



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

April 30, 2008

Mr. David A. Christian
President and Chief Nuclear Officer
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060

SUBJECT: NORTH ANNA POWER STATION – NRC INTEGRATED INSPECTION
REPORT 05000338/2008002 AND 05000339/2008002, AND ANNUAL
ASSESSMENT MEETING SUMMARY

Dear Mr. Christian:

On March 31, 2008, the U. S. 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 April 15 and April 30, 2008, with Mr. Daniel Stoddard and Mr. Larry Lane, respectively and other members of your staff.

The inspection examined activities conducted under your licenses as they related 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 on the results of this inspection, three NRC-identified findings and a self-revealing finding of very low safety significance (Green) were identified. 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 findings as non-cited violations (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you wish to contest these non-cited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-001; with copies to the Regional Administrator Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the North Anna Power Station.

In accordance with 10 CFR 2.390 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 the 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/

James S. Dodson, Acting Chief
Reactor Projects Branch 5
Division of Reactor Projects

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

Enclosure: Inspection Report 05000338/2008002 and 05000339/2008002
w/Attachment: Supplemental Information

cc w/encl. (See next page)

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-338, 50-339

License Nos: NPF-4, NPF-7

Report No: 05000338/2008002, 05000339/2008002

Licensee: Virginia Electric and Power Company (VEPCO)

Facility: North Anna Power Station, Units 1 & 2

Location: 1022 Haley Drive
Mineral, Virginia 23117

Dates: January 1, 2008 to March 31, 2008

Inspectors: J. Reece, Senior Resident Inspector
R. Clagg, Resident Inspector
E. Lea, Senior Operations Examiner, Section 1R11
G. Laska, Senior Operations Examiner, Section 1R11

Approved by: James S. Dodson, Acting Chief
Reactor Projects Branch 5
Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000338/2008-002, 05000339/2008-002; 01/01/2008 – 03/31/2008; North Anna Power Station, Units 1 and 2. Fire Protection, Maintenance Effectiveness, Refueling and Other Activities, and Identification and Resolution of Problems.

The report covered a three month period of inspection by resident inspectors and reactor inspectors from the region. Four findings were identified and were determined to be non-cited violations (NCVs). The significance of most findings is identified 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 4, dated December 2006.

A. NRC Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

Green. The inspectors identified a non-cited violation of the North Anna Power Plant Facility Renewed Operating Licensee NPF-7, Condition D, Fire Protection Program, which involved a failure to adequately install a section of the oil collection system on the Unit 2 'A' reactor coolant pump motor. The licensee entered this issue into their corrective action program and took prompt action to repair the problem.

The finding was more than minor because it impacted the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and the related attribute of protection against external factors such as fire. This finding had a credible impact on safety because the inadequate installation of the oil collection system presented a degradation of a fire confinement component which has a fire prevention function of not allowing an oil leak to reach hot surfaces. The finding was of very low safety significance or Green because of the low degradation rating of the fire confinement category related to the oil collection system. The cause of this finding involved the cross-cutting area of human performance, the component of resources and the aspect of complete, accurate and up-to-date procedures, H.2(c), because the procedure was not adequate to ensure all bolting material was correctly installed. (Section 1R05)

Green. A self-revealing, non-cited violation of Technical Specification (TS) 5.4.1a was identified for a failure to adequately establish procedure requirements for protective relay testing which resulted in the inoperability of the '1H' emergency diesel generator (EDG). The licensee entered this problem into their corrective action program, revised the procedure, and successfully completed the relay testing.

The finding was more than minor because it impacted the mitigating systems cornerstone objective to ensure reliability and capability of systems that respond to initiating events to prevent undesirable consequences, and the related attribute of procedure quality. The finding was of very low safety significance or Green because

it did not result in an actual loss of safety function nor a loss of one train for greater than the allowed Technical Specification outage time. The cause of this finding involved the cross-cutting area of human performance, the related component of resources, and the associated aspect of complete and accurate procedures, H.2(c), because the failure to establish adequate procedural requirements rendered '1H' EDG inoperable. (Section 1R12)

Green. A Green NRC-identified non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified for inadequate design control measures to assure that the measurement technique used to verify the gaps between Unit 2 containment sump strainer modules were within the design particle retention size and the acceptance criteria for spacing between modules. The licensee entered the condition into their corrective action program and inspected all the gaps and either corrected or evaluated any gaps which exceeded the installation procedure acceptance criteria. This issue had previously been addressed on Unit 1.

The finding was more than minor because it impacted the mitigating systems cornerstone objective to ensure the availability and capability of systems that respond to initiating events to prevent undesirable consequences, and the related attribute of design control. The finding was of very low safety significance or Green because it did not result in an actual loss of safety function. The cause of this finding involved the cross-cutting area of human performance, the component of resources and the aspect of complete and accurate procedures and work packages H.2(c), because the licensee failed to establish an adequate method to verify that the installed configuration of the containment sump strainer met the design specification. (Section 1R20.2)

Green. The inspectors identified a non-cited violation of Technical Specification 5.4.1a for a failure to adequately implement maintenance procedure requirements for the turbine driven auxiliary feedwater pump (TDAFWP) which, consequently, led to a spurious trip of the TDAFWP, following a reactor trip, on December 25, 2007. The licensee's corrective actions included repair of the affected TDAFWP components and procedure revisions to ensure accurate dimensional checks.

The finding was more than minor because it impacted the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and the related attribute of equipment reliability. The finding was of low safety significance or Green based upon both the motor driven auxiliary feedwater pumps being available and the subsequent manual restart of the TDAFWP. The cause of the finding was related to the cross-cutting area of human performance, the component of work practices and the aspect involving procedure compliance, H.4(b), because the licensee failed to adequately implement a maintenance procedure step to identify unacceptable component dimensions. (Section 4OA2.2)

B. Licensee Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Unit 1 began the period at full Rated Thermal Power (RTP) and operated at full power for the entire report period.

