesel Generator Test Slow Start Test;"
- 2-PT-63.1B, "Quench Spray System - 'B' Subsystem;"
- 2-PT-213.8B, "Valve Inservice Inspection ('B' Train of Safety Injection System);"
- 2-PT-31.7, "Pressurizer Level Channel (2-RC-L-2459) Channel Operational Test;"
- 1-PT-75.2B, "Unit 1 Service Water Pump (1-SW-P-1B);" and,
- 2-PT-57.1B, "Emergency Core Cooling Subsystem - Low Head Safety Injection Pump (2-SI-P-1B)".

b. Findings

.1 Failure to Follow Procedures During SSPS Testing

Introduction. A Green, self-revealing NCV of TS 5.4.1.a was identified for failure to implement a surveillance procedure which resulted in placing an incorrect bistable in a trip condition.

Description. On July 22, 2005, during the performance of SSPS testing on Unit 2 in accordance with procedure 2-PT-31.7, "Pressurizer Level Channel I (2-RC-L-2459) Channel Operational Test," of which step 6.1.5 requires placement of trip switches BS1 and BS2 on card C1-442 in the trip position, instrument technicians incorrectly placed switches BS1 and BS2 on card C1-422 (same switch designation but a different card) in the test position, which initiated an unexpected alarm (LO LO Tave Interlock Loop 1 A-B-C) in the control room. This caused Unit 2, Loop 1 T cold inputs to the SSPS Relays K148 (Lo Lo Tave)(BS1) and K140 (Lo Tave)(BS2) to fail safe and show a trip condition. A subsequent review by the inspectors of I/C drawings revealed that these relays were Channel I inputs for P-12 (Lo Lo Tave Steam Dump Interlock) and feedwater isolation permissives. The inspectors concluded that since loops two and three were not in a trip condition, the two out of three logic was not satisfied, and the plant was not affected.

Analysis. The inspectors reviewed IMC 0612 and determined that the finding was more than minor because it could reasonably be viewed as a precursor to a more significant event. If another channel in the logic had already been tripped, the plant would have been adversely affected by the performance deficiency. The inspectors consulted IMC 0609 for the SDP and determined that the finding is Green (very low safety significance) because it did not involve any LOCA initiators, did not contribute to both a reactor trip or mitigating system unavailability, nor increase the likelihood of a fire. This finding contains aspects relating to the cross-cutting area of human performance.

Enforcement. TS 5.4.1.a, requires that written procedures shall be established, implemented, and maintained per RG 1.33, Appendix A, of which Part 8 stipulates procedures for surveillance tests. Procedure, 2-PT-31.7.1, step 6.1.5. states, "Place the following comparator trip switches in TEST: On card C1-442, BS1 and BS2." Contrary to the above on July 22, 2005, step 6.1.5 was improperly implemented in that comparator switches, BS1 and BS2, on card C1-422 were placed in trip as opposed to the switches on the correct card, C1-442. This finding is of very low safety significance or Green, is in the licensee's CAP as Plant Issue N-2005-2755, and thus is characterized as an NCV, consistent with Section VI.A of the NRC's Enforcement Policy: NCV 05000339/2005004-04, Failure to Follow Procedure During Solid State Protection System Testing.

.2 Failure to Follow Procedures Affecting Safety-Related Breakers

Introduction. A Green, self-revealing NCV of TS 5.4.1.a was identified for a failure to follow procedures resulting in a trip of the Unit 2 Quench Spray Pump, 2-QS-P-1B.

Description. On August 19, 2005, during performance testing of 2-QS-P-1B per 2-PT-63.1B, "Quench Spray System - 'B' Subsystem," the respective motor breaker, 2-EE-BKR-24J1-4, closed and then immediately tripped open. The licensee subsequently determined that two of the three as-found phase values of the breaker overload device instantaneous pickup were low when compared to the North Anna Setpoint Document (NASD) procedure which contains the setpoints, trip times and test currents for all overload trip devices for 480-volt BBC/ITE K-Line Breakers. Therefore, the motor starting current of approximately 3028 amps compared to the overload instantaneous setpoints of 2268 amps and 2912 amps for 'B' and 'C' phases respectively resulted in a premature trip of the breaker. The licensee previously performed maintenance on this breaker on February 19, 2005, when the overload devices were set and tested in accordance with electrical maintenance procedure, 0-EPM-302-02, "BBC/ITE 480-volt K-Line Breaker & Associated Switchgear Cubicle Maintenance," which references the NASD. Procedure 0-EPM-302-02, step 6.19.4.a.2 states, "If the trip setpoint is within tolerance (80-120 percent) that was recorded in step 6.19.1, then go to substep 6.19.4.b, and if not, then make adjustments using Attachment 5, Instantaneous And Short-Time Pickup Adjustment, and repeat steps 6.19.4.a.1 and 6.19.4.a.2." Contrary to the above, the technician performing the maintenance left the 'B' and 'C' phase instantaneous overload setpoints low outside of the allowable procedural tolerance at 3030 & 3002 amps respectively instead of within the allowable procedural tolerance of 3080 to 4620 amps. The licensee determined that a contributing cause was setpoint drift

on the associated overload device. However, the inspectors determined that given the worst case drift, 'B' phase at 812 amps, and an initial setpoint of 3850 amps (middle of the established ban), the resulting drift would have resulted in a value above the motor starting current.

Analysis. The inspectors referenced IMC 0612 and determined that the finding was more than minor because it affected the Barrier Integrity cornerstone objective to provide reasonable assurance that the containment physical design barriers protect the public from radio nuclide releases caused by accidents or events and the cornerstone attribute of human performance. The inspectors referenced IMC 0609 for the SDP and determined that the finding is Green (very low safety significance) because it did not impact design deficiencies, result in a loss of system safety functions, exceed related TS outage times, nor involve a seismic, flooding, or severe weather initiating event. This finding contains aspects relating to the cross-cutting area of human performance.

Enforcement. TS 5.4.1.a, requires that written procedures shall be established, implemented, and maintained as documented in RG 1.33, Appendix A, of which Part 9 stipulates procedures for maintenance. Procedure 0-EPM-302-02, step 6.19.4.a.2 stated, "If the trip setpoint is within tolerance (80-120 percent) that was recorded in step 6.19.1, then go to substep 6.19.4.b, and if not, then make adjustments using Attachment 5, Instantaneous And Short-Time Pickup Adjustment, and repeat steps 6.19.4.a.1 and 6.19.4.a.2." Contrary to the above, on February 19, 2005, this step was not properly implemented or followed resulting in improper instantaneous overload setpoints on 'B' and 'C' phases and a subsequent trip of 2-QS-P-1B. This finding is of very low safety significance or Green, is in the licensee's CAP as Plant Issue N-2005-3225, and thus is characterized as an NCV, consistent with Section VI.A of the NRC's Enforcement Policy: NCV 05000339/2005004-05, Failure to Follow Procedures Affecting Safety-Related Breakers.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed two temporary plant modifications to verify that the modifications did not affect system operability or availability as described by the TS and UFSAR. In addition, the inspectors verified that the installation of the temporary modifications was in accordance with the work package, that adequate controls were in place, procedures and drawings were updated, and post-installation tests verified the operability of the affected systems.

The temporary plant modifications reviewed were:

- Temporary Modification 2005-1759, "Install 3" Float Stop Backflow Preventer in Floor Drains Located in Emergency Switchgear Fan Rooms;" and,
- Temporary Modification 2005-1761, "Construction of a Temporary Dam (approx ½" tall) on top of Tandem Seal Package" for 1-RS-P-2A to help trouble shoot numerous seal head tank HI-LO level alarms (IT-C4)."

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Testing

a. Inspection Scope

The inspectors evaluated the adequacy of licensee methods for testing the alert and notification system in accordance with NRC Inspection Procedure 71114, Attachment 02, "Alert and Notification System (ANS) Testing." The applicable planning standard 10 CFR Part 50.47(b)(5) and its related 10 CFR Part 50, Appendix E, Section IV.D requirements were used as reference criteria. The criteria contained in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, was also used as a reference.

