UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

February 13, 2012

Mr. David A. Heacock
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 05000338/2011005 AND 05000339/2011005

Dear Mr. Heacock:

On December 31, 2011, 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 January 18, 2012, with Mr. Jerry Bischof 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.

The enclosed inspection report discusses one self-revealing apparent violation (AV) of potentially greater than Green significance that requires further risk evaluation to determine the final significance. The report also discusses one NRC-identified finding and one self-revealing finding, both of low safety significance and both were determined to involve violations of NRC requirements. One of these findings was determined to be a Severity Level IV violation of NRC requirements. However, because of the very low safety significance of these issues and because they were entered into your corrective action program, the NRC is treating these as non-cited violations (NCVs) consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest this AV or these NCVs, 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.

Additionally, if you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, 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 Agencywide Document Access and management 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/

Gerald J. McCoy, Chief
Reactor Projects Branch 5
Division of Reactor Projects

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

Enclosure: Inspection Report 05000338/2011005 and 05000339/2011005
w/ Attachment: Supplemental Information

cc w/ encl. (See next page)

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Letter to David A. Heacock from Gerald J. McCoy dated February 13, 2012

SUBJECT: NORTH ANNA POWER STATION – NRC INTEGRATED INSPECTION REPORT 05000338/2011005 AND 05000339/2011005

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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.	05000338/2011005 and 05000339/2011005
Licensee:	Virginia Electric and Power Company (VEPCO)
Facility:	North Anna Power Station, Units 1 & 2
Location:	1022 Haley Drive Mineral, Virginia 23117
Dates:	October 1, 2011 through December 31, 2011
Inspectors:	G. Kolcum, Senior Resident Inspector R. Clagg, Resident Inspector L. Lake, Senior Reactor Inspector (Section 1R07) E. Lea, Senior Operations Engineer (Section 1R11.2)
Accompanied By:	M. Yoo, Nuclear Safety Professional Development Program (Training)
Approved by:	Gerald J. McCoy, Chief Reactor Projects Branch 5 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000338/2011-005, 05000339/2011-005; 10/01/2011 – 12/31/2011; North Anna Power Station, Units 1 and 2; Surveillance and Other Activities.

The report covered a 3 month period of inspection by resident inspectors and reactor inspectors from the region. One self-revealing apparent violation (AV), one Non-cited Violation (NCV) and one SL IV NCV were 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). The cross-cutting aspect was determined using IMC 0310, "Components Within the Cross Cutting Areas." 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: Initiating Events

- Green. A self-revealing Green NCV of Technical Specification 5.4.1.a was identified for the licensee's failure to implement procedures as required by Regulatory Guide 1.33, Appendix A, Section 8, Procedures for Control of Measuring and Test equipment and for Surveillance Tests, Procedures, and Calibrations, specifically calibration procedures for a control circuit associated with a residual heat removal (RHR) suction valve. The licensee entered this issue into their corrective action program as CR452756 "2-RH-MOV-2700 will not open with proper pressure across the seat" and properly calibrated the control circuit.

  The inspectors determined that the failure to use the appropriate test point as required by licensee procedure 2-ICP-RC-P-2402 for the calibration of comparator card PC-2402 C1-245 was a performance deficiency. The inspectors reviewed IMC 0612, Appendix E and determined the finding was more than minor because it was similar to example 4.c. In accordance with NRC Inspection Manual Chapter (IMC) 0609, Appendix G, "Shutdown Operations Significance Determination Process," Attachment 1, Checklist 4, the inspectors conducted a Phase 1 SDP screening and determined the finding required a Phase 2 analysis because the calibration error degraded the licensee's ability to recover DHR once it was lost. A phase 2 SDP evaluation was performed by a regional SRA in accordance with NRC IMC 0609 Appendix G, Attachment 2, Phase 2 SDP Template for PWR during Shutdown. The exposure time was < 1 day from when RHR was secured and the valve closed until the licensee restored normal function for the valve. The significant assumptions and influential factors affecting the risk included: (1) The PD only affected opening from the main control room, local manual operation was not affected, (2) Closing of the valve and valve position indication were not affected, (3) Procedural guidance existed for local manual operation, (4) RCS pressure remained low (380psig) during the exposure period, and (5) the plant had been shutdown since August 23, 2011, and decay heat was very low. Large Early Release Fraction (LERF) risk was not significant due to the exposure period existing long after shutdown. The result of the risk analysis was an increase in core damage frequency of < 1E-6 per year, a GREEN finding of very low safety significance. The cause of this finding involved the cross-cutting area of human performance, the component of work practices, and the aspect of human error prevention, H.4(a) because the licensee failed to utilize the human performance tool of self-checking when completing the calibration of comparator card PC-2402 C1-245. (Section 1R22)

- Green. The inspectors identified a Severity Level IV Non-cited Violation (NCV) of the North Anna Power Station, Unit 1 and Unit 2 Renewed Facility Operating Licenses, NPF-4 and NPF-7, Condition 2.D, Fire Protection Program (FPP) for making a change that adversely affected their ability to achieve and maintain safe shutdown. This led to inadequate controls of transient combustibles. The licensee initiated condition reports CR342754, “Failed to submit request for transient fire loading in U-2 safeguards,” CR 397441, “Appendix R fire wrap in Unit 2 Containment,” and CR 396368, “Appendix R fire wrap in Unit 1 Containment.”

  The inspectors determined that the changes to the FPP involving the control of transient combustibles was a violation involving traditional enforcement because it impacted the NRC’s ability to perform its regulatory function. The finding was determined to be more than minor because the relaxation of transient combustible controls described in the revisions to VPAP-2401, constituted a change which adversely affected the licensee’s ability to achieve and maintain safe shutdown in the event of a fire. This violation is characterized at Severity Level (SL) IV in Supplement I of the NRC Enforcement Policy, in that actual fire did not occur, and the potential consequences were limited given that defense in depth was maintained with the existence of automatic fire detection and suppression capability and the availability of fire response teams. Although the licensee failed to meet regulatory requirements that have more than minor safety or environmental significance, the inspectors were unable to confirm the introduction of excessive transient combustibles into the plant other than the problem identified on July 27, 2009. This lack of information was due to the licensee FPP changes that did not require a permit for evaluation and documentation. Because the issue is in the licensee’s corrective action program as CR382725, this violation is being treated as an NCV, consistent with the NRC Enforcement Policy. This violation was not screened for associated cross-cutting aspects because it dealt with traditional enforcement. (Section 4OA5.4)

Cornerstone: Mitigating Systems

- TBD. A self-revealing Apparent Violation of Technical Specifications 5.4.1.a was identified for the licensee’s failure to establish and maintain emergency diesel generator (EDG) maintenance procedures as required by Regulatory Guide 1.33, Appendix A, Section 9, Procedures for Performing Maintenance. The licensee initiated condition report CR439091, “02-EE-EG-2H Emergency Diesel Generator manually secured," and subsequently completed root cause evaluation (RCE) 001062.