Unit 2 began the inspection period in a forced outage due to the failure of a reactor coolant pump (RCP) motor on December 25, 2007. On January 3, 2008, Unit 2 returned to full RTP operation until a forced outage on February 2, 2008, due to degraded performance of the 'A' RCP #1 seal. On February 9, 2008, Unit 2 returned to full RTP and operated at full power for the remainder of the report period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

a. Inspection Scope

The inspectors conducted four equipment partial alignment 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 systems descriptions, Updated Final Safety Analysis Report (UFSAR), system operating procedures, and Technical Specifications 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. Documents reviewed are listed in the Attachment to this report.

- Unit 2 'B' Low Head Safety Injection (LHSI) System during planned maintenance on 'A' train LHSI pump and related valves
- Unit 1 'A' Quench Spray (QS) pump during planned maintenance on the Unit 1 'B' QS pump and related components
- Unit 2 '2J' Emergency Diesel Generator (EDG) and support systems during planned maintenance on the '2H' EDG
- Unit 1 'A' and 'B' motor driven auxiliary feedwater pumps during planned maintenance on the turbine driven auxiliary feedwater pump (TDAFWP)

b. Findings

No findings of significance were identified.

1R05 Fire Protectiona. Inspection Scope

The inspectors conducted tours of the nine areas listed below that are 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.

- Containment Unit 2 (fire zone 1-2a / RC-2)
- Battery Room 1 – I Unit 1 (fire zone 7A-1 / BR1-I)
- Battery Room 2 – I Unit 2 (fire zone 7A-2 / BR2-I)
- Battery Room 1 – II Unit 1 (fire zone 7B-1 / BR1-II)
- Battery Room 2 – II Unit 2 (fire zone 7B-2 / BR2-II)
- Battery Room 1 – III Unit 1 (fire zone 7C-1 / BR1-III)
- Battery Room 2 – III Unit 2 (fire zone 7C-2 / BR2-III)
- Battery Room 1 – IV Unit 1 (fire zone 7D-1 / BR1-IV)
- Battery Room 2 – IV Unit 2 (fire zone 7D-2 / BR2-IV)

b. Findings

Introduction: A Green NCV was identified by the NRC regarding the failure to adequately install a section of the oil collection system for the Unit 2 'A' RCP motor contrary to the operating license Fire Protection Program requirements.

Description: On February 7, 2008, the inspectors identified an inadequately installed section of the oil collection system on the Unit 2 'A' RCP motor during a fire protection walkdown in the Unit 2 containment as part of a containment closeout tour. The inspectors reviewed work order (WO) 00783887-10, "Remove motor for seal work," for the Unit 2 'A' RCP motor which stipulated the use of maintenance procedure, 0-ECM-1405-02, "Reactor Coolant Pump Motor General Disconnect," Revision 19. This procedure contained an action to ensure that all mounting bolts and cap screws were in place. The inspectors concluded that for this procedure, this action was inappropriately combined with other actions of conditional statements in steps 6.4.2 and 6.4.18. This allowed the conditional steps to be signed off as not applicable, thereby causing the bolting verification action to be bypassed. The licensee has initiated CR 095957 for corrective actions.

The approved Fire Protection Plan included the 10 CFR 50, Appendix R requirement that a reactor coolant pump oil collection system be installed such that a failure will not lead to a fire during normal or design basis accident conditions.

Analysis: The inspectors determined that the failure to adequately install the Unit 2 'A' RCP motor oil collection system was a performance deficiency because it was contrary to the licensee's Fire Protection Program requirements. This finding had a credible impact on safety because the inadequate installation of the oil collection system presented a degradation of a fire confinement component which has a fire

prevention function of not allowing an oil leak to reach hot surfaces. The inspectors determined the finding was more than minor because it impacted the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and the related attribute of protection against external factors such as fire. The inspectors reviewed IMC 0609, Appendix F, and determined that the finding was of very low safety significance or Green because of the low degradation rating of the fire confinement category. The cause of this finding involved the cross-cutting area of human performance, the component of resources and the aspect of complete, accurate and up-to-date procedures, H.2(c), because the procedure was not adequate to ensure all bolting material was correctly installed.

Enforcement: North Anna Power Plant Facility Renewed Operating License NPF-7, Condition D, Fire Protection, states, in part, that VEPCO shall implement and maintain in effect all provisions of the approved Fire Protection Program as stated in the UFSAR section 9.5.1.1 that includes 10 CFR 50, Appendix R, Section III.O, which requires, in part, that the RCP shall be equipped with an oil collection system installed such that failure will not lead to fire during normal or design basis accident conditions. Contrary to this, on February 7, 2008, the licensee failed to adequately install a section of the oil collection system on the Unit 2 'A' RCP motor. Because the finding is of very low safety significance and because it has been entered into the licensee's corrective action program (CAP) as Condition Report (CR) 090727, this violation is being treated as a Green NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000339/2008002-01, Failure to Adequately Install an Oil Collection System on a Reactor Coolant Pump Motor.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors assessed the internal flooding vulnerability of the Unit 1 and 2 Charging Pump Cubicles with respect to adjacent safety-related areas to verify that the flood protection barriers and equipment were being maintained consistent with the UFSAR. The licensee's corrective action documents were reviewed to verify that corrective actions with respect to flood-related items identified in CRs were adequately addressed. The inspectors conducted a field survey of the selected areas to evaluate the adequacy of flood barriers, and floor drains to protect the equipment, as well as their overall material condition.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