The inspectors reviewed various documents which are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization Augmentation

a. Inspection Scope

The inspectors reviewed the Emergency Response Organization (ERO) augmentation staffing requirements and the process for notifying the ERO to ensure the readiness of key staff for responding to an event and timely facility activation. The inspectors reviewed the results of the February 22, 2005, unannounced off-hours augmentation drill and reviewed the backup notification systems. The qualification records of key position ERO personnel was reviewed to ensure all ERO qualifications were current. A sample of problems identified from augmentation drills or system tests performed since the last inspection were reviewed to assess the effectiveness of corrective actions.

The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 03, "Emergency Response Organization (ERO) Augmentation Testing." The applicable planning standard, 10 CFR 50.47(b)(2) and its related 10 CFR 50, Appendix E requirements were used as reference criteria.

The inspectors reviewed various documents which are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

The inspectors evaluated the associated 10 CFR 50.54(q) reviews associated with non-administrative emergency plan, implementing procedures and Emergency Action Level (EAL) changes. The inspectors reviewed Emergency Plan revisions 29 and 30 and reviewed 10 CFR 50.47(q) evaluations for the period covering July 2004 to July 2005.

The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 01, "Emergency Action Level and Emergency Plan Changes." The applicable planning standard, 10 CFR 50.47(b)(4) and its related 10 CFR 50, Appendix E requirements were used as reference criteria. The criteria contained in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1 and RG 1.101 were also used as references.

The inspectors reviewed various documents which are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies

a Inspection Scope

The inspectors reviewed the corrective actions identified through the Emergency Preparedness (EP) program to determine the significance of the issues and to determine if repeat problems were occurring. The facility's self-assessments and audits were reviewed to assess the licensee's ability to be self-critical, thus avoiding complacency and degradation of their EP program. In addition, inspectors reviewed licensee's self-assessments and audits to assess the completeness and effectiveness of all EP-related corrective actions.

The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 05, "Correction of Emergency Preparedness Weaknesses and Deficiencies." The applicable planning standard, 10 CFR 50.47(b)(14) and its related 10 CFR 50, Appendix E requirements were used as reference criteria.

The inspectors reviewed various documents which are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation

a. Inspection Scope

On September 13, 2005, the inspectors reviewed and observed the performance of an simulator drill that involved a loss of Bearing Cooling Pumps with a subsequent reactor trip, followed by increased primary plant leakage, a small block LOCA and a loss of instrument air. The inspectors assessed emergency procedure usage, emergency plan classification, notifications, and the licensee's identification and entrance of any problems into their CAP. This inspection evaluated the adequacy of the licensee's conduct of the drill and critique performance. Drill issues were captured by the licensee in their CAP and were reviewed by the inspectors.

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

Access Control. Licensee activities for monitoring workers and controlling access to radiologically significant areas were inspected. The inspectors evaluated procedural guidance and directly observed implementation of administrative and physical controls; appraised radiation worker and technician knowledge of, and proficiency in implementing, Radiation Protection (RP) program activities; and assessed worker exposures to radiation and radioactive material.

Radiological postings and material labeling were directly observed during tours of the auxiliary building, external buildings and the independent spent fuel storage installation (ISFSI). Inspectors conducted independent surveys in the auxiliary building and the ISFSI to verify posted radiation levels and to compare with current licensee survey records. During plant tours, control of High Radiation Area (HRA), HRA with dose rates greater than 15 rem/hr and very HRA keys and the physical status of HRA doors were examined. In addition, the inspectors observed radiological controls for non-fuel items stored in the spent fuel pools. The inspectors also reviewed selected RP procedures and radiation work permits (RWPs), and discussed current access control program implementation with RP supervisors.

During the inspection, radiological controls for work activities in HRAs were observed and discussed. The inspectors observed workers' adherence to RWP guidance and Health Physics Technician (HPT) proficiency in providing job coverage. Controls for limiting exposure to airborne radioactive material were reviewed and operation of ventilation units and positioning of air samplers were also observed. The inspectors evaluated electronic dosimeter alarm set points for consistency with radiological conditions in auxiliary building, decontamination building and the ISFSI. In addition, the inspectors interviewed workers to assess knowledge of RWP requirements.

The inspectors evaluated worker exposures through review of data associated with discrete radioactive particle and dispersed skin contamination events. Controls used for monitoring extremity doses and the placement of dosimetry when work involved significant dose gradients were reviewed. The inspectors discussed the processes that would be used if an individual were to have an uptake of radioactive materials.

RP program activities were evaluated against 10 CFR Part 20; RG 8.38, Control of Access to High and Very High Radiation Areas in Nuclear Power Plants; and approved licensee procedures. Licensee guidance documents, records, and data reviewed are listed in the Attachment.

Problem Identification and Resolution. Five plant issues and two audits associated with radiological controls, personnel monitoring, and exposure assessments were reviewed and discussed with RP supervisors. The inspectors assessed the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with licensee procedures VPAP-1501, Deviations, and VPAP-1601, Corrective Action. Specific documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation

a. Inspection Scope

Radiation Monitoring Instrumentation and Post-Accident Sampling. During tours of the auxiliary building and Spent Fuel Pool building, the inspectors observed installed radiation detection equipment including the following instrument types: Area Radiation Monitors (ARMs), Continuous Air Monitors (CAMs), Personnel Contamination Monitors (PCMs), and components of the Post-Accident Sampling System (PASS). The inspectors observed the physical location of the components, noted the material condition, and compared sensitivity ranges with the UFSAR. The inspectors also observed HPT selection and use of portable instruments during a survey of the ISFSI perimeter fence and support of work in a decontamination building.

In addition to equipment walk-downs, the inspectors observed functional checks and alarm setpoint testing of various fixed and portable detection instruments. These

observations included response checks of portable ion chambers and teletectors, PCMs, Small Article Monitors (SAMs), Portal Monitors, and a Whole Body Counter (WBC). The 10 CFR Part 61 analysis for Dry Active Waste was reviewed to determine if calibration and response check sources are representative of the plant source term.

The inspectors reviewed calibration records for a selected PCM, portal monitors, SAM, and WBC, ARM channel RM-153, Fuel Pit Bridge ARM, and for all Unit 1 containment high-range ARMs (channels RM-165 and 166). The records were evaluated to determine frequency and adequacy of the calibrations. Calibration stickers on portable survey instruments were noted during inspection of storage areas for "ready-to-use" equipment. In addition, the inspectors discussed in-place radiation detection system reliability with the responsible engineer.

Operability and reliability of selected radiation detection instruments were reviewed against details documented in the following: 10 CFR Part 20; NUREG-0737, Clarification of TMI Action Plan Requirements; TS Section 3; UFSAR Chapter 12; and applicable licensee procedures. Documents reviewed during the inspection are listed in the Attachment.

Self-Contained Breathing Apparatus (SCBA) and Protective Equipment. Selected SCBA units staged for emergency use in the Control Room and other locations were inspected for material condition, air pressure, and number of units available. The inspectors also reviewed maintenance records for components of selected SCBA units for the past five years and certification records associated with supplied air quality.

Qualifications for licensee staff responsible for testing and repairing SCBA equipment were evaluated through review of manufacturer training certificates. In addition, selected Control Room operators were interviewed to determine their knowledge of available SCBA equipment locations, including corrective lens inserts if needed, and their training on bottle change-out during periods of extended SCBA use. Respirator qualification records were reviewed for several Control Room operators and Maintenance department personnel assigned emergency response duties.

Licensee activities associated with maintenance and use of respiratory protection equipment were reviewed against 10 CFR Part 20; RG 8.15, Acceptable Programs for Respiratory Protection; ANSI-Z88.2-1992, American National Standard for Respiratory Protection; and applicable licensee procedures. Documents reviewed during the inspection are listed in the Attachment.