The inspectors determined that the failure to adequately establish and maintain procedure 0-MCM-0701-27 was a performance deficiency. The inspectors reviewed IMC 0609, Appendix B, and determined that the finding was more than minor because it adversely affected the procedure quality attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically the failure to establish and maintain EDG maintenance procedures led to the inability of the 2H EDG to perform its safety function. The inspectors reviewed IMC 0609, Attachment 4, and determined that since the finding represented an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time, a phase 2 analysis was required. A phase 2 analysis was performed by a resident inspector and resulted in a potentially greater than green significance. Therefore, a phase 3 analysis is required to be performed by a regional SRA in accordance with the guidance of IMC 0609 Appendix A. The cause of this finding involved the cross-cutting area of problem identification and resolution, the component of operating experience, and the aspect of implementing operating experience, P.2(b), because the licensee failed to properly incorporate operating experience into station procedures. (Section 4OA5.3)

B. Licensee Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Unit 1 began the report period in a forced outage which was the result of an August 23, 2011, seismic event and a loss of all offsite power. Unit 1 commenced reactor startup activities on November 11, 2011, and ended the period at full rated thermal power (RTP)

Unit 2 began the report period in a planned refueling outage that was entered following a forced outage which was the result of an August 23, 2011, seismic event and a loss of all offsite power. Unit 2 commenced reactor startup activities on November 18, 2011, and ended the period at full RTP.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

The inspectors reviewed the licensee's adverse weather preparations for cold weather operations specified in 0-GOP-4, "Cold Weather Operations," Revision 52, and the licensee's corrective action database for cold weather related issues. The inspectors walked down the three risk-significant areas listed below to verify compliance with procedural requirements and to verify that the specified actions provided the necessary protection for the applicable structures, systems, or components (SSCs). The inspectors reviewed the licensee's corrective action program (CAP) database to verify that weather related problems due to temperature were being identified at the appropriate level, entered into the CAP, and appropriately resolved.

- Unit 1 and 2 Emergency Diesel Generator Rooms
- Unit 1 and 2 Refueling Water Storage Tanks
- Station Blackout Diesel Room

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Complete Walkdown

a. Inspection Scope

The inspectors performed a detailed walkdown and inspection of the Unit 2 Outside Recirculation Spray System to assess proper alignment and to identify discrepancies that could impact its availability and functional capacity. The inspectors assessed the physical condition and position of each recirculation spray and casing cooling valve, whether manual, power operated or automatic to ensure correct positioning of the valves. 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 to this report.

b. Findings

No findings were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors conducted focus tours of the eight areas listed below that are important to reactor safety to verify the licensee’s implementation of fire protection requirements as described in fleet procedures CM-AA-FPA-100, Revision 5, “Fire Protection/Appendix R (Fire Safe Shutdown) Program,” CM-AA-FPA-101, “Control of Combustible and Flammable Materials,” Revision 3, and CM-AA-FPA-102, “Fire Protection and Fire Safe Shutdown Review and Preparation Process and Design Change Process,” Revision 3. 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.

- Service Water Pump House (fire zone 12a / SWPH), Auxiliary Service Water Pump House (fire zone 13a / ASWPH), Motor-Driven Fire Pump Building (fire zone 26 / FPB), and Service Water Valve House (fire zone 48a / SWVH)
- Quench Spray Pump House and Safeguards Area Unit 1 (includes Z-16-1)(fire zone 15-1a / QSPH-1)
- Quench Spray Pump House and Safeguards Area Unit 2 (includes Z-16-2)(fire zone 15-2a / QSPH-2)
- Technical Support Center (fire zone 46b / TSC) and Technical Support Center Battery Room (fire zone 46B / TSCBR)
- Containment Unit 1 (fire zone 1-1a / RC-1)

- Containment Unit 2 (fire zone 1-2a / RC-2)
- Main Steam Valve House Unit 1 (includes MG Set Room)(fire zone 17-1a / MSVH-1)
- Main Steam Valve House Unit 2 (includes MG Set Room)(fire zone 17-2a / MSVH-2)

b. Findings

No findings were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors assessed the internal flooding vulnerability of the Unit 1 and 2 Emergency Switchgear Rooms with respect to adjacent safety-related areas to verify that the flood protection barriers and equipment were being maintained consistent with the Updated Final Safety Analysis Report (UFSAR). The licensee's corrective action documents were reviewed to verify that corrective actions with respect to flood-related items identified in condition reports 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 were identified.

1R07 Triennial Heat Sink Performance

a. Inspection Scope

The inspector reviewed inspection records, test results, and other documentation to ensure that heat exchanger deficiencies that could mask or degrade performance were identified and corrected. The test procedures and records were also reviewed to verify that these were consistent with Generic Letter (GL) 89-13 licensee commitments and industry guidelines. The inspector reviewed documentation associated with the component cooling water (CCW) system heat exchangers (HX), charging pumps oil cooler HX, and recirculation spray (RS) HX to assess the health of each. In addition, the inspectors reviewed documentation associated with the service water (SW) system to assess its capabilities to support these and other risk-significant HXs. All documents reviewed are listed in the Attachment to this report.

The inspector reviewed site and corporate HX program procedures, maintenance procedures including testing and cleaning frequencies, design basis documents, condition report documents, system health reports, and conducted interviews with service water system engineers. The inspector reviewed visual inspection records, flow measurement trends, system walkdown inspection results, and eddy current testing procedures. The inspector also reviewed documentation that supported changing inspection frequency on the CCW heat exchangers from two to three years. CR428731 was issued by the GL 89-13 coordinator that identified that the changes had not been sufficiently reviewed and were made without the support of the GL 89-13 program. Upon further evaluation, the inspection frequency of the CCW heat exchangers was rolled back to two years.

In addition, the inspectors conducted a walkdown of the SW system, intake structure, discharge reservoir and selected HXs to assess general material condition and to identify any degraded conditions of selected components.

Condition Reports were reviewed for potential common cause problems and problems which could affect system performance to confirm that the licensee was entering issues in the corrective action program and initiating appropriate corrective actions.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program

.1 Quarterly Resident Inspector Observations

a. Inspection Scope

The inspectors reviewed a crew examination on October 24, 2011, which involved a main steam line break during unit startup. 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 were identified.