.1 Biennial Review

a. Inspection Scope

During the week of January 28, 2008, the inspectors reviewed documentation, interviewed licensee personnel, and observed the administration of simulator

operating tests associated with the licensee's operator requalification program. Each of the activities performed by the inspectors was done to assess the effectiveness of the licensee in implementing requalification requirements identified in 10 CFR 55, "Operators' Licenses." The evaluations were performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," and Inspection Procedure 71111.11, "Licensed Operator Requalification Program." The inspectors reviewed and evaluated the licensee's simulation facility for adequacy for use in operator licensing examinations. The inspectors observed two crews during the performance of simulator operating tests. Documentation reviewed included written examinations, Job Performance Measures (JPMs), simulator scenarios, licensee procedures, on-shift records, licensed operator qualification records, selected watchstanding and medical records, feedback forms, and remediation plans. The inspectors also reviewed a sample of simulator performance test records (transient tests, malfunction tests, steady state test, and procedure tests), simulator modification request records, and the process for ensuring continued assurance of simulator fidelity to ensure compliance with 10 CFR 55.46 Simulation Facilities. Licensee documents reviewed during the inspection are listed in the Attachment to this report.

b. Findings

Introduction: The inspectors identified an unresolved item (URI) related to the failure of the licensee to report an existing medical condition on an initial operator licensing application. The medical condition, which the licensee failed to report, could have resulted in a restriction being placed on the individual's license per required identified in 10 CFR 55 and ANSI 3.4-1983.

Description: While reviewing medical records, the inspectors discovered that an individual, who was issued an operator license in 2006, had a preexisting medical condition (history of myocardial infarction/coronary heart disease) that had not been reported on their original NRC-396 form. Documentation review by the inspectors indicated that the individual had a myocardial infarction in 1999. The information concerning the operator's preexisting medical condition should have been submitted to the NRC per requirements identified in 10 CFR 55.23, "Certification." The information submitted would have allowed the NRC to evaluate/disposition the operator's initial application as required by 10 CFR 55.33, "Disposition of an initial application." Dispositioning of the initial application would have been done using guidelines identified in ANSI 3.4-1983. ANSI 3.4-1983, Section 5.3.2, Cardiovascular, states in part, "(1) Ischemic heart disease, myocardial infarction, coronary insufficiency or angina pectoris shall disqualify for solo operation..." Depending on the outcome of the NRC's review, the operator could have been given a conditional license (restriction placed on the operator's licensee). As a result of this discovery by the inspectors, the licensee initiated CR 090083. Information associated with the operator's preexisting condition is still under review by NRC medical. Pending additional guidance from NRC medical, related to the information provided by the licensee, this issue will be identified as URI 05000338, 339/2008002-02, Failure to Report Accurate Medical Information on Initial Licensing Application.

.2 Resident Inspector Quarterly Review

a. Inspection Scope

The inspectors reviewed a crew examination which involved a trip of the 'C' feedwater pump, a failure of the main turbine 1st stage pressure, a failure of the 'A' RCP #1 seal, a failure of the automatic main turbine trip function, and a faulted 'A' steam generator.

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 instructor and reviewed with the operators.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

For the two equipment issues listed below, the inspectors evaluated the effectiveness of the corresponding licensee's 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 ER-AA-MRL-10, "Maintenance Rule Program," and Engineering Transmittal CEP-97-0018, "North Anna Maintenance Rule Scoping and Performance Criteria Matrix." Other documents reviewed are listed in the Attachment to this report.

- CR 028378, "4KV blown fuse annunciator (1D-A5) actuated during relay test of 1-EE-BKR-15H1," which affected operability of the '1H' EDG and related maintenance rule evaluation MRE 001114
- CR 090845, "2H and 2J diesel batteries were found out of spec," which affected operability of both EDGs and related maintenance rule evaluation MRE 006456

b. Findings

Introduction: A self-revealing, NCV of TS 5.4.1a was identified regarding the failure to adequately establish procedural requirements for protective relay testing. This failure resulted in the inoperability of the '1H' EDG.

Description: During preventative maintenance for protective relay testing associated with breaker, 1-EE-BKR-15H1, '1H' Emergency Bus Power Supply, annunciator 1D-A5, Bus '1H' Blown Fuse, was received by the operators. An evaluation by the licensee determined that the shorting bars for the relay test plug were incorrectly set due to lack of procedural requirements in 1-EPM-1806-09, "Protective Relay Maintenance for Breaker 15H1, Alternate Supply to Bus 1H." This event resulted in the loss of synchronizing circuitry and indication of '1H' EDG parameters (volts, watts, frequency, and volts-amps-reactive) in the control room and the remote, Appendix R shut down panel. The licensee replaced the fuse and returned '1H' EDG to an operable status within approximately 82 minutes. The licensee completed a revision to 1-EPM-1806-09 and successfully completed the relay testing. The inspectors also determined that the licensee failed to identify that the 10 CFR 50 Appendix R shut down function of '1H' EDG was also impacted. The licensee initiated corrective action (CA) 072597 within CR 028378 for corrective action.

Analysis: The inspectors determined that the failure to adequately establish procedural requirements for breaker '15H1' protective relay testing was a performance deficiency. The inspectors determined the finding was more than minor because it impacted the mitigating systems cornerstone objective to ensure the reliability and capability of systems that respond to initiating events to prevent undesirable consequences, and the related attribute of procedure quality. The inspectors determined that the finding was of very low safety significance or Green because it did not result in an actual loss of safety function nor a loss of one train for greater than the allowed Technical Specification outage time. The cause of this finding involved the cross-cutting area of human performance, the related component of resources, and the associated aspect of complete and accurate procedures, H.2(c), because the failure to establish adequate procedural requirements rendered '1H' EDG inoperable.