Problem Identification and Resolution. Five plant issues and one audit associated with instrumentation and protective equipment were reviewed and assessed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure VPAP-1601, Corrective Action. Documents reviewed are listed in the Attachment.

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

Effluent Processing Equipment. The inspectors reviewed the operability and reliability of selected radioactive effluent process sampling and detection equipment used for routine and accident monitoring activities. Inspection activities included review of the most recent calibration records and direct observation of select monitors. The inspectors observed the material condition of the effluent monitoring equipment and assessed the installed configurations, where accessible. The inspectors also reviewed applicable parts of licensee procedures related to effluent monitoring equipment calibration.

Selected parts of the liquid radioactive waste (radwaste) system were examined and reviewed with cognizant count room staff. The inspectors discussed with cognizant count room staff liquid waste release permits. In addition, the inspectors directly observed the collection and analysis of liquid effluent samples taken from the clarifier tank.

Major waste gas system components were inspected and discussed with cognizant count room staff. Also, cognizant count room staff were interviewed regarding the gaseous radwaste system configuration and effluent monitor operation. Inspectors also observed Instrumentation and Calibration staff performing a calibration of the service water discharge radiation monitor (RM-SW-108).

Installed configuration, material condition, operability, and reliability for selected effluent sampling and monitoring equipment were reviewed against details documented in 10 CFR Part 20; UFSAR Section 11, Off-Site Dose Calculation Manual (ODCM); and RG 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants." Procedures and records reviewed during the inspection are listed in the Attachment.

Effluent Release Processing and Quality Control (QC) Activities. The inspectors directly observed and evaluated licensee proficiency in effluent release processing during preparation of a containment purge weekly release permit. The inspectors also reviewed effluent release procedural guidance.

QC activities regarding gamma spectroscopy and liquid scintillation counting instrumentation were discussed with cognizant count room staff. The inspectors reviewed records of daily QC checks and trending data for selected gamma spectroscopy detectors. In addition, results of the radiochemistry cross-check program

were discussed for years 2003 and 2004. The inspectors also reviewed the 2003 and 2004 Annual Effluent Reports to identify any anomalous releases.

Observed task evolutions, offsite dose results, and count room activities were evaluated against RG 1.21 guidance, 10 CFR Part 20 requirements, Appendix I to 10 CFR Part 50 design criteria, UFSAR details, and ODCM requirements. Documents reviewed are listed in the Attachment.

Problem Identification and Resolution. Select plant issues associated with effluent release activities were reviewed and assessed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure VPAP-1601, Corrective Action, and associated guideline documents. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

2PS3 Radiological Environmental Monitoring Program (REMP) and Radioactive Material Control Program

a. Inspection Scope

REMP Implementation. The inspectors reviewed the licensee's most recent Annual Radiological Environmental Operating Reports for 2003 and 2004 which described implementation of the REMP and provided an assessment of the program results. Information regarding surveillance results, analysis of data, land use census, the interlaboratory comparison program, and permitted program deviations were evaluated. The inspector also reviewed and discussed implementation of the REMP with respect to sampling locations, monitoring and measurement frequencies.

The inspectors observed collection of air particulate filters and charcoal cartridges at five air sampling stations and assessed sample collection methodology and techniques. Calibration procedures and records for the air sampling stations were reviewed. The inspectors also observed thermoluminescent dosimeters (TLDs) placement at eight locations as described in the ODCM.

Through the above reviews and observations, the licensee's practices and implementation of their radiological monitoring program were evaluated by the inspectors for consistency with the ODCM, UFSAR, TS, and 10 CFR Part 20 requirements.

Meteorological Monitoring Program. The inspectors reviewed the operability of the meteorological monitoring equipment and operator access to meteorological data. Current meteorological monitoring equipment performance was reviewed with the system engineer. Licensee technicians primarily responsible for equipment maintenance and surveillance were interviewed by the inspectors concerning equipment performance, reliability, and routine inspections.

Calibration procedures and records for the two most recent calibrations of the meteorological monitoring instruments for air temperature and for wind speed and direction were also reviewed. The inspectors evaluated the operability of instruments and determined the availability of current meteorological conditions displayed in the Control Room for the primary tower.

Meteorological monitoring program implementation and results were reviewed against TS, ODCM guidance, and procedures listed in the Attachment.

Unrestricted Release of Materials from the Radiologically Controlled Area (RCA). The inspectors reviewed and evaluated radiation protection program activities associated with the unconditional release of licensed materials from RCA locations. Licensee guidance and implementation of RCA exit monitoring activities were evaluated against 10 CFR Part 20 requirements and applicable procedures documented in the Attachment.

Problem Identification and Resolution. The inspectors reviewed audits, and selected Plant Issues associated with REMP operations and the program for unrestricted release of materials from the RCA. The inspectors assessed the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with licensee procedures VPAP-1601, Corrective Action. Specific Plant Issues reviewed and evaluated in detail for these program areas are identified in the Attachment.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4AO1 Performance Indicator (PI) Verification

Emergency Preparedness PI Verification

a. Inspection Scope

The inspectors reviewed the licensee's procedure for developing the data for the Emergency Preparedness PI which are: (1) Drill and Exercise Performance (DEP); (2) ERO Drill Participation; and (3) ANS Reliability. The inspectors examined data reported to the NRC for the period June, 2004, to June, 2005. Procedural guidance for reporting PI information and records used by the licensee to identify potential PI occurrences were also reviewed. The inspectors verified the accuracy of the PI for ERO drill and exercise performance through review of a sample of drill and event records. The inspectors reviewed selected training records to verify the accuracy of the PI for ERO drill participation for personnel assigned to key positions in the ERO. The inspectors verified the accuracy of the PI for alert and notification system reliability through review of a sample of the licensee's records of periodic system tests.

The inspection was conducted in accordance with NRC Inspection Procedure 71151, "Performance Indicator Verification." The applicable planning standards, 10 CFR 50.9 and NEI 99-02,"Regulatory Assessment Performance Indicator Guidelines," Revision 3, were used as reference criteria.

The inspectors reviewed various documents which are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

Radiation Safety PI Verification

a. Inspection Scope

The inspectors sampled licensee records to verify the accuracy of reported PI data for the periods listed below. To verify the accuracy of the reported PI elements, the reviewed data were assessed against guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Rev. 3, and the Performance Indicator Frequently Asked Questions (FAQ) list.

Occupational Radiation Safety Cornerstone

Occupational Exposure Control Effectiveness

The inspectors reviewed the Occupational Exposure Control Effectiveness PI results for the period of January 2004 through June 2005. For the assessment period, the inspectors reviewed HP shift log entries, electronic dosimeter alarm logs, and licensee procedural guidance for collecting and documenting Performance Indicator data. Plant Issues were reviewed for uptakes and abnormal TLD results. Report section 2OS1 contains additional details regarding the inspection of controls for high dose areas and review of related Plant Issues. Documents reviewed are listed in the Attachment.

Public Radiation Safety Cornerstone

Radiological Control Effluent Release Occurrences

The inspectors reviewed the Radiological Control Effluent Release Occurrences PI results for the period of January 2004 through June 2005. For the assessment period, the inspectors reviewed cumulative and projected doses to the public. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Daily Review

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished by reviewing daily Plant Issues summary reports and periodically attending daily Plant Issue Review Team meetings.