.2 Annual Review of Licensee Requalification Examination Results

a. Inspection Scope

On February 18, 2011, the licensee completed the annual requalification operating tests and written examinations required to be administered to all licensed operators in accordance with 10 CFR 55.59(a)(2). The inspectors performed an in-office review of the overall pass/fail results of the individual operating tests, the crew simulator operating tests and the written examinations. These results were compared to the thresholds established in Manual Chapter 609 Appendix I, Operator Requalification Human Performance Significance Determination Process.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

For the two equipment issues listed below, the inspectors evaluated the effectiveness of the respective 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 licensee staff. The inspectors compared the licensee's actions with the requirements of the Maintenance Rule (10 CFR 50.65), and licensee procedure ER-AA-MRL-10, "Maintenance Rule Program," Revision 5.

- CR432888, "NRC SRI requests additional information for 3 items already closed in CRS (CR350198, CR413318, and CR425931)"
- MRE 014184, "Pressurizer PORV (1-RC-PCR-1456) failed its stroke time during 1-PT-212.0"

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments

a. Inspection Scope

The inspectors reviewed three operability determinations and functionality assessments, listed below, affecting risk-significant mitigating systems, 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 Technical Specifications (TS) Limiting Conditions for Operation and the risk significance in accordance with the Significant Determination Process. The inspectors' review included a verification that operability determinations (OD) were made as specified by procedure OP-AA-102, "Operability Determination," Revision 7. Other documents utilized and reviewed as part of the inspections are listed in the Attachment to this report.

- Review of OD 000455, "1-CH-328 Valve Drive Installed Does not Meet NDE Requirements"
- Review of OD 000454, “Support 1-SI-R-551 Not Installed IAW Design Drawing”
- Review of OD 000457, “OD to Return Line 6”-RH-27-153A-Q3 and 3”-SI-120-153A-Q3 to Service”

b. Findings

No findings were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed work order (WO) 591020844747, 2H EDG cylinder liner replacement, for selected risk-significant mitigating systems listed below, 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 in accordance with VPAP-2003, “Post Maintenance Testing Program,” Revision 14.

b. Findings

No findings were identified. Enforcement aspects associated with this issue are discussed in Section 4OA5.3 of this report.

1R20 Refueling and Other Outage Activities

.1 Unit 1 Forced Outage Due to Seismic Event

a. Inspection Scope

Unit 1 began a forced outage on August 23, 2011, which continued until November 11, 2011, due to a seismic event. 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.
- 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.
- Implementation of clearance activities and confirmation that tags were properly hung and appropriate clearance boundaries established
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication and an accounting for instrument error.
- Controls over the status and configuration of electrical systems to ensure that TS and outage safety plan requirements were met, and controls over switchyard activities.
- Reactivity control in accordance with the TS to ensure activities or SSCs which could cause unexpected reactivity changes were identified in the outage risk plan and were controlled accordingly.
- Observation of the effect of distractions from unexpected conditions or emergent activities on operator ability to maintain required reactor vessel level.
- Verification of fatigue management processes

b. Findings

No findings were identified.

.2 Unit 2 Refueling Outage

a. Inspection Scope

The inspectors reviewed the Outage Safety Review and contingency plans for the Unit 2 refueling outage, which began August 26, 2011, to confirm that the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth. The inspectors used inspection procedure 71111.20, “Refueling and Outage Activities,” to observe portions of the shutdown, cooldown, refueling, maintenance activities, and startup activities to verify that the licensee maintained defense-in-depth commensurate with the outage risk plan and applicable TS. The inspectors monitored licensee controls over the outage activities listed below.

- Licensee configuration management to evaluate maintenance of defense-in-depth commensurate with the outage risk control plan for key safety functions and compliance with the applicable TS when taking equipment out of service
- Implementation of clearance activities and confirmation that tags were properly hung and appropriate clearance boundaries established

- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication and an accounting for instrument error
- Controls over the status and configuration of electrical systems to ensure that TS and outage safety plan requirements were met, and controls over switchyard activities
- Decay heat removal processes to verify proper operation and that steam generators, when relied upon, were a viable means of backup cooling.
- 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.
- Reactivity control in accordance with the TS to ensure activities or SSCs which could cause unexpected reactivity changes were identified in the outage risk plan and were controlled accordingly.
- Control of containment penetrations according to the TS to ensure achievement of containment closure at all times
- Verification of plants systems configurations to ensure they are in accordance with licensee commitments from GL88-17
- Observation of the effect of distractions from unexpected conditions or emergent activities on operator ability to maintain required reactor vessel level.
- Verification that refueling seals had been properly installed and tested, and that foreign material exclusion was being maintained in the refuelling, spent fuel, and suppression pool areas.
- Verification of fatigue management processes
- Verification of RCS boundary leakage, containment integrity, and reactor physics testing

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the six surveillance tests listed below, the inspectors examined the test procedures, witnessed testing, or 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. Documents reviewed are listed in the Attachment to this report.

Containment Isolation Valve:

- 2-PT-61.3, "Containment Type C Testing Penetration 34," Revision 40

Other Surveillance Tests:

- 1-PT-66.3, "Containment Depressurization Actuation Operational Test," Revision 47
- 1-PT-57.4, "Containment Injection Operational Test," Revision 56
- 2-PT-66.3, "Containment Depressurization Actuation Operational Test," Revision 43
- 1-PT-57.4, "Safety Injection Operational Test," Revision 55
- 2-ICP-RC-P-2402, "Reactor Coolant System Pressure (Wide and Narrow Range)(P-RC-2402) Protection Channel 1 Calibration," Revision 4

b. Findings

Failure to Follow Procedure to Ensure Proper Calibration of RHR Valve Control Circuit

Introduction: A self-revealing Green NCV of Technical Specification 5.4.1.a was identified for the licensee's failure to implement procedures as required by Regulatory Guide 1.33, Appendix A, Section 8, Procedures for Control of Measuring and Test equipment and for Surveillance Tests, Procedures, and Calibrations, specifically calibration procedures for a control circuit associated with a residual heat removal (RHR) suction valve.

Description: On November 15, 2011, while the licensee was preparing for RHR valve leakage testing, 02-RH-MOV-2700, Loop A Hot Leg to RH Pumps Isolation Valve, failed to open upon demand. The licensee initiated condition report (CR) 452756, "2-RH-MOV-2700 will not open with proper pressure across the seat", and performed troubleshooting which identified that the trip value for the open permissive signal for 02-RH-MOV-2700, located on comparator card PC-2402 C1-245, was out of tolerance. This out of tolerance condition prevented 02-RH-MOV-2700 from receiving a required permissive signal needed for operation in the open direction. Comparator card PC-2402 C1-245 was subsequently calibrated correctly and 02-RH-MOV-2700 was opened with no further issues noted.