Enforcement: TS 5.4.1a requires, in part, that written procedures shall be established per Regulatory Guide 1.33, Appendix A, of which part 9 specifies procedures for performing maintenance. Contrary to this, on January 8, 2008, the licensee failed to adequately establish the appropriate procedural requirements in 1-EPM-1806-09 which subsequently resulted in the inoperability of '1H' EDG. Because the finding is of very low safety significance and because it has been entered into the licensee's CAP as CR 028378, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000338/2008002-03, Inoperability of '1H' EDG Due to Failure to Adequately Establish Procedural Requirements for Protective Relay Testing.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated, as appropriate, the five activities listed below for the following: (1) effectiveness of the risk assessments performed before maintenance activities were conducted; (2) management of risk; (3) upon identification of an unforeseen situation, necessary steps were taken to plan and control the resulting emergent work activities; and (4) 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.

- Emergent work for a blown fuse during '1H' emergency bus protective relay testing which impacted '1H' EDG operability on January 8, 2008, as documented in CR 028578
- Emergent work to repair a coolant leak on '1J' EDG, as documented in CR 028621
- Outage Safety Review for Unit 2 forced outage, due to degraded performance of the 'A' RCP #1 seal
- Unit 2 emergent work on '2H' and '2J' emergency diesel generator battery chargers due to voltage below TS limits
- Units 1 and 2 emergent entry into 0-AP-41, "Severe Weather Conditions"

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed six operability evaluations affecting the risk-significant mitigating system, 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; and (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 determinations of operability were made as specified by procedure VPAP-1408, "System Operability."

- CR 028931, review of Operability Determination (OD) 000059, "Unit 1 'C' Charging Pump speed increaser oil leak"
- CR 028491, review of OD 000143, "Unit 1 Core Cooling Heat Exchanger Operability with Reduced Flow"
- CR 028389, review of OD 000141, "Potential Damage to Service Water Struts Under Elevated Service Water Temperature"
- CR 027995, review of OD 000140, "1-MS-TV-115 Trip Linkage Manufacturing Tolerance in Question"
- CR 028792, review of OD 000145, "Perform OD for 1-SW-326 Will Not Close Fully"
- CR 091227, review of OD 000149, "Evaluate pitting corrosion found in 3 inch air release line associated with service water pump, 2-SW-P-1B"

b. Findings

No findings of significance were identified.

1R18 Plant Modificationsa. Inspection Scope

The inspectors reviewed Temporary Modification 1179, "Connection of flow scanner equipment to the Unit 2 'B' main feedwater regulation valve, 2-FW-FCV-2488, to monitor performance of the valve on line," to verify that the modification 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 modification was in accordance with the work package, and that adequate controls were in place, procedures and drawings were updated, and post-installation tests verified the operability of the affected systems.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testinga. Inspection Scope

The inspectors reviewed six 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) test 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 in accordance with licensee procedure VPAP-2003, "Post Maintenance Testing Program." Documents reviewed are listed in the Attachment to this report.

- WO 00796522-01, Furmanite injection for body to bonnet leak repair on 2-MS-PCV-201C, 'C' SG PORV
- WO 00797498-01, Thermocouple lead replacement on '1J' EDG for red lead broken at thermocouple terminal
- WO 00797804-01&02, 1-FW-P-2 turbine trip valve linkage repair and retesting
- WO 00801525-01, Grounded motor repair on 2-SW-P-1B, Unit 2 'B' train service water pump
- WO 00796528-01, Replace SOV for 2-CC-TV-201A, RCP thermal barrier component cooling return header containment isolation valve
- WO 00787908-01, Repair Appendix R fire barrier, 1-FP-FBAR-256SFG01-Wall, between safeguards area and auxiliary building

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities

.1 Unit 2 Forced Outage Due to 'B' RCP Motor Trip

a. Inspection Scope

Unit 2 began a forced outage on December 25, 2007 which continued until January 3, 2008. During the forced outage period, the inspectors used Inspection Procedure 71111.20, "Refueling and Outage Activities," to observe portions of the maintenance and startup activities to verify that the licensee maintained defense-in-depth commensurate with outage risk assessments and applicable TS. The inspectors reviewed licensee actions for the outage activities listed below.

- Licensee configuration management, including daily outage reports, to evaluate defense-in-depth commensurate with the outage safety plan and compliance with the applicable TS when taking equipment out of service.
- Controls over the status and configuration of electrical systems and switchyard to ensure that TS and outage safety plan requirements were met.
- Decay heat removal processes to verify proper operation and that steam generators, when relied upon, were a viable means of backup cooling.
- Containment closure activities, including a detailed containment walkdown prior to startup, to verify that there was no evidence of leakage and that debris had not been left which could affect the performance of the containment sump.
- Heat up and startup activities to verify TS, license conditions, and other requirements, commitments, and administrative procedure prerequisites for mode changes were met prior to changing modes or plant conditions. Reactor Coolant System (RCS) integrity was verified by reviewing RCS leakage calculations and containment integrity was verified by reviewing the status of containment penetrations and containment isolation valves.

b. Findings

No findings of significance were identified.

.2 Unit 2 Degraded Performance on the 'A' RCP #1 Seal

a. Inspection Scope

Unit 2 began a forced outage on February 2, 2008, due to degraded performance of the 'A' RCP #1 seal. During the forced outage period, the inspectors used Inspection Procedure 71111.20, "Refueling and Outage Activities," to observe portions of the maintenance and startup activities to verify that the licensee maintained defense-in-depth commensurate with outage risk assessments and applicable TS. The inspectors reviewed licensee actions for the outage activities listed below.