.2 Annual Sample Review

a. Inspection Scope

The inspectors reviewed the licensee's assessments and corrective actions for Plant Issue N-2005-2320, "during the performance of 1-PT-71.1Q (1-FW-P-2, Turbine Driven Auxilliary Feedwater (TDAFW) pump), noted the outboard bearing slinger ring leaking oil at approximately 3-4 drops per second." The Plant Issue was reviewed to ensure that the full extent of the issue was identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. The inspectors also evaluated the Plant Issue against the requirements of the licensee's CAP as specified in VPAP-1601, "Corrective Action Program," VPAP-1501, "Deviations" and 10 CFR 50, Appendix B. Additional documents reviewed are listed in the Attachment.

b. Findings and Observations

No findings of significance were identified. On June 21, 2005, the licensee initiated Plant Issue N-2005-2320 in response to an oil leak on the Unit 1 TDAFW pump outboard bearing identified during the quarterly surveillance test. The licensee completed a functional evaluation and declared a GL 91-18 condition (operable but degraded) for the component. During subsequent testing, the licensee better quantified the leak at 1.58 gallons per day as opposed to the original estimate of 8.5 gallons per day. The inspectors verified the licensee functional evaluation which considered the following facts that the design basis accident mission time for TDAFW operation is 8 hours and that the pump oil reservoir is maintained at 12 - 18 gallons of which 8 gallons are below pump suction. This would result in a leakage of .53 gallons during the 8 hour mission time resulting in the maintenance of pump operability. The inspectors reviewed the history of bearing oil leaks for the Unit 1 and 2 TDAFW pumps which included work order, 00505761-01, for an oil leak on the Unit 1 TDAFW pump outboard bearing which was completed on September 18, 2004. The licensee subsequently identified this corrective action as rework. The inspectors also found for the Unit 2 TDAFW pump an Item Equivalency Evaluation Review (IEER) report, N95-5022-000, which installed new seals of a different design due to similar problems of oil leakage. The licensee could not explain why this same design had not been considered for the Unit 1 TDAFW pump. The inspectors reviewed the IEER process as implemented by VPAP-0708, "Item Equivalency Evaluation," and the corrective action process as implemented by VPAP-1601 and VPAP-1501. The inspectors determined that VPAP-0708 did not perform an extent of

condition review nor reference, consider or require a plant issue. The inspectors also determined that neither VPAP-1601 or VPAP-1501 discussed the IEER process as part of the CAP. The inspectors concluded the failure to implement adequate corrective action for the Unit 1 TDAFW pump constituted a minor violation. This finding is not yet captured in the licensee's corrective action program.

4OA4 Cross-cutting Aspects of Findings

Section 1R04 describes a finding associated with human performance involving inadequate design control relating to verification of design adequacy. The inspectors determined that information relating to the SW system pressure loads was known within the engineering organization. However, this information was neither transferred into the modification design, nor was the design verified to ensure the S/Rs were adequate for the replacement expansion joints.

Section 1R06 describes a finding for inadequate corrective action resulting a flood problem for the safeguards instrument rack room. The inspectors determined that previous corrective actions and plant area flood reviews failed to identify the ACCR/ACFR floor drain flood path.

Section 1R14 documents two findings associated with corrective action problems:

- The first finding involves two circumstances in which lightning impacts the same Unit 2 instrumentation in each case with one involving a reactor trip. For both cases, the licensee took no corrective action and instead attributed the cause to either "outside the control of the company," or "an isolated event from the extremely dry soil conditions affecting the grounding grid that year;" and,
- The second finding for inadequate corrective action concerns a failure to involve the valve vendor to obtain important information relative to the problem. Once the vendor was involved to obtain the correct torque information for the valve actuator, actions were untimely and allowed a subsequent leak forcing a unit shutdown.

Section 1R22 describes two findings associated with human performance relating to a failure to follow procedure:

- The first finding concerning SSPS testing involved two maintenance technicians of which one incorrectly identified a card on which the trip switches would be manipulated and the second incorrectly performed independent verification of the card contrary to procedure requirements; and,
- The second finding concerning breaker maintenance involved a supplemental employee who failed to adhere to procedure requirements to ensure as left overload setpoints were within the specified band.

4OA5 Other Activities

.1 (Closed) Temporary Instruction (TI) 2515/161 "Transportation of Reactor Control Rod Drives in Type A Packages"

a. Inspection Scope

The inspectors reviewed shipping logs and discussed shipment of Reactor Control Rod Drives (CRD) in Type A packages with shipping staff. The inspectors noted that no shipments of Reactor CRDs in Type A packages have been made since January 1, 2002.

b. Findings

No findings of significance were identified.

.2 (Discussed) Temporary Instruction (TI) 2515/163, "Operational Readiness of Offsite Power"

Completion of this TI was documented in NRC Inspection Report Nos. 05000338, 339/2005003. However, after an NRC headquarters review of the data provided, additional information related to the TI was requested. The inspectors collected this information from licensee discussions, site procedures and licensee documentation. The information was subsequently provided to the headquarters staff for further analysis.

.3 Independent Spent Fuel Storage Installation (ISFSI) Radiological Controls

a. Inspection Scope

The inspectors conducted independent gamma and neutron surveys of the ISFSI facility and compared the results to previous surveys. The inspectors also observed and evaluated implementation of radiological controls, including RWPs and postings, and discussed the controls with a HPT and RP supervisory staff. Radiological controls for loading the ISFSI casks were also reviewed and discussed.

Radiological control activities for ISFSI areas were evaluated against 10 CFR Part 20, 10 CFR Part 72, and applicable licensee procedures. Documents reviewed are listed in section 4OA5 of the Attachment

b. Findings

No findings of significance were identified.

4OA6 Meetings, including Exit

On September 22, 2005, the senior resident inspector and the reactor projects branch chief presented the inspection results to Mr. Jack Davis and other members of the staff.

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

4OA7 Licensee-Identified Violation

The following finding of very low significance was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

TS 5.4.1 requires that written procedures shall be established, implemented, and maintained covering the activities in the applicable procedures recommended by RG 1.33, Revision 2, Appendix A, February 1978, of which Part 2 requires general plant operating procedures. Contrary to the above, on August 6, 2005, the licensee failed to implement step 5.36 of operating procedure 1-OP-2.2, "Unit Power Operation From Mode 1 to Mode 2," which requires the performance of power range low setpoint channel operational tests to comply with TS surveillance requirement 3.3.1.8. The licensee discovered the procedure noncompliance during plant startup requirements, entered TS SR 3.0.3 and successfully completed the required testing. The inspectors reviewed IMCs 0612 and 0609, and determined that the finding was of very low safety significance given the successful completion of the surveillance tests. The licensee has this finding documented in their CAP as Plant Issue N-2005-2980.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

W. Anthes, Assistant Manager, Maintenance
G. Bischof, Director, Nuclear Safety and Licensing
J. Breeden, Supervisor, Radioactive Analysis and Material Control
W. Corbin, Director, Nuclear Engineering
J. Crossman, Assistant Manager, Nuclear Operations
J. Costello, Supervisor, Nuclear Emergency Preparedness (Virginia)
J. Davis, Site Vice President
R. Evans, Manager, Radiological Protection
R. Foster, Supply Chain Manager
S. Hughes, Manager, Nuclear Operations
P. Kemp, Supervisor, Nuclear Safety & Licensing
J. Kirkpatrick, Manager, Maintenance
L. Lane, Director, Operations and Maintenance
J. Leberstien, Licensing Technical Advisor
T. Maddy, Manager, Nuclear Protection Services
M. Main, Component Engineer
C. McClain, Manager, Organizational Effectiveness
F. Mladen, Manager, Nuclear Site Services
B. Morrison, Assistant Engineering Manager
J. Rayman, Emergency Planning Supervisor
H. Royal, Manager, Nuclear Training
M. Sartain, Manager, Nuclear Engineering
J. Scott, Supervisor, Nuclear Training (operations)
G. Salomone, Licensing
R. Williams, Component Engineer

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000338, 339/2005004-02	URI	Inadequate Corrective Action Results in Safeguards Instrument Rack Room Flood Problem (Section 1R06)

Opened and Closed

05000338, 339/2005004-01	NCV	Inadequate Design Control Results in Degradation of SW Supports/Restraints (Section 1R04.2)
05000338/2005004-03	NCV	Inadequate Maintenance of a Procedure Results in Loss of Safety Related 480V Buses (Section 1R12)
05000339/2005004-03	NCV	Failure to Identify and Correct Deficiencies in Instrumentation Results In Reactor Trip (Section 1R14.1)