The inspectors reviewed licensee procedure 2-ICP-RC-P-2402, "Reactor Coolant System Pressure (Wide and Narrow Range) (P-RC-2402) Protection Channel I Calibration," Revision 4, and noted that section 6.9 requires that setpoint data for the open permissive function of 02-RH-MOV-2700 be read from a digital multimeter connected to test point (TP) 2 of card PC-2402 C1-444. The inspectors reviewed licensee apparent cause evaluation (ACE) 018955, "2-RH-MOV-2700 will not open" which investigated this event. The inspectors noted that during performance of the calibration for comparator card PC-2402 C1-245 on 9/20/2011, the technician read the setpoint data from a digital multimeter connected to TP1 of card PC-2402 C1-144 vice the location required in section 6.9 of 2-ICP-RC-P-2402. This resulted in the incorrect input being provided to comparator card PC-2402 C1-245. As a result, this caused the open permissive trip setpoint to be lower than required which prevented the generation of the permissive signal to allow 02-RH-MOV-2700 to operate in the open direction.

The inspectors concluded that the technician failed to use the appropriate test point as required by licensee procedure 2-ICP-RC-P-2402 for the calibration of comparator card PC-2402 C1-245.

Analysis: The inspectors determined that the failure to use the appropriate test point as required by licensee procedure 2-ICP-RC-P-2402 for the calibration of comparator card PC-2402 C1-245 was a performance deficiency. The inspectors reviewed IMC 0612, Appendix E and determined the finding was more than minor because it was similar to example 4.c. In accordance with NRC Inspection Manual Chapter (IMC) 0609, Appendix G, “Shutdown Operations Significance Determination Process,” Attachment 1, Checklist 4, the inspectors conducted a Phase 1 SDP screening and determined the finding required a Phase 2 analysis because the calibration error degraded the licensee’s ability to recover DHR once it was lost. A phase 2 SDP evaluation was performed by a regional SRA in accordance with NRC IMC 0609 Appendix G, Attachment 2, Phase 2 SDP Template for PWR during Shutdown. The exposure time was < 1 day from when RHR was secured and the valve closed until the licensee restored normal function for the valve. The significant assumptions and influential factors affecting the risk included: (1) The PD only affected opening from the main control room, local manual operation was not affected, (2) Closing of the valve and valve position indication were not affected, (3) Procedural guidance existed for local manual operation, (4) RCS pressure remained low (380psig) during the exposure period, and (5) the plant had been shutdown since August 23, 2011, and decay heat was very low. Large Early Release Fraction (LERF) risk was not significant due to the exposure period existing long after shutdown. The result of the risk analysis was an increase in core damage frequency of < 1E-6 per year, a GREEN finding of very low safety significance. The cause of this finding involved the cross-cutting area of human performance, the component of work practices, and the aspect of human error prevention, H.4(a) because the licensee failed to utilize the human performance tool of self-checking when completing the calibration of comparator card PC-2402 C1-245.

Enforcement: TS 5.4.1.a states, in part, that written procedures shall be implemented covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, of which Section 8 specifies procedures for calibrations. Contrary to the above, from September 20, 2011, until November 15, 2011, the licensee failed to properly implement a calibration procedure, specifically procedure 2-ICP-RC-P-2402 for the calibration of comparator card PC-2402 C1-245 associated with valve 02-RH-MOV-2700. Because the issue is in the licensee’s corrective action program as CR452756, this violation is being treated as a Non-cited Violation (NCV) consistent with the NRC Enforcement Policy and is identified as NCV 05000339/2011005-01, Failure to Follow Procedure to Ensure Proper Calibration of RHR Valve Control Circuit.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

On December 2, 2011, the inspectors observed the licensee simulator based training that involved a spray valve failure and main feed regulator valve failure. The inspectors assessed emergency procedure usage, emergency plan classification, notification, 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. There were no drill issues requiring a condition report.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors performed a periodic review of the Safety System Functional Failures PI for both Unit 1 and Unit 2 to assess the accuracy and completeness of the submitted data and whether the performance indicators were calculated in accordance with the guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspection was conducted in accordance with NRC inspection procedure 71151, "Performance Indicator Verification." Specifically, the inspectors reviewed the Unit 1 and Unit 2 data reported to the NRC for the period October 1, 2010, through September 30, 2011. Documents reviewed included applicable NRC inspection reports, licensee event reports, operator logs, station performance indicators, and related CRs.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution

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

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.1 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the six-month period of July 1, 2011, through December 31, 2011, although some examples expanded beyond those dates where the scope of the trend warranted.

Inspectors also reviewed major equipment problem lists, repetitive and rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's CAP trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

b. Assessment and Observations

No findings were identified. Trends noted by the inspectors' were previously identified by the licensee and addressed in the licensee's corrective action program.

.3 Annual Sample: Operator Work-Around Review

a. Inspection Scope

The inspectors performed a review regarding the licensee's assessments and corrective actions for operator workarounds (OWAs). The inspectors reviewed the cumulative effects of the licensee's OWAs and licensee procedure OP-AA-1700, "Operations Aggregate Impact", Revision 5. The inspectors reviewed the data package associated with this procedure which included an evaluation of the cumulative effects of the OWAs on the operator's ability to safely operate the plant and effectively respond to abnormal and emergency plant conditions. The inspectors reviewed and monitored licensee planned and completed corrective actions to address underlying equipment issues causing the OWAs. The inspectors also evaluated OWAs against the requirements of the licensee's CAP as specified in PI-AA-200, "Corrective Action," Revision 17, 10 CFR 50, Appendix B, and OP-AA-100, "Conduct of Operations," Revision 17.

b. Findings and Observations

No findings were identified. In general, the inspectors verified that the licensee has identified operator workaround problems at an appropriate threshold, entered them in the corrective action program, and has proposed or implemented appropriate corrective actions.

.4 Annual Sample: CR350198 NRC Question Maintenance Rule Classification

a. Inspection Scope

The inspectors performed a review regarding the licensee's assessments and corrective actions for CR350198, "NRC question Maintenance Rule classification of 01-HV-LV-100," 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 CRs against the requirements of the licensee's CAP as specified in procedure, PI-AA-200, "Corrective Action Program," Revision 17, and 10 CFR 50, Appendix B.

b. Findings

No findings were identified.

.5 Annual Sample: CR439091 Emergency Diesel Generator Manually Secured

a. Inspection Scope

The inspectors performed a review regarding the licensee's assessments and corrective actions for CR439091, "02-EE-EG-2H, Emergency Diesel Generator manually secured", 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 CRs against the requirements of the licensee's CAP as specified in procedure, PI-AA-200, "Corrective Action Program," Revision 17, and 10 CFR 50, Appendix B.

b. Findings

No findings were identified. Enforcement aspects associated with this issue are discussed in Section 4OA5.3 of this report.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with the licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings were identified.