- Licensee configuration management, including daily outage reports, to evaluate defense-in-depth commensurate with the outage safety plan and compliance with the applicable TS when taking equipment out of service.
- Controls over the status and configuration of electrical systems and switchyard to ensure that TS and outage safety plan requirements were met.

- Decay heat removal processes to verify proper operation and that steam generators, when relied upon, were a viable means of backup cooling.
- Containment closure activities, including a detailed containment walkdown prior to startup, to verify that there was no evidence of leakage and that debris had not been left which could affect the performance of the containment sump.
- Heat up and startup activities to verify TS, license conditions, and other requirements, commitments, and administrative procedure prerequisites for mode changes were met prior to changing modes or plant conditions. Reactor Coolant System integrity was verified by reviewing RCS leakage calculations and containment integrity was verified by reviewing the status of containment penetrations and containment isolation valves.

b. Findings

Introduction: A Green NRC-identified NCV of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified for inadequate design control measures to assure that the measurement technique used to verify the gaps between Unit 2 containment sump strainer modules were within the design particle retention size and the acceptance criteria for spacing between modules.

Description: During a containment closeout tour, the inspectors determined that the licensee failed to exercise adequate design control measures for verifying or checking the adequacy of design involving gaps between the Unit 2 containment sump strainer modules due to an inadequate measurement technique. Previously, the inspectors had identified an issue involving gaps which exceeded procedure acceptance criteria for the Unit 1 containment sump strainer modules as documented in NCV 05000338/2007005-01, "Failure to Adequately Accomplish a Procedure for Installation of Containment Sump Modification." During a Unit 2 forced outage in February 2008, the licensee performed an extent of condition review of the Unit 2 containment sump strainer and identified 15 similar gaps of which 4 gaps were greater than 0.045 inches as documented in CR 090558.

The inspectors reviewed the replacement containment sump strainer design specification, NAN1-34325-DS-001, which specified a 100% particle retention of greater than or equal to .0625 inches. The inspectors also noted that the strainers utilize a hole of 0.0625 inches in diameter to meet the design specification. The inspectors further observed that the typical gaps located in the module adjustable flange seal strips were of different shapes than the strainer openings. The shapes typically consisted of one straight side with an opposite side resembling a standard deviation curve. The inspectors interviewed engineering personnel in containment and noted that their gap measurement technique utilized an approximately 5/8 inch wide feeler gages of varying thickness to measure the gaps. However, this measurement failed to account for the height of the curve. Thus, a gap could have a maximum curve height that exceeded 0.0625 inches but still prevented insertion of a feeler gage at .045 inches. The inspectors noted the gaps varied in length from approximately 0.5 inches to 1.25 inches. Additionally, using the licensee's technique, the inspector identified a gap of 0.049 inches between modules A7 and A8 which exceeded the licensee's acceptance criteria of 0.045 inches (which was a vendor approved increase over the previous acceptance criteria of 0.030 inches).

The licensee's immediate corrective action was to inspect all the gaps and either correct or evaluate any gaps which exceeded the installation procedure acceptance criteria. Long term corrective action plans included adding an additional barrier to prevent damage to the module flanges sealing strips.

Analysis: The inspectors concluded that the licensee's gap measurement technique was not a suitable design verification measure in that it failed to accurately determine if the design specification for particle retention could be met. The inspectors determined that the failure to exercise adequate design control measures for verifying or checking the adequacy of design involving gaps between the Unit 2 containment sump strainer modules due to an inadequate measurement technique was a performance deficiency. The inspectors determined the finding was more than minor because it impacted the mitigating systems cornerstone objective to ensure the availability and capability of systems that respond to initiating events to prevent undesirable consequences, and the related attribute of design control. The licensee evaluated the as-found condition and determined that the containment sump strainer remained capable of performing its intended safety function. The inspectors assessed the finding using the SDP and determined the finding to be of very low safety significance or Green because it did not result in an actual loss of safety function. The cause of this finding involved the cross-cutting area of human performance, the component of resources and the aspect of complete and accurate procedures and work packages H.2(c), because the licensee failed to establish an adequate method to verify that the installed configuration of the containment sump strainer met the design specification.

Enforcement: 10 CFR 50, Appendix B, Criterion III, requires in part, that measures shall be established to assure that the design basis is correctly translated into specifications, drawings, procedures, and instructions. Contrary to this, measures were not adequate to assure that the design basis was correctly translated into procedures and instructions, in that, on February 8, 2008, no gap measurement technique was specified in procedures or instructions for the containment sump strainer module spacing which would assure that the design specification for particle retention or the acceptance criteria for spacing between modules could be met. Because the finding is of very low safety significance and because it has been entered into the licensee's CAP as CR 090738, this violation is being treated as a Green NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000339/2008002-04, Inadequate Design Control Involving Unit 2 Containment Sump Strainer Gaps.

1R22 Surveillance Testing

a. Inspection Scope

For the five surveillance tests listed below, the inspectors examined the test procedure, witnessed testing, 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 TS were met. The inspectors also determined whether the testing effectively demonstrated that the systems or components were operationally ready and capable of performing their intended safety functions. The inspectors reviewed four in-service testing activities for a risk significant pump or valve as part of the surveillance activities.

Documents reviewed are listed in the Attachment to this report.