Attachment

05000338/2005004-04	FIN	Untimely Corrective Actions for Actuator Oil Leakage on Turbine Interface Valve Results in Rapid Down power (Section 1R14.2)
05000339/2005004-04	NCV	Failure to Follow Procedures During Solid State Protection System Testing (Section 1R22.1)
05000339/2005004-05	NCV	Failure to Follow Procedures Affecting Safety-Related Breakers (Section 1R22.2)
Closed		
05000338/2005003-01	URI	Inadequate Maintenance of a Procedure Results in Loss of Safety Related 480V Buses (Section 1R12)
2515/161	TI	Transportation of Reactor Control Rod Drives In Type A Packages (Section 4OA5)
Discussed		
2515/163	TI	Operational Readiness of Offsite Power (Section 4OA5.1)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

Documents

- List of open work orders for Unit 2 SW components
- List of plant issues since 2004 for Unit 2 SW components
- TS 3.7.8, "Service Water (SW) System"
- Plant Issue N-2005-2927, NRC identified issue with loose tie rods on SW expansion joints associated with RS heat exchanger supply and return piping.
- Plant Issue N-2005-3376, NRC identified issue with loose tie rods on SW expansion joints associated with the SBO diesel generator.
- 0-OP-49.1, “Service Water System Normal Operation”
- Module, NCRODP-13-NA, “Service Water System”
- Root Cause Evaluation N-2005-2229, Damaged SW Supports
- Engineering Transmittal, ET-CEM-05-0009, “Documentation of the Results of the Structural Review for As-Found Condition of Service Water supports in the Tie-in Vault and Valve House Expansion Joint Vault, NAPS Units 1 & 2"
- Calculation Number, CE-1799, “Structural Operability Evaluation for Service Water Lines in the Tie-In Vault and Valve House Expansion Joint Vault, NAPS 1 & 2"

Drawings

- 11715-FM-078A, B, C, series of flow diagrams for SW system
- 11715-PSSK-105AN.01, Sheets 1, 2, “Pipe Support 1-WS-PH-E85.1 for 321/4"-WS-E85-151-Q3"

- 11715-PSSK-105AN.02, Sheets 1, 2, 3, “Pipe Support 1-WS-PH-E85.2 for 321/4"-WS-E85-151-Q3"
- 11715-PSSK-105AK.10, Sheets 1, 2, 3, “Pipe Support 1-WS-PH-3.2 for 36"-WS-3-151-Q3"
- 11715-PSSK-105AK.06, Sheets 1, 2, 3, “Pipe Support 1-WS-PH-4.2 for 36"-WS-4-151-Q3"
- 11715-WMKS-0105AMA, Sheet 1, “Inservice Inspection Isometric WS Sys:36", 24", 18" Valve HSE Pipe#1"
- 11715-FP-5AN, Sheet 1, “Plan & Sections Service Water Valve House Piping”
- 11715-FP-5AK, Sheet 1, “Service Water Buried Piping Tie-In”
- 11715-WMKS-0105AK, Sheet 1, “Inservice Inspection Isometric WS Sys:36" Tie-In Vault”

Section 1R05: Fire Protection

Documents

- PI N-2005-3733, NRC identified issue regarding the lack of a corrective action process to resolve deficiencies identified during fire drills.
- UFSAR Section 9.5.1, Fire Protection System
- 0-FPMP-10.0, "Conduct of Fire Drills"
- VPAP-2401, "Fire Protection Program"
- Appendix A to Branch Technical Position APCSB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976"
- NFPA 27, "Private Fire Brigades, 1981"

Section 1R06: Flood Protection Measures

Documents

- ET N-04-0043, Rev.0, “Evaluation of the Potential for Flooding of the U2 Emergency Switchgear from the Turbine Building Through U2 Cable Vault Floor Drain Check Valve, 1-DB-424"
- Plant Issue N-2005-2605, Floodwalls, 1-BLD-FLW-7 and 2-BLD-FLW-5, between the ACCR and ACFR on both units have exceeded their maintenance rule performance criteria of 40 hours per year.
- ET NAF 00-0069, Rev. 0, Summary of Components Considered in the IPE Internal Flooding Analysis for Surry and North Anna Power Stations, Units 1&2
- Calculation Number, ME-0782, “Maximum Backflow Flowrate Through Floor Drain Between Chiller Room and Fan Room - Elevation 252'-0" and 254'-0" “
- Plant Issue N-2005-2597, Licensee identified issue with air gap in Unit 1 instrument rack room sump pump discharge piping (i.e., piping discharges to a funnel at elevation of adjacent fan room)
- Plant Issue N-1990-0020, IN 83-44-S1, Potential damage to redundant safety equipment as a result of backflow through the equipment and floor drain system
- Plant Issue N-2005-2251, licensee identified issue of modification, DCP 59-92-161 that installed a backflow preventer in the charging pump cubicle drain as part of the internal flood protection program but station drawing, 11715-FB-9A, sheet 1 was not revised to add mark numbers to the drawing

- Engineering transmittal, ET-CEP-00-0006, Rev. 0, “Evaluation of The Potential For Flooding In The Emergency Switchgear Rooms North Anna Power Station, Units 1 & 2"
- Engineering Work Request, 90-131, “NP-1971, Outside containment Flooding Protection, recommended the modification of the instrument rack room sump pumps for Unit 1 & 2. These pumps are to be automatic with level alarm indication.”
- UFSAR Section 9.3.3.2, “System Description”

Drawings

- 11715-FB-26A, Plumbing Service Building - Sheet 1 of 1, Revision 18

Section 1R12: Maintenance Effectiveness

Documents

- WO 00523899
- SDBD- NAPS-QS, Revision 06
- WO 00487833, HHSI seal replacement (TYPICAL)
- WO 52002302, SW hand torque valve (TYPICAL)
- WO 51440701, Replace SI valve stem (TYPICAL)
- Response to Adverse Trend Plant Issue N-2005-0478, electrical maintenance August 2005

Procedures

- VPAP-0815, “Maintenance Rule Program,” Revision 14
- STD-GN-0044, “Supplemental Maintenance Rule Guidelines,” Revision 4

Plant Issues

- N-2000-2600, bottled air flow problems
- N-2001-2479, HHSI motors (TYPICAL)
- N-2002-1125, 1-HV-P-22C motor problems
- N-2002-1875, Service water spray arrays
- N-2002-2951, refrigerant leak control room chiller
- N-2002-3065, HHSI pump seals
- N-2003-1801, SW stainless steel MIC problems
- N-2004-0053, while repairing compressor terminal plate under WO 489188-01, found internal compressor motor protection device disabled
- N-2004-2193, 1H EDG
- N-2004-2368, RWST chillers
- N-2004-2382, transform deluge system heat detectors
- N-2004-5064, service and instrument air compressor timers
- N-2005-0605, 1-HV-P-22A, high vibration control room chiller
- N-2005-1615, H/J 480 VAC buses
- N-2004-2195, 2-QS-MR-1A #2 fan motor bad and locking up
- N-2004-2368, found 01-QS-MR-1B breaker tripped, compressor failed due to starter contacts welded together
- N-2004-4434, RWST temp is 47 degrees with no chiller running

- N-2004-4844, observed 14 day trend of U2 RWST temperature shows continual increase from 42 degrees to 46 degrees
- N-2005-1177, DCP and parts delays may require re-evaluation f (a)1 corrective action dates associated with replacement of 1/2 QS-MR-1A/B
- N-2005-2494, 2-CH-P-1C had a 20 ml/minute outboard endbell leak
- N-2005-2536, 2-CH-P-1C was disassembled for OB mechanical seal leakage and high vibes on the OB bearing
- N-2005-2584, 2-QS-MR-1A Unit 2 “A” RWST chiller tripped on oil failure relay
- N-2005-2610, 2-QS-MR-1B, Unit 2 “B” RWST chiller tripped with RWST temperature at 45 degrees