.2 Review of the Operation of an Independent Spent Fuel Storage Installation (Inspection Procedure 60855.1)

a. Inspection Scope

Inspectors verified by direct observation, and review of selected records, that the licensee had identified fuel assemblies placed in the Independent Spent Fuel Storage Installation. The inspectors verified that the parameters and characteristics of each fuel assembly were recorded, and that a record of each fuel assembly was made as a controlled document. The documents utilized and reviewed as part of the inspection are listed in the Attachment to this report.

b. Findings

No findings were identified

.3 (Closed) URI 05000339/2011011-02: Failure of 2H Emergency Diesel Generator Jacket Water Cooling Gasket Resulting in Inoperability During Dual Unit LOOP

a. Inspection Scope

As described in Unresolved Item (URI) 05000339/2011011-02, the inspectors identified issues related to maintenance procedures for the 2H Emergency Diesel Generator (EDG) following a jacket water cooling leak that developed during a dual unit loss of offsite power (LOOP).

The inspectors interviewed station personnel and performed an extensive review of the licensee's EDG maintenance procedures, the maintenance history of the 2H EDG, and corrective action program documents regarding this issue. This URI is closed.

b. Findings

Introduction: The inspectors had previously opened URI 05000339/2011011-02, Failure of 2H Emergency Diesel Generator Jacket Water Cooling Gasket Resulting in Inoperability During Dual Unit LOOP. A self-revealing AV of TS 5.4.1.a was identified for the licensee's failure to establish and maintain EDG maintenance procedures as required by Regulatory Guide 1.33, Appendix A, Section 9, Procedures for Performing Maintenance.

<u>Description</u>: Following a seismic event on August 23, 2011, at 1:51 p.m., all four EDGs started and loaded their respective emergency busses due to a loss of offsite power on both units. About 45 minutes after the EDGs started, a coolant leak was observed on the 2H EDG. At 2:40 p.m., the 2H EDG was manually tripped and secured and the associated emergency bus de-energized. The 2H emergency bus was subsequently re-energized by the Station Blackout diesel generator. Initial investigation by the licensee determined that the leak was caused by the failure of a gasket located in the EDG jacket water cooling system between the exhaust belt and the jacket water cooling inlet jumper on the opposite control side of the EDG. Corrective action taken by the licensee included replacement of the failed gasket and inspection of similar gaskets located on both unit's EDGs. The licensee initiated condition report (CR) 439091 and subsequently completed root cause evaluation (RCE) 001062.

The inspectors reviewed the maintenance history associated with the 2H EDG and other EDGs and noted that the failed gasket type was initially installed in October 2001. The inspectors reviewed a Fairbanks Morse Engine Division marketing information letter that provided guidance regarding the installation of this gasket type including use of a high tack spray adhesive during installation. The inspectors also noted multiple instances of leaks associated with this joint location, specifically in October 2001 and again in May 2010. Following the leak identified in October 2001 the licensee began using RTV in place of the high tack spray adhesive to achieve proper sealing on the joint, however, no engineering evaluation of this practice was completed. Following the leak identified in May 2010 the licensee initiated CR383161 and changed procedure 0-MCM-0701-27, "Replacement of Emergency Diesel Generator Cylinder Liners," Revision 19, to include a 30-60 minute cure time for the RTV used to assemble the joint. It was not identified that a cure time of less than 30-60 minutes was used on one side of the failed gasket during reassembly. The inspectors noted that the May 2010 maintenance of the 2H EDG was the last maintenance conducted on the subject gasket prior to its failure on August 23, 2011. The inspectors reviewed RCE001062 and noted that it listed inadequate procedural guidance regarding the installation of the adjusting nut for the jacket water cooling inlet jumper. Specifically, the procedure did not limit the amount of torque to be applied to the adjusting nut and failed to provide adequate guidance for cure time on RTV used to assemble the joint. The inspectors noted that, during the licensee's investigation, it was determined that a small amount of torque on the adjusting nut unloaded the compression on the lower portion of the gasket, which was the area that was determined to have failed during the event. The inspectors also noted that RCE001062 identified the improper cure time that was used on one side of the failed gasket during the May 2010 maintenance.

The inspectors concluded that the licensee failed to adequately establish and maintain EDG maintenance procedures, specifically procedure 0-MCM-0701-27, which resulted in a faulty gasket installation that was determined to have contributed to the failure of the EDG to perform its safety function.

Analysis: The inspectors determined that the failure to adequately establish and maintain procedure 0-MCM-0701-27 was a performance deficiency. The inspectors reviewed IMC 0609, Appendix B, and determined that the finding was more than minor because it adversely affected the procedure quality attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically the failure to establish and maintain EDG maintenance procedures led to the inability of the 2H EDG to perform its safety function. The inspectors reviewed IMC 0609, Attachment 4, and determined that since the finding represented an actual loss of a safety function of a single train for greater than its Technical Specification allowed outage time, a phase 2 analysis was required. A phase 2 analysis was performed by a resident inspector and resulted in a potentially greater than green significance. Therefore, a phase 3 analysis is required to be performed by a regional SRA in accordance with the guidance of IMC 0609 Appendix A. The cause of this finding involved the cross-cutting area of problem identification and resolution, the component of operating experience, and the aspect of implementing operating experience, P.2(b), because the licensee failed to properly incorporate operating experience into station procedures.

Enforcement: TS 5.4.1.a states, in part, that written procedures shall be established and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, of which Section 9 specifies procedures for performing maintenance. Contrary to the above, from June 2, 2010 until August 23, 2011, the licensee failed to establish and maintain EDG maintenance procedures. Specifically procedure 0-MCM-0701-27 did not provide adequate guidance for installation of the jacket water cooling inlet jumper gasket. The licensee initiated CR439091. Pending final determination of the safety significance, this finding is identified as AV 05000339/2011005-02, Failure to Provide Adequate Guidance for Installation of 2H EDG Jacket Water Cooling Inlet Jumper.

.4 (Closed) URI 05000338, 339/2009004-01, Control of Transient Combustibles, and URI 05000338, 339/2010005-01, Appendix R Fire Protection for RCS Instrumentation in Containment

a. Inspection Scope

The inspectors issued unresolved item (URI) 05000338, 339/2009004-01, Control of Transient Combustibles, in NRC Integrated Inspection Report (IIR) 05000338/2009004, 05000339/2009004, based on concerns regarding changes in the methodology of transient combustible controls dictated by VPAP-2401, “Fire Protection Program,” Revision 0, up to Revision 29 which was in effect on July 27, 2009. Subsequently, the inspectors issued URI 05000338, 339/2010005-01, Appendix R Fire Protection for RCS Instrumentation in Containment, in NRC IIR 05000338/2010005, 05000339/2010005, for concerns regarding transient combustibles impacting RCS pressurizer level and pressure transmitters and respective cabling located within containment and protected by radiant heat shields used for Appendix R fire protection features. These URIs are closed.

b. Findings

Introduction: The inspectors identified a Severity Level IV Non-Cited Violation (NCV) of North Anna Power Station, Units 1 and 2 Renewed Facility Operating License, NPF-4, Condition 2.D, Fire Protection for an adverse change in the Fire Protection Program (FPP) for making a change that adversely affected their ability to achieve and maintain safe shutdown. This led to inadequate controls of transient combustibles.