In-Service Test:

- 2-PT-71.2Q.1, "2-FW-P-3A, A Motor-Driven AFW IST Comprehensive Pump and Valve Test," Revision 2
- 1-PT-14.1, "Charging Pump 1-CH-P-1A," Revision 46
- 2-PT-75.2A.1, "Service Water Pump (2-SW-P-1A) Head Curve Verification, Revision 24
- 1-PT-71.1Q, "1-FW-P-2 Turbine Driven Auxiliary Feedwater Pump and Valve Test," Revision 49

Other Surveillance Tests:

- 2-PT-82J, "Unit 2 2J Emergency Diesel Generator Slow Start test," Revision 44

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

Resident inspectors evaluated the conduct of a routine licensee emergency drill, for identification of any weaknesses and deficiencies in classification, notification, and protective action recommendation (PAR) development activities. The inspectors observed emergency response operations in the simulated control room to verify that event classification and notifications were done in accordance with emergency plan implementing procedures. The inspectors also attended the licensee critique of the drill to compare any inspector-observed weakness with those identified by the licensee in order to verify whether the licensee was properly identifying failures. Drill issues were captured by the licensee in their corrective action system as CR 092934.

The drill involved a simulated reactor vessel loose parts causing fuel damage, with a reactor coolant leak that developed into a small break loss of coolant accident (LOCA) leading to a large break LOCA, and a failure of both charging pumps. The event led to an Alert and subsequent General Emergency declarations.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors reviewed the licensee's procedures for developing the data for the Unplanned Scrams per 7000 Critical Hours and Unplanned Power Changes per 7000 Critical Hours Initiating Events PIs. The inspectors examined Unit 1 and Unit 2 data reported to the NRC for the period January 2007 through December 2007. Procedural guidance for reporting PI information and records used by the licensee to identify potential PI occurrences were also reviewed for both units. The inspectors reviewed the licensee event reports, CAP documents, and maintenance rules records as part of the verification process. The inspection was conducted in accordance with NRC Inspection procedure 71151, "Performance Indicator verification." NEI 99-02, "Regulatory Assessment Performance Indicator Guidelines," was used as reference criteria.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Review of items Entered into the Corrective Action Program:

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 CR report summaries and periodically attending daily CR Review Team meetings.

.2 Annual Sample: Review of CR 027749, 2-FW-P-2 Tripped on Overspeed

a. Inspection Scope

The inspectors reviewed the licensee's assessments and corrective actions for CR 027749, "2-FW-P-2 tripped on over speed," 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 CR against the requirements of the licensee's CAP as specified in procedure, PI-AA-200, "Corrective Action Program," and 10 CFR 50, Appendix B. Documents reviewed are listed in the Attachment to this report.

b. Findings and Observations

Introduction: The inspectors identified a non-cited violation of TS 5.4.1a for a failure to adequately implement maintenance procedure requirements for the TDAFWP. This consequently led to a spurious trip of the TDAFWP following a reactor trip on December 25, 2007.

Description: On December 25, 2007, following a reactor trip, the Unit 2 TDAFWP automatically started but immediately tripped due to the actuation of the turbine over speed trip mechanism. The licensee reset the turbine trip mechanism and restarted the TDAFWP which functioned properly for the remainder of the event. The inspectors reviewed the licensee's Root Cause Evaluation (RCE) 000066, "Turbine-Driven Auxiliary Feedwater Pump 2-FW-P-2 Trip," of which the root cause stated, "Maintenance Procedure 2-MPM-0102-01 does not identify some critical dimensional checks that should be performed when assembling the trip linkage for 2-MS-TV-215." Specifically, inspectors noted that portions of the RCE also stated:

"When the tappet assembly was disassembled and inspected, the tappet nut to head lever engagement was measured to be .020 inches, which is less than the manufacturer recommendation of .030 to .060 inches. This reduced engagement would increase the potential for a spurious actuation of the over speed trip mechanism as noted in the St. Lucie OE," and "Based on the investigation described above, the direct cause of the spurious trip of 2-FW-P-2 was determined to be inadequate engagement of the turbine trip mechanism head lever and tappet nut."

The inspectors reviewed vendor drawing 800489, "Trip Tappet Installation (Disc-Type Instructions)," and verified that the aforementioned maintenance procedure, 2-MPM-0102-01, "Unit 2 Turbine Driven Auxiliary Feedwater Pump Preventative Maintenance," Revision 9, included in Attachment 1 a figure of tappet nut to head lever engagement detailing the required engagement. Additionally, the inspectors verified that an instructional step on drawing 800489 was included in 2-MPM-0102-01 as step 6.4.18, "Inspect tappet nut, head lever, and head bracket assembly to ensure correct engagement of tappet nut to head lever is .030 to .060 inches."

The inspectors reviewed the last completion of 2-MPM-0102-01 on April 12, 2007, as documented in WO00741167-01, "Refueling Maintenance," and determined that the WO did not identify any dimensional or excessive clearance problems. The inspectors interviewed engineering and maintenance personnel who reported that a method for measuring the engagement of tappet nut to head lever was obtained from a vendor technical representative and involved the use of paper to obtain an imprint of the engagement. This imprint was then measured to an accuracy of 1/64th inches or .0156 inches. The inspectors reviewed the maintenance training program documents and identified discussion regarding accuracy of measurements in lieu of no tolerances and for measurements out to three decimal places an expected accuracy of .001 inches was noted. Although 2-MPM-0102-01 specified a tolerance of .030 to .060 inches for engagement, the inspectors noted that the use of the appropriate tools to obtain a reasonable accuracy would have identified the service-induced wear which was subsequently identified following the spurious trip. The licensee's investigation also revealed that a vendor technical representative at another plant had recommended the use of a dial indicator to provide the necessary accuracy to adequately determine proper engagement. The inspectors also reviewed procedure VPAP-0801, "Maintenance Program," and noted that step 6.18.1 states, "Maintenance by outside organizations is controlled to ensure contractor and other non-plant personnel are properly supervised and work under the same controls, procedures, and standards as Station maintenance personnel." The inspectors concluded that station maintenance personnel did not adequately question a vendor

recommendation that contradicted general maintenance training standards. Consequently, the inspectors also concluded that the methodology used to perform step 6.4.18 of 2-MPM-0102-01 was insufficiently accurate to ensure adequate procedure implementation.