Section 1R17: Permanent Plant Modifications

Documents

- Design Change Package 04-019, “ RSST 34.5 kV Cable Replacement / North Anna / Units 1 & 2"
- Procedure 1-MOP-26.77, “ ‘A’ RSS Transformer and ‘D’ Transfer Bus”, Revision 18
- Procedure 1-MOP-26.78, “ ‘B’ RSS Transformer and ‘E’ Transfer Bus”, Revision 18-P2
- Procedure 1-MOP-26.79, “ ‘C’ RSS Transformer and F Transfer Bus”, Revision 17

Drawings

- 11715-FE-1BB
- 11715-FE-1BD
- 11715-FE-1A

Section 1R19: Post Maintenance Testing

Documents

- Plant Issue N-2005-1061, Valves 1-BC-MOV-127 and 2-BC-MOV-227 are being installed to support new BC tower returning to service
- Procedure 0-ECM-1401-03, “General Maintenance of Electrical Motors,” Revision 31
- Procedure 0-ECM-0206-01, “Installation of Lugs,” Revision 6

Section 1EP2: Alert and Notification System Testing

Procedures

- 0-EPM-0501-01, Early Warning System Preventive Maintenance, Revision 14
- 0-PT-172.3, Early Warning System Polling Function Test, Revision 0
- 0-PT-172.2, Early Warning System Sirens Activation Monitoring, Revision 2

Records and Data

- Siren Problem Tracking Report
- Various Plant Issues written against NAPS Sirens
- Six Quarterly Data packages from 3/1/04to 4/17/2005 for 0-PT-172.2, Early Warning System Sirens Activation Monitoring

Miscellaneous

- Sterling Siren Technical manual
- WPS-2800 Series High Power Voice & Siren System - Installation & Instruction Manual

Section 1EP3: Emergency Response Organization Augmentation

Procedures

- EPIP-3.05, Augmentation of Emergency Response Organization, Revision 2

Records and Data

- VPAP-2601, Attachment 3, Augmentation Capability Assessment of Emergency Response Organization, 02/22/2005 at 1800
- VPAP-2601, Attachment 3, Augmentation Capability Assessment of Emergency Response Organization, 03/18/2004 at 2000
- VPAP-2601, Attachment 3, Augmentation Capability Assessment of Emergency Response Organization, 04/07/2004 at 1900

Section 1EP4: Emergency Action Level and Plan Changes

Records and Data

- 10 CFR50.54(q) Review for North Anna Power Station Emergency Plan Revision 29
- 10 CFR50.54(q) Review for North Anna Power Station Emergency Plan Revision 30
- North Anna Power Station Emergency Plan Revision 29
- North Anna Power Station Emergency Plan Revision 30

Procedures

- EPIP-1.01, Emergency Manager Controlling Procedure, Revision 40
- EPIP-2.01, Notification of State and Local Governments, Revision 27
- EPIP-4.07, Protective Measures, Revision 16
- EPIP-1.06, Protective Action Recommendations, Revision 6

Section 1EP5: Correction of Emergency Preparedness Weakness and Deficiencies

Records and Data

- Report of Declaration: Notification of Unusual Event Declared at North Anna Power Station on October 8, 2004
- North Anna Power Station June 7, 2005 Training Exercise/Medical Drill Critique Results, Resolution Report and Ongoing Self Assessment
- North Anna Power Station June 7, 2005 Training Exercise/Medical Drill Exercise Manual
- North Anna Power Station May 5, 2005 Training Exercise Critique Results, Resolution Report and Ongoing Self Assessment
- North Anna Power Station May 5, 2005 Training Exercise Manual
- North Anna Power Station March 1, 2005 Training Exercise Critique Results, Resolution Report and Ongoing Self Assessment
- North Anna Power Station March 1, 2005 Training Exercise Manual

Section 2OS1: Access Control to Radiologically Significant Areas

Procedures, Manuals, and Guides

- Health Physics Procedure Number C-HP-1020.011, Radiological Protection Action Plan During Diving Activities, Revision 3
- Health Physics Procedure Number C-HP-1031.021, Dosimetry Requirements for Site Restricted Areas, Revision 6
- Health Physics Procedure Number C-HP-1031.022, RWP Dosimetry: Exposure Control Support, Revision 9
- Health Physics Procedure Number C-HP-1032.020, Radiological Survey Criteria and Scheduling, Revision 5
- Health Physics Procedure Number Dominion, NAPS, C-HP-1032.060, Radiological Posting and Access Control, Revision 1
- Health Physics Procedure Number C-HP-1032.061, High Radiation Area Key Control, Revision 2
- Health Physics Procedure Number C-HP-1081.010, Radiation Work Permits: Preparing and Approving, Revision 7
- Health Physics Procedure Number C-HP-1081.020, Radiation Work Permits: RWP Briefing and Controlling Work, Revision 4
- Health Physics Procedure Number C-HP-1081.040, Radiation Work Permits: Providing HP Coverage During Work, Revision 1.14
- Station Administrative Procedure (SAP), No. VPAP-1501, Deviations, Revision 17
- SAP, No. VPAP-1601, Corrective Action, Revision 20

Radiation Work Permits

- Radiation Work Permit 05-2-1212, Obtain a sample from Spent Resin Hold-up Tank (1-LW-TK-1) in decontamination building basement. [LHRA]
- Radiation Work Permit 05-2-1502, General entry during sub-atmospheric conditions for the purpose of walkdowns, inspections, radiological surveys, minor maintenance and adjustments [LHRA>15 rem/hr]
- Radiation Work Permit 05-2-1503, General entry by Operations, Health Physics, Security and assorted craft personnel for the performance of routine PT's, surveys, inspections and corrective maintenance as required. [LHRA > 15 rem/hr]
- Radiation Work Permit 05-2-1504, Survey, lifting and transferring radioactive waste liners to include associated support and placing of material into liner [LHRA >15 rem/hr]

Corrective Action Program (CAP) Documents/Audits

- Audit 03-06: Radiological Protection/ Chemistry, 9/22/2003
- Audit 04-08: Radiation Protection & Process Control Programs, 9/20/2004
- Plant Issue N-2005-0149-R1, A worker entered a posted "Radiation Area" in the TSC without the proper dosimetry (Digital Alarming Dosimetry). The area was posted as a Radiation Area and Radiation Work Permit required for entry.
- Plant Issue N-2005-1467-R1, Observed an increase (3X) in dose rates on the remote monitoring dosimeter by 1-LW-491 located in the Unit 1 side of demin alley.
- Plant Issue N-2005-1898, Two TLDs with abnormal readings for which a TLD re-evaluation was requested, were confirmed as having normal response by the

vendor on 05/20/2005. The two individuals' TLD readings for the first quarter 2005 were 147 and 163 mrem, while the DAD readings totaled 0 mrem.
- Plant Issue N-2005-2010, The HP lock for the Fuel Building Basement to Decon building basement jail bar door is sticking and will not allow the door to be opened.
- Plant Issue N-2005-2184, Employee issued a DAD against the wrong RWP. The employee should have issued a DAD against Radiation Work Permit 05-2-1505; instead the DAD was issued against Radiation Work Permit 05-2-1105
- Self Assessment: ITC-SA-04-02, Assessment of NBU for Adverse Trends in Radiological Protection Events, 04/29/04

Section 2OS3: Radiation Monitoring Instrumentation

Procedures

- Health Physics Procedure Number C-HP-1042.450, Self-Contained Breathing Apparatus Maintenance, Revision 10
- Health Physics Procedure Number C-HP-1042.520, Respiratory Protection Program Equipment Criteria and Verification, Revision 4
- Procedure No. 0-FPMP-3, SCBA Operability Test, Revision 2
- Procedure No. ICP-RM-1-RMS-165, Containment High Range Radiation Monitoring System (RMS-165), Revision 14
- Procedure No. ICP-RM-1-RMS-166, Containment High Range Radiation Monitoring System (RMS-166), Revision 15