Description: On July 27, 2009, the inspectors identified transient fire loads consisting of combustible Class A materials located in a safety-related area, Unit 2 Safeguards building, and in a position below cable trays with cables for both trains of loads associated with the low head safety injection and recirculation spray (RS) systems. The inspectors determined the transient fire loads were stored without written authorization from the supervisor of the nuclear site safety department and informed the licensee who entered the problem in their CAP as CR 342754. The inspectors also determined that the transient fire loads were stored within the Unit 2 Safeguards building over the previous weekend (from Friday, July 24, 2009), in preparation for work to start in the following week. Interviews with licensee personnel indicated that they believed that had prior written authorization been obtained, then they would have been allowed to store the materials over the weekend without violation of their FPP. This interpretation led to the initiation of the URI for Control of Transient Combustibles.

The inspectors completed a review of the FPP implemented by VPAP-2401, "Fire Protection Program," from Revision 0 to Revision 29, which was in effect on July 27, 2009, and identified the following changes demonstrating a relaxation in the controls of transient combustibles:

- Revision 0, step 4.6.4, Transient Combustible definition was changed in Revision 21, effective July 16, 2003, in step 4.31.4, "Transient Combustible," to add an additional statement to the definition, "Materials will be considered a transient fire load if required to be stored past 1 shift."
- The above requirement was further amplified in Revision 25, effective October 12, 2005, step 6.1.3, "Transient Combustibles," which states in part, "Transient combustibles are defined as any flammable or combustible material that is typically not permanent plant equipment or stored in an approved storage area but that is necessary for the performance of work activities in plant areas." "Materials will be considered a transient fire load if they are required to be stored in an unapproved storage area past one (1) shift." Use of transient combustibles in a safety-related area requires the use of VPAP-2401, Attachment 2, "Transient Fire Loading Report." Attachment 21, "Transient Fire Load Flowchart," was used to determine when a Transient Fire Loading Report was required. This flow chart, which excluded combustible liquids, allowed combustible materials with no limits in an area with no evaluation if they were removed within the same shift. The inspectors also noted that a limit of 100 pounds was added to the combustible materials for this Attachment in Revision 27, effective November 30, 2006.

- Revision 0, step 6.1.2, a.4, “Combustible materials shall not be stored in or in close proximity to safety related areas or equipment,” was deleted in Revision 28, effective December 14, 2007. The inspectors were unable to locate a similar step regarding the storage of transient combustibles within “close proximity to safety related areas or equipment.”
- Revision 25, effective October 12, 2005, step 6.1.2.a.9 had been revised to remove the comment regarding flame retardant wood as a combustible. Therefore, flame retardant wood was no longer considered a transient combustible that required an evaluation.

The inspectors also noted that the Transient Fire Load Reports are approved by a member of the Safety and Loss Prevention group. The inspectors determined that the training of this respective group does not include the familiarization of what constitutes safety-related and/or safe shutdown components. Of consequence is the example identified by the inspectors and described above on July 27, 2009, where the placement of the combustibles exposed safety-related targets comprised of cabling in the overhead trays. The inspectors determined that the lack of training was not a change to the FPP, but, rather, had been in place since the inception of VPAP-2401.

The licensee entered the problems into their CAP as corrective action (CA) 170278 associated with CR382725.

The inspectors reviewed the North Anna Power Station, Units 1 and 2 Renewed Facility Operating License, NPF-4 and NPF-7, Condition 2.D, “Fire Protection,” which states, “VEPCO shall implement and maintain in effect all provisions of the approved fire protection program as described in the UFSAR for the facility and as approved in the SER dated February 1979 subject to the following provision: “The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.” The inspectors also reviewed the basis documents in UFSAR section 9.5.1, “Fire Protection System,” for the requirements stipulating control of transient combustibles and found no justification for the licensee’s changes in transient combustible controls. The inspectors concluded that the relaxation of transient combustible controls stipulated in the revisions to VPAP-2401, constituted a change resulting in an adverse impact to the ability to achieve and maintain safe shutdown in the event of a fire because the failure to adequately control and evaluate would present potential fire scenarios involving significant, non-liquid transient combustibles that would adversely affect safety-related and safe shutdown components.

On September 24, 2010, the inspectors identified an issue of concern regarding transient combustibles impacting the Unit 1 RCS pressurizer level and pressure transmitters and respective cabling located within containment and protected by radiant heat shields used for Appendix R fire protection features. Specifically, the inspector was able to postulate a scenario in which transient combustibles could damage both trains of the instrumentation required for Appendix R safe shutdown requirements during Mode 4 conditions. On October 1, 2010, the inspectors identified a similar concern for Unit 2 RCS instrumentation and cabling. The inspectors performed a review of the original installations and subsequent exemption requests by the licensee and found that the exemption requests regarding certain aspects of Appendix R requirements were contingent on adequate control of transient combustibles. The inspectors determined that the failure to adequately control transient combustibles invalidated the exemption requests. A review of this issue of concern by NRC headquarters fire protection specialists confirmed this conclusion in spite of the agency's oversight to describe the required adequate control of transient combustibles in the respective NRC safety evaluation report. The inspectors concluded that the licensee corrective actions in response to the deficiencies impacting FPP transient combustible control have resolved this problem. Consequently, the URI for Appendix R fire protection of RCS instrumentation in containment can be closed.

Analysis: The inspectors determined that the changes to the FPP involving the control of transient combustibles was a violation involving traditional enforcement because it impacted the NRC's ability to perform its regulatory function. The finding was determined to be more than minor because the relaxation of transient combustible controls described in the revisions to VPAP-2401 constituted a change which adversely affected the licensee's ability to achieve and maintain safe shutdown in the event of a fire. This violation is characterized at Severity Level IV in Supplement I of the NRC Enforcement Policy, in that actual fire did not occur, and the potential consequences were limited given that defense in depth was maintained with the existence of auto fire detection and suppression capability and the availability of fire response teams. Although the licensee failed to meet regulatory requirements that have more than minor safety or environmental significance, the inspectors were unable to confirm the introduction of excessive transient combustibles into the plant other than the problem identified on July 27, 2009. This lack of information was due to the licensee FPP changes that did not require a permit for evaluation and documentation. This violation was not screened for associated cross-cutting aspects because it dealt with traditional enforcement.