Analysis: The inspectors determined that the failure to adequately implement step 6.4.18 of 2-MPM-0101-01, which is contrary to TS 5.4.1a requirements is a performance deficiency. The inspectors reviewed IMC 0612, Appendix B, and determined the finding was more than minor because it impacted 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 related attribute of equipment reliability. The inspectors reviewed IMC 0609, Appendix A, and determined that the finding represented an actual loss of a safety function of a single train for greater than the TS allowed outage time based on the last successful completion of a surveillance test on November 28, 2007, until the time of the event and therefore, required further evaluation. A preliminary Phase 3 has bound the finding as being of very low safety significance (Green) based upon both the motor driven auxiliary feedwater pumps being available and the subsequent manual restart of the TDAFWP. The cause of the finding was related to the cross-cutting area of human performance, the component of work practices and the aspect involving procedure compliance, H.4(b), because the licensee failed to adequately implement a maintenance procedure step to identify unacceptable tappet nut to head lever engagement.

Enforcement: TS 5.4.1.a, requires in part, that written procedures shall be implemented per Regulatory Guide 1.33, Appendix A, of which part 9 specifies procedures for performing maintenance. Contrary to this, on December 25, 2007, the licensee failed to adequately implement maintenance procedure, 2-MPM-0102-01, which consequently led to a spurious trip of the TDAFWP. This finding is of low safety significance or Green, is in the licensee's CAP as CR 027749, and is characterized as a NCV, consistent with Section VI.A.1 of the NRC's Enforcement Policy: NCV 05000339/2008002-05, Spurious Turbine Driven Auxiliary Feedwater Pump Trip Due to Failure to Adequately Implement Procedure.

4OA3 Event Followup

Unit 2 Automatic Reactor Trip

The inspectors followed up on actions taken in response to the Unit 2 automatic reactor trip on December 25, 2007, and the spurious trip of the TDAFWP. The enforcement aspects related to the TDAFWP trip are discussed in section 4OA2 of this report.

4OA6 Meetings, Including Exit

.1 Exit Meeting Summary

On April 15, the senior resident inspector presented the inspection results to Mr. Daniel Stoddard and other members of the staff, who acknowledged the findings. A subsequent exit was conducted with Mr. Larry Lane on April 30, 2008. The inspectors

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

.2 Annual Assessment Meeting Summary

On March 24, 2008, the NRC's Chief of Reactor Projects Branch 5 and the Resident Inspectors assigned to the North Anna Power Station met with Virginia Electric and Power Company to discuss the NRC's Reactor Oversight Process (ROP) and the NRC's annual assessment of North Anna's safety performance for the period of January 1 through December 31, 2007. The major topics addressed were the NRC's assessment program, and the results of the North Anna Power Station assessment. Attendees included North Anna site management, members of the site staff, a representative from Old Dominion Electric Corporation and a member of the radio media.

This meeting was open to the public. The presentation material used for the discussion and the list of attendees is available from the NRC's document system (ADAMS) as accession number ML081200874. ADAMS is accessible from the NRC Web site at <http://www/nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:

V. Armentrout, SG Programs, ISI Corporate
J. Breeden, Supervisor, Radioactive Analysis and Material Control
W. Corbin, Director, Nuclear Engineering
R. Evans, Manager, Radiological Protection and Chemistry
R. Foster, Supply Chain Manager
S. Hughes, Manager, Nuclear Operations
P. Kemp, Supervisor, Station Licensing
A. Kozak, Senior Simulator Support Coordinator
J. Kirkpatrick, Manager, Nuclear Maintenance
L. Lane, Plant Manager
G. Lear, Manager, Organizational Effectiveness
T. Maddy, Manager, Nuclear Protection Services
M. Main, Component Engineer
G. Marshall, Manager, Nuclear Outage and Planning
C. McClain, Manager, Nuclear Training
F. Mladen, Manager, Nuclear Site Services
B. Morrison, Supervisor Nuclear Engineering
J. Rayman, Nuclear Emergency Preparedness
M. Sartain, Director, Nuclear Safety and Licensing
J. Scott, Supervisor, Nuclear Training (operations)
W. Shura, Supervisor Nuclear Training
D. Stoddard, Site Vice President
R. Wesley, Supervisor of Shift Operations
R. Williams, Component Engineer

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000338, 339/2008002-02 URI Failure to Report Accurate Medical Information on Initial Licensing Application (Section 1R11.1)

Opened and Closed

05000339/2008002-01 NCV Failure to Adequately Install an Oil Collection System on a Reactor Coolant Pump Motor (Section 1R05)

05000338/2008002-03 NCV Inoperability of 1H EDG Due to Failure to Adequately Establish Procedural Requirements for Protective Relay Testing (Section 1R12)

05000339/2008002-04 NCV Inadequate Design Control Involving Unit 2 Containment Sump Strainer Gaps (Section 1R20.2)

05000339/2008002-05

NCV Spurious Turbine Driven Auxiliary Feedwater Pump Trip
Due to Failure to Adequately Implement Procedure
(Section 4OA2.2)

Discussed

None

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

- Procedure 1-AP-22.1, "Loss of 1-FW-P-2 Turbine-Driven AFW Pump," Revision 13
- Procedure 1-OP-31.2A, "Valve Checkoff – Auxiliary Feedwater," Revision 22