Calibrations, Surveillance Tests, and Licensee Records

- 10 CFR Part 61 Analysis, Dry Active Waste (U1, U2, and Common), 12/8/04, 8/30/04, and 9/17/03
- FASTSCAN WBC Calibration, 3/16/05
- MSA Factory Training Certificates for Individuals Qualified to Repair SCBA Vital Components
- PCM-1B Serial No. 176, Calibrations, 6/10/04 and 6/13/05
- PM-7 Serial No. 372, Calibrations, 12/1/04 and 4/18/05
- RM-153, Fuel Pit Bridge ARM Calibrations, 11/1/01 and 7/9/03
- RM-165 and 166, U1 Containment High Range ARM Calibrations, 165: (9/25/04, 1/15/03, 3/10/03) and 166: (9/24/01, 8/9/01, 1/15/03, 3/10/03)
- SAM-11 Serial No. 177A, Calibrations, 12/1/04 and 6/7/05
- SCBA Air Regulator Number ND263131, Maintenance History, 7/18/00 - 8/25/04
- SCBA Qualification Records, Selected Operations and Maintenance Department Staff
- Service Air Breathing Air Quality Analyses, 11/18/03, 3/24/04, 10/21/04, 3/30/05
- Source Certificate Number 98CS5001061, Cs-137 SAM-11 Calibration Source

CAP Documents/Audits

- Audit 04-08, Radiation Protection & Process Control Programs, 9/20/04
- SAP, No. VPAP-1601, Corrective Action, Revision 20
- Plant Issue N-2004-0182, "Filter not in motion" alarms are occurring frequently on 2-RM-RMS-259

- Plant Issue N-2004-0991, 1-RM-RMS-163 spiking and causing numerous “Hi-Hi” alarms
- Plant Issue N-2004-1384, Teletector failed performance check after being used to survey HRA
- Plant Issue N-2005-0575, Electronic dosimeter not turned on prior to attempted RCA entry
- Plant Issue N-2005-2714, Respiratory qualification report showed incorrect expiration dates

Section 2PS1: Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

Procedures, Guidance Documents, and Operating Manuals

- Health Physics Procedure Number HP-3010.020, Radioactive Liquid Waste Release Permits, Revision 9
- Health Physics Procedure Number HP-3010.021, Radioactive Liquid Waste Sampling and Analysis, Revision 17
- Health Physics Procedure Number HP-3010.022, Radioactive Liquid Waste Accountability and Dose Calculations, Revision 6
- Health Physics Procedure Number HP-3010.023, Abnormal Liquid Release, Revision 1
- Health Physics Procedure Number HP-3010.030, Radioactive Gaseous Waste Release Permits, Revision 9
- Health Physics Procedure Number HP-3010.031, Radioactive Gaseous Waste Sampling and Analysis, Revision 21
- Health Physics Procedure Number HP-3010.032, Radioactive Gaseous Waste Accountability and Dose Calculations, Revision 11
- Health Physics Procedure Number HP-3010.033, Abnormal Gaseous Release, Revision 15
- Health Physics Procedure Number HP-3010.040, Radiation Monitoring System Setpoint Determination, Revision 17
- SAP, Offsite Dose Calculation Manual (North Anna), Procedure Number VPAP-2103N, Revision 7
- Instrument Calibration Procedure, Number 0-1CP-SW-RM-108, Service Water Discharge Radiation Monitor (RM-SW-108) Calibration, Revision 4

Records, Data, and Drawings

- Calibration Certificates - Beckman LS-6000SC Dated 06/23/03 and Gamma Products G-5020 Dated 06/02/04
- Condenser Air Ejector In-Line Radio Gas Radiation Monitor (RM-SV-121 and 221) Channel Calibrations, Test Results Dated 10/22/04 and 04/09/05
- Discharge Tunnel Effluent Radiation Monitors (RM-SW-130 and 230) Channel Calibrations, Test Results Dated 05/05/05 and 08/22/04
- Radiological Environmental Monitoring Program, 2003
- ECCS PREACS Train A and B Filter In-Place Tests (1-HV-FL-3A and 3B), Test Results Dated 11/14/03 and 04/30/04

- Effluent Radiation Monitor Setpoint Records for 01-GW-RM-178-1, 1-SS-RM-125, 1-SV-RM-121, 1-SW-RM-108, 1-SW-RM-130, 1-VG-RM-179-1, 1-VG-RM-180-1, 2-SS-RM-225, 2-SV-RM-221, 2-SW-RM-230, RM-LW-111
- Gaseous Effluents Cumulative Dose Summary for 2004 Through May 2005
- Heating and Ventilation Flow A (F-HV-1212A) and B (F-HV-1212B) Channel Calibrations, Test Results Dated 04/26/05
- High Capacity Steam Generator Blowdown Radiation Monitors (RM-SS-125 and 225) Calibrations, Test Results Dated 12/15/04 and 03/24/05
- Liquid Effluents Cumulative Dose Summary for 2004 Through May 2005
- Liquid Waste Batch Release Permit and Record, Permit No. 04-LBATCH-01 Dated 05/14/05
- Liquid Waste Clarifier Radiation Monitor (RM-LW-111) Channel Calibration, Test Results Dated 09/03/04
- Miscellaneous Gaseous Release Records, Permit Numbers 04-MGR-54 Dated 05/06/04, 04-MGR-125 Dated 09/13/04, 04-MGR-128 Dated 09/15/04, and 04-MGR-130 Dated 09/16/04
- NAPS, First Quarter 2004 Count Room Confirmatory Measurements
- Process Vent Blowers Discharge Flow (1-GW-F-108) Calibration, Test Results Dated 04/14/04
- Process Vent Normal and High Range Effluent Radiation Monitor (GW-RM-178) Channel Calibration, Test Results Dated 02/01/05
- Reactor Containment Release Records, Permit Nos. 04-RXC-01 Dated 05/02/04 and 04-RXC-12 Dated 10/02/04
- Results of Radiochemistry Cross Check Program, North Anna Power Station, Third Quarter 2003
- Service Water Discharge Radiation Monitor (RM-SW-108) Calibration, Test Results Dated 07/20/05
- Unplanned Gaseous Release Record, ID No. 05-AGR-01 Dated 04/04/05
- Vent Stack A and B Normal and High Range Effluent Radiation Monitors (VG-RM-179 and 180)
- Channel Calibrations, Test Results Dated 02/24/05 and 06/04/04

CAP Documents/Audits

- Nuclear Oversight Audit Report, No. 03-11, Offsite Dose Calculation Manual Radiological Environmental Monitoring Program and Environmental Protection Program, Dated 02/25/04
- SAP, Number VPAP-1601, Corrective Action, Revision 20
- Plant Issue N-2003-3417, Operations Failed to Notify the Health Physics Count Room Prior to Performing Make-Up to the Unit #2 RWST
- Plant Issue N-2004-3756, 1-HV-MOD-102A, “A” Fuel Building Exhaust Fan Discharge Damper, Was Noted to Not Come Open When Restoring Fuel Building Ventilation
- Plant Issue N-2004-4089, A Service Water Sample From the “Catch Basin” 244'Auxiliary Building Used for Draining Service Water Prior to Pumping to Storm Drains indicated the Presence of Licensed Material
- Plant Issue N-2005-1121, Received Alert and Hi Alarms on 1-RI-VG-180, “B” Vent Stack Gaseous RM

- Plant Issue N-2005-2031, While Performing 1-PT-38.1.11 (Liquid Waste Radiation Monitor), Technicians Noted 1-LW-LCV-111 Repositioned to the Closed Position on Receiving the Hi-Hi Radiation Alarm on 1-LW-RM-111 During PT
- Radioactive Effluent Control Program Evaluation, 4th Quarter 2003 to 2nd Quarter 2005