Enforcement: North Anna Power Station, Units 1 and 2 Renewed Facility Operating License, NPF-4 and NPF-7, Condition 2.D, Fire Protection states that the licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire. Contrary to this, on July 27, 2009, the licensee had incorporated changes to the approved FPP procedure, VPAP-2401, which adversely affected the ability to achieve and maintain safe shutdown based on the inadequate control of transient combustibles. Because this issue is characterized as a traditional enforcement Severity Level IV violation and is in the licensee's corrective action program as CR382725, this violation is being treated as an NCV, consistent with the NRC Enforcement Policy and is identified as NCV 05000338, 339/2011005-03, Adverse Changes to the Fire Protection Program Involving Inadequate Control of Transient Combustibles.

.5 (Closed) URI 05000338, 339/2011011-03: Missing Orifice Plate on 1J and 2J EDG

a. Inspection Scope

As described in URI 05000339/2011011-03, the inspectors identified issues related to the missing orifice plate on the 1J and 2J EDGs.

The inspectors interviewed station personnel and performed an extensive review of the licensee's procedures, documents associated with the orifice plate, and corrective action program documents regarding this issue. This URI is closed.

b. Findings

The inspectors reviewed CR 441537, "1-EG-P-7J does not have an orifice plate installed on the discharge of the pump," and CR 441540, "2-EG-P-7J does not have an orifice plate installed on the discharge of the pump." A performance deficiency existed with regard to design configuration, but the lack of a missing orifice plate did not contribute to EDG performance issues. The inspectors concluded that, regarding this URI, the performance deficiency was not more than minor.

.6 (Closed) URI 05000338, 339/2011011-06: Seismic Alarm Panel

a. Inspection Scope

As described in URI 05000339/2011011-06, the inspectors identified issues related to the seismic monitoring panel and its input into EAL decisions by the licensee.

The inspectors interviewed station personnel and performed an extensive review of the licensee's EAL procedures, documents associated with the seismic monitoring panel, and corrective action program documents regarding this issue. This URI is closed.

b. Findings

The inspectors reviewed the licensee's condition report (CR) 439052, "Dual Unit trip following Magnitude 5.8 Earthquake." and it associated root cause evaluation (RCE) 1061, "Dual Unit trip following Magnitude 5.8 Earthquake." The inspectors noted that Strong Motion Accelerograph Peak Shock Annunciator located on the seismic monitoring panel did not provide a visual alarm due to the loss of power it encountered following the loss of offsite power on August 23, 2011, and that this annunciator is used as an entry condition in Alert EAL HA 1.1. The inspectors noted that the licensee declared an Alert during the event using Alert EAL HA 6.1 using judgment of the Site Emergency Manager and that this was the proper declaration given the seismic conditions that were experienced onsite. The inspectors reviewed licensee procedure 0-AP-36, "Seismic Event", Revision 19, and noted that Attachment 2 is used when seismic instrumentation is determined to be inoperable. Attachment 2 to 0-AP-36 uses alternate indications such as earthquake magnitude and proximity to the site to assist in determining correct EAL entry. The inspectors reviewed CR443415, "Create Work Order to Replace the Uninterruptible Power Supply in 1-EI-CB-151" and licensee temporary modification TM1845, "Installation of an Uninterruptible Power Supply on Earthquake Monitoring Panel 1-EI-CB-151." The inspectors noted that the licensee's corrective actions installed a seismically qualified uninterruptible power supply for the seismic monitoring panel which will alleviate the loss of power condition that was experienced by the panel consequent to the loss of offsite power event that occurred on August 23, 2011. The inspectors concluded that, regarding this URI, no performance deficiency exists.

.7 (Closed) URI 05000338, 339/2011011-07: Safety Related Instrumentation Anomalies

a. Inspection Scope

As described in URI 05000339/2011011-07, the inspectors identified issues related to safety related instrumentation anomalies.

The inspectors interviewed station personnel and performed an extensive review of the licensee's procedures, documents associated with the safety related instrumentation anomalies, and corrective action program documents regarding this issue. This URI is closed.

b. Findings

The inspectors reviewed CR 444447, "Validity of the Dranetz Sequence of Event Recorder data for Unit 1 and Unit 2." The inspectors determined that the instruments identified during the event responded appropriately during the event in accordance with defined calibration data. The inspectors concluded that, regarding this URI, no performance deficiency exists.

4OA6 Meetings, Including Exit

.1 Triennial Heat Sink Performance

An exit meeting was conducted on November 17, 2011, with licensee management and members of the plant staff. The inspectors confirmed proprietary information was not reviewed during the inspection.

.2 Quarterly Exit Meeting Summary

On January 18, 2012, the senior resident inspector presented the inspection results to Mr. Jerry Bischof and other members of the staff, who acknowledged the findings. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT: SUPPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION
KEY POINTS OF CONTACT

Licensee personnel:
M. Becker, Manager, Nuclear Outage and Planning
J. Bischof, Site Vice President
M. Crist, Plant Manager
J. Daugherty, Manager, Nuclear Maintenance
R. Evans, Manager, Radiological Protection
C. Gum, Manager, Nuclear Protection Services
T. Huber, Director, Nuclear Engineering
S. Hughes, Manager, Nuclear Operations
K. La Baron, GL 89-13 Coordinator
L. Lane, Site Vice President
J. Leberstien, Technical Advisor Licensing
P. Kemp, Project Manager, Station Improvement Initiatives
F. Mladen, Director, Nuclear Safety and Licensing
J. Plossl, Supervisor, Nuclear Station Procedures
R. Scanlon, Manager, Nuclear Site Services
J. Schlesser, Manager, Nuclear Organizational Effectiveness
D. Taylor, Supervisor, Station Licensing
R. Wesley, Manager, Nuclear Training
M. Whalen, Technical Advisor Licensing

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000339/2011005-02	AV	Failure to Provide Adequate Guidance for Installation of 2H EDG Jacket Water Cooling Inlet Jumper (Section 4OA5.3)

Opened and Closed

05000339/2011005-01	NCV	Failure to Follow Procedure to Ensure Proper Calibration of RHR Valve Control Circuit (Section 1R22)
05000338, 339/2011005-03	NCV	Adverse Changes to the Fire Protection Program Involving Inadequate Control of Transient Combustibles (Section 4OA5.4)

Closed

05000339/2011011-02	URI	Failure of 2H Emergency Diesel Generator Jacket Water Cooling Gasket Resulting in Inoperability During Dual Unit LOOP (Section 4OA5.3)
05000338, 339/2009004-01	URI	Control of Transient Combustibles (Section 4OA5.4)

05000338, 339/2010005-01	URI	Appendix R Fire Protection for RCS Instrumentation in Containment (Section 4OA5.4)
05000338, 339/2011011-03	URI	Missing Orifice Plate on 1J and 2J EDG (Section 4OA5.5)
05000338, 339/2011011-06	URI	Seismic Alarm Panel (Section 4OA5.6)
05000338, 339/2011011-07	URI	Safety Related Instrumentation Anomalies (Section 4OA5.7)