Section 1R11: Licensed Operation Requalification

- TRCP-0006, Nuclear Training Program Implementation, Revision 11
- FIG-09, Administer the LORP Examination Banks (Test Items and Task Performance Evaluations), Revision 14
- TRCP-3002, Simulator Modification Record (SMR) Process, Revision 10
- TRCP-3003, Simulator Technical Procedures, Revision 4
- TRCP-3004, Simulator Software Management, Revision 5
- TRCP-3005, Simulator Hardware Management, Revision 8
- TRCP-3006, Simulator Configuration Management, Revision 5
- TRCP-3007, Simulator Performance Testing, Revision 1
- North Anna 2002/2003 LORP Table of Specs and Sample Plans
- North Anna Simulator Certification Submittal, August 1988
- Licensed Operator Requalification Program, Revision 12
- Return to Licensed Duties Certifications
- Remediation Training Records
- LOCT Feedback Forms
- Simulator Scenarios SGX-20, SGX-28, SGX-01, and SGX-53
- O-NA-ANS-05, "Performance Operability Steady State Test," Revision 0
- O-NA-ANS-02, "Performance Operability Transient Test, Simultaneous Trip of All FW Pumps," Revision 0
- O-NA-ANS-03, "Performance Operability Transient Test, Simultaneous Closure of All Main Steam Isolation Valves," Revision 0
- O-NA-ANS-04, "Performance Operability Transient Test, Simultaneous Trip of All Reactor Coolant Pumps," Revision 0
- O-NA-ANS-06, "Performance Operability Transient Test, Main Turbine Trip less than 30%," Revision 0
- Core Performance Testing
- Reviewed Normal Evolution from Mode 1 to Mode 2, (100% to Offline)
- Simulator Maintenance Requests Reports 200708230929, 200712180852, and 200801091500
- Written Exam B Shift 2007-1-B open reference exam
- Written Exam B Shift 2007-1-B Freeze exam
- Written Exam C Shift 2007-1-C open reference exam
- Written Exam C Shift 2007-1-C Freeze Exam
- Sample Plan for development of Biennial and Annual examinations
- JPM R-208, "Establish Safety Injection Flow during a loss of All AC Power Recovery with SI Required"
- JPM R-675, "Respond to a Failure of Main Generator Voltage Regulator High"
- JPM R-224, "Immediate Operator Actions of FRP-S.1 (Turbine Fails to Trip)"
- JPM R-758, "Establish Redundant Cold Leg Injection Flow Paths in Accordance With E-1"

- JPM S-94.1, S-94-3, “Classify an Event”
- JPM N-1585, “Align the TDAFW Pump to Feed the Steam Generators by way of the HCV Header”
- JPM N-1473, “Rack in a 4160V Breaker”
- JPM N-1726, “Align the Bus Duct Cooling System to Cool Main Generator Leads”
- JPM N-1584, “Align the TDAFW Pump to Feed the Steam Generators by way of the MOV Header”
- JPM N-1473, “Rack in a 4160V Breaker (Ground Straps Connected)”

Section 1R19: Post Maintenance Testing

- Work Order WO 00796522-01 for Furmanite Inject for Body to Bonnet Leak
- Procedure 0-MCM-1904-01, “On-Line Leak Repair Using Contractor Leak-Sealing Methods,” Revision 15
- CR 028773, Engineering to review PMT process of Leak Sealant Injections
- Work Order WO 00797498-01 for Red Lead broken at thermocouple terminal
- CR 028642, 1J emergency diesel generator tripped on high lube oil temperature
- Work order WO 00797804-01, check trip hook to latch up lever engagement
- Work Order WO 00797804-02, inspect/repair/replace over speed trip tappet assembly and linkage

Section 1R22: Surveillance Testing

- Procedure 2-PT-71.2Q.1, “2-FW-P-3A, A Motor-Drive AFW IST Comprehensive Pump and Valve Test,” Revision 2
- Procedure 2-PT-75.2A.1, “Service Water Pump (2-SW-P-1A) Head Curve Verification,” Revision 24
- Procedure 1-PT-14.1, “Charging Pump 1-CH-P-1A,” Revision 46
- Procedure 2-PT-82J, “2J Emergency Diesel Generator Slow Start Test,” revision 44
- Procedure 1-PT-71.1Q, “1-FW-P-2 Turbine Driven Auxiliary Feedwater Pump and Valve Test,” Revision 49

Section 4OA2: Identification and Resolution of Problems

- CR 027749, 2-FW-P-2 tripped on overspeed
- OCEA000075, “MISC 53: TR4-39 – Review of Auxiliary Feedwater System Events (place keeper for Plant Issue N-2006-3870)”
- Plant Issue N-2006-3870, MISC 53: Review of Auxiliary Feedwater System Events
- MISC-04-26, “Review of Auxiliary Feedwater System Events – August 2004”
- RCE 000066, “Turbine-Driven Auxiliary Feedwater Pump 2-FW-P-2 Trip”
- Procedure 2-MPM-0102-01, “Unit 2 Turbine Driven Auxiliary Feedwater Pump Preventative Maintenance”

LIST OF ACRONYMS

ADAMS	Agencywide Document Access and Management System
CA	Corrective Action
CAP	Corrective Action Program
CFR	<u>Code of Federal Regulations</u>
CR	Condition Report
EDG	Emergency Diesel Generator
IMC	Inspection Manual Chapter
JPM	Job Performance Measures
LHSI	Low Head Safety Injection
NCV	Non-cited Violation
NRC	Nuclear Regulatory Commission
OD	Operability Determination
PARS	Publicly Available Records
PI	Performance Indicator
QS	Quench Spray
RCE	Root Cause Evaluation
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RTP	Rated Thermal Power
SDP	Significance Determination Process
SR	Surveillance Requirements
TDAFWP	Turbine Driven Auxiliary Feedwater Pump
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
VEPCO	Virginia Electric and Power Company
VPAP	Virginia Power Administrative Procedure
WO	Work Order