Section 2PS3: Radiological Environmental Monitoring Program (REMP) and Radioactive Material Control Program

Procedures and Guidance Documents

- Health Physics Procedure Number C-HP-1033.440, NE Technology Sam-9/SAM-11 Calibration and Operation, Revision 1
- Health Physics Procedure Number C-HP-1033.620, Portable Air samplers Calibration and Operation, Revision 4
- Health Physics Procedure Number HP-3051-010, Radiological environmental monitoring Program, Revision 15
- Procedure No. 0-HPS-ISFSI-001, Independent Spent fuel Storage Installation (ISFSI), Health Physics TLD Survey Surveillance, Revision 3
- Procedure Number 0-ICP-MM-DP-1, Primary Meteorological Tower Dew Point Measuring System Calibration, Revision 6
- Procedure Number 0-ICP-MM-RG-1, Primary Meteorological Tower Precipitation Monitor Calibration, Revision 5
- Procedure Number 0-ICP-MM-S-101A, Weather Tower 48 Meter Wind Speed Calibration, Revision 8
- Procedure Number 0-ICP-MM-S-101B, Weather Tower 10 Meter Wind Speed Calibration, Revision 10
- Procedure Number 0-ICP-MM-T-100A, Weather Tower 10 Meter Temperature Calibration, Revision 9
- Procedure Number 0-ICP-MM-T-100B, Weather Tower 10/48 Meter Delta Temperature Calibration Revision 10
- Procedure Number 0-ICP-MM-Temp-1, Primary Meteorological Tower Ambient Temperature and Differential Temperature Calibration, Revision 11
- Procedure Number 0-ICP–MM-Z-101A, Weather Tower 48 Meter Wind Direction Calibration, Revision 8
- Procedure Number 0-ICP-MM-Z-101B, Weather Tower 10 Meter Wind Direction Calibration, Revision 8
- Procedure Number 0-ICP-MM-ZR-1A, Primary Meteorological Tower 10 Meter Wind Speed and Wind Direction Calibration, Revision 7
- Procedure Number 0-ICP-MM-ZR-1B, Primary Meteorological Tower 48 Meter Wind Speed and Wind Direction Calibration, Revision 8
- Procedure Number 0-PT-487.10, Radiological Environmental Monitoring Program, Land Use Census, Revision 8
- Procedure Number 0-PT-487.21, Annual Radiological Environmental Operating Report, Draft, Revision 5
- Procedure Number 0-PT-487.22, Annual Radiological Environmental Operating Report, Final, Revision 5
- Memorandum, North Anna Meteorological Data, 01/28/05
- VPAP-1601, Corrective Action, Revision 20

Instrument Calibration and Environmental Data Records

- 2003 Annual Radiological Environmental Operating Report
- 2004 Annual Radiological Environmental Operating Report
- Calibration Certificate Portable Environmental Air Sampler HiQ, Kit 1, 04/20/05
- Calibration Certificate Portable Environmental Air Sampler HiQ, Kit 2, 04/20/05
- Calibration Certificate Portable Environmental Air Sampler HiQ, Kit 3, 04/20/05
- Calibration Certificate Portable Environmental Air Sampler HiQ, Kit 5, 04/28/05
- Calibration Certificate Portable Environmental Air Sampler HiQ, Kit 6, 04/20/05
- Framatone ANP Environmental laboratory Analytical Service Semi-Annual Quality Status Report (January - June 2004)
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CAP Documents

- Procedure VPAP-1601, Corrective Action, Rev. 20
- Plant Issue N-2001-3454, the Interior of the Trailers (Primary and Backup) Are In Need of Upgrading/Refurbishment, 12/04/2001
- Plant Issue N-2003-2304, the Current Assumption Regarding The Charcoal Cartridge Collection Efficiency for Iodine Is Incorrect, 06/09/03
- Plant Issue N-2003-2852-R, Change In Most Limiting Exposure Pathway “Grass-Cow-Milch” to “Vegetable/Broadleaf Vegetation,” 07/23/03
- Plant Issue N-2003-2986, Extension Cord Alarmed Sam -11 at Service Building, 08/04/03
- Plant Issue N-2003-3342, Sam 9 Contamination Monitors Failed Performance Check, 09/04/03
- Plant Issue N-2004-0129-E1, Worker Alarms PM-7s Located at Protection Area Exit, 01/14/04
- Plant Issue N-2004-0435, Eye Bolt Found Near the Unit 1 Boron Recovery Tank in the Yard, 02/10/04
- Plant Issue N-2004-1389, Individual Alarmed PM-7 at PA When Exiting, 05/02/04
- Plant Issue N-2004-1441-E1, Worker Alarmed PM-7 Upon Trying to Exit the PA, 05/04/04
- Plant Issue N-2005-1571-E1, Individual Alarmed PM 7 While Attempting to Exit Protected Area, 05/09/04
- Plant Issue N-2004-1654, Individual Alarms PM-7 at Security, 05/11/04
- Plant Issue N-2004-1788-E1, Spent Secondary Resin Was Released for Disposal to Clean Trash, 05/16/04
- Plant Issue N-2004-2811-E1, In-coming Positive Whole Body Count, 07/28/04
- Plant Issue N-2004-4198, Worker Inappropriately Removed Radioactive Material From An RCA, 09/30/04
- Plant Issue N-2004-5094, Individual Alarmed PM-7 At Security, 11/03/04
- Plant Issue N-2004-5126, Shackle Alarmed SAM-11 At Service Building Tool Crib, 12/02/04
- Plant Issue N-2005-1116, Two Acetylene Hoses With Yellow Paint In Maintenance Shop, 03/22/05
- Plant Issue N-2005-1152, Small Sledge Hammer With Yellow and Magenta Paint Found In Personal Tool Box, 03/23/05
- Plant Issue N-2005-2738, NRC Walk-down of Primary Met Tower Express Concerns of Tree Height, 07/20/05

- Radiological Incident Investigation, Contaminated Hammer Found In Mechanics Tool Box
- Radiological Incident Investigation, Contaminated Shackle Found Outside RCA
- Radiological Incident Investigation, Contaminated Wire Rope Rigging Found Outside RCA
- Radiological Incident Investigation, Plant Issue N-2003-2986, Contaminated Extension Cord In Protected Area
- Radiological Incident Investigation, Radioactive Material Detected By PM-7 Portal Monitor Located At Security Exit (East) Badge # 4972
- Radiological Incident Investigation, Radioactive Material Detected By PM-7 Portal Monitor Located At Security Exit Badge # 5857 Plant Issue N-2004-1654
- Response to Plant Issue N-2004-0435: Contaminated Eye Bolt Found Outside the RCA

Section 4OA1: Performance Indicator Verification

Emergency Preparedness
Procedures

- DNAP-2605, Emergency Preparedness Performance Indicators, Revision 1

Records and Data

- Performance Indicator Monthly Data from January, 2004 thru June, 2005

Radiation Safety
Procedures

- Procedure Number HPAP-2802, NRC Performance Indicator Program, Revision 3
- SAP, Number VPAP-1501, Deviations, Revision 17
- SAP, Number VPAP-1601, Corrective Action, Revision 20

Section 4OA5: Other Activities

ISFSI Radiological Controls
Procedures

- Procedure Number 0-HSP-ISFSI-001, Independent Spent Fuel Storage Installation (ISFSI), Health Physics TLD Survey Surveillance, Revision 3
- Procedure Number HP-1020.012, Radiological Protection Action Plan During Dry Storage Cask Activities, Revision 14

Radiation Work Permits

- Radiation Work Permit 05-2-1107, Receive, prep, load, decon, leak test, and ship the loaded NAC-LWT Cask includes all associated work

Temporary Instruction 2515/161, Transport of Control Rod Drive (CRD) in Type A Packages
Records

- Radioactive Material Shipment Log, 01/02 - 06/05