Discussed

None

LIST OF DOCUMENTS REVIEWED

<u>Section 1R04: Equipment Alignment</u>

- Procedure 2-PT-64.7, "Outside Recirc Spray and Casing Cooling System Valve Lineup and Verification," Revision 005
- Technical Specification 3.6.7, Recirculation Spray System
- Technical Specification SR 3.6.7.4, RS System Surveillance Requirements
- Drawing 12050-FM-918A, "Cont Quench and Recir Spray Sub Sys," Sheet 1 of 4 and Sheet 4 of 4
- Drawing 12050-FM-91B, "Containment Quench and Recirculating Spray Sub System," Sheet 1

<u>Section 1R07 : Triennial Heat Sink Performance</u>

<u>Procedures</u>

- ER-NA-SYS-320, Rev. 0, Generic Letter 89-13 Program
- ER-AA-PRS-1010, Rev. 1, Preventive Maintenance Task Basis & Maintenance Strategy
- ER-AA-102, Rev. 5, Preventive Maintenance Program
- ER-AA-HTX-1003, Rev. 5, Heat Exchanger Monitoring and Assessment
- ER-AA-HTX-10, Rev. 1, Heat Exchanger Program
- ER-AA-HTX-1002, Rev. 1, Heat Exchanger Program Visual and Leak Testing
- CHAP-0105, Rev. 12, Auxiliary Cooling System Chemistry Control Program (North Anna)
- 0-PT-75.15, Rev. 6, GL 89-13 Service Water Testing Requirements Coordination

<u>Condition Reports (CRs)</u>

- CR386229, Leak identified on 20"_WS-E23-151-Q3 at Support 2030
- CR405494, 1-SW639 through wall leak
- CR452999, ER-NA-SYS-320 is silent on the clean and inspect requirements for the RSHX
- CR428731, PM frequency changes not supported by the GL 89-10 Program
- CR422066, PM frequency changes not supported by the GL 89-10 Program close out

<u>Miscellaneous</u>

- Flow Balance Test - 1-PT-75.6, Rev. 20, Service Water System Flow Balance Test dated 10/7/2010
- Visual Inspection - 0-PT-75.12, Rev. 5, Visual Inspection of the Service Water Reservoir Dike Crest and Toe dated 5/31/2011
- Visual Inspection - 0-PT-75.12, Rev. 5, Visual Inspection of the Service Water Reservoir Dike Crest and Toe dated 9/23/2011
- Settlement Test - 0-PT-115, Rev. 11, Survey of Settlement Monitoring dated 3/30/2011
- Settlement Survey - 0-PT-115, Rev. 11, Survey of Settlement Monitoring dated 9/23/2011
- Structures Monitoring - 0-PT-112, Rev. 10, Category 1 Structures Settlement Monitoring dated 4/18/2011
- Service Water 2011 Quarter 2 Health Report
- Service Water 2011 Quarter 3 Health Report
- Service Water 2011 Quarter 1 Health Report

- Service Water 2010 Quarter 4 Health Report
- Service Water 2010 Quarter 3 Health Report
- Service Water 2010 Quarter 2 Health Report
- Service Water 2010 Quarter 1 Health Report
- Component Cooling Water 2011 Quarter 2 Health Report
- Component Cooling Water 2011 Quarter 3 Health Report
- Component Cooling Water 2011 Quarter 1 Health Report
- Component Cooling Water 2010 Quarter 2 Health Report
- Component Cooling Water 2010 Quarter 3 Health Report
- Component Cooling Water 2010 Quarter 4 Health Report
- Component Cooling Water 2010 Quarter 1 Health Report
- Calculation No. ME-0275, Heat Load Calculation
- Eddy Current Inspection Report, April 1, 2007, NAPS-2 – Recirc Spray Heat Exchanger 2-RS-E-1B
- UFSAR 9.2, Water Systems
- Coordination Review – 0-PT-75.15, Rev. 6, GL 89-13 Service Water Testing Requirements dated 9/9/2011

Section 1R15: Operability Determinations and Functionality Assessments

- CA215427, “CA to Engineering to document review of previous operability of system”
- DWG 11715-PSSK-111AR.02, Pipe Support 1-SI-R-171.551
- UFSAR Chapter 3, Design Criteria
- UFSAR Chapter 5, Reactor Coolant System
- UFSAR Chapter 6, Engineered Safety Features
- UFSAR Chapter 9.3.4, Chemical and Volume Control System
- UFSAR Chapter 15, Accident Analysis
- WO59102366379, “Rebuild support 1-SI-R-551 to the correct orientation IAW 11715-PSSK-111AR.02”
- WO59080009001, “Inspect internals on 3” velan check”
- 1-PT-210.14, “Miscellaneous Containment Isolation Check Valve Backseat Test”, Revision 13
- 1-PT-212.2, “Valve Inservice Inspection (CVCS System)”, Revision 16

Section 1R22: Surveillance Testing

- 1-PT-57.4, Safety Injection Operational Test, Revision 56 (completed 10/25/2011)
- ETE-NA-2011-0083, Engineering Acceptance of 1-PT-57.4, Safety Injection Operational Test, from Fall 2011 Unit 1 Forced Outage
- 1-PT-66.3, Containment Depressurization Actuation Operational Test, Revision 47 (completed 10/7/2011)
- ETE-NA-2011-0087, Engineering Acceptance of 1-PT-66.3 from Fall 2011 Unit 1 Forced Outage
- 2-PT-57.4, Safety Injection Operational Test, Revision 55-OTO-1
- 2-PT-66.3, Containment Depressurization Actuation Operational Test, Revision 43

Section 4OA5: Other Activities

- 0-OP-4.50, ”NUHOMS 32 PTH Dry Shielded Canister Loading and Handling”, Revision 10
- ETE-NAF-2010-0003, “North Anna Power Station Independent Spent Fuel Storage Installation 10 CFR 72.212 Evaluation Report”, Revision 2
- SNCR 11-C-003, “Dry Shielded Canister (DSC) Reduced Basket Rail Face Thickness – DSC S/N DOM-32PTH-030-D”
- SNCR 11-C-004, “Dry Shielded Canister (DSC) – Incorrect Welding Procedure Utilized for Temporary Welded Attachment to Bottom Shield Plug S/N 51-14 Utilized in DSC S/N DOM-32PTH-030-D”
- SNCR 11-N-001, “Platform scales out of the required scale accuracy”
- SNCR 11-N-002, “Thermometer out of the required scale accuracy”

LIST OF ACRONYMS

ADAMS	Agencywide Document Access and Management System
CA	Corrective Action
CAP	Corrective Action Program
CFR	Code of Federal Regulations
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