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

May 10, 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 NO. 05000338/2012002 and 05000339/2012002

Dear Mr. Heacock:

On March 31, 2012, 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 25, 2012, with Mr. G. 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.

One finding of very low safety significance (Green) was identified during the inspection. The finding did not involve a violation of NRC requirements. Additionally, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the NRC Enforcement Policy. If you wish to contest this NCV, 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 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 05000338/2012002
and 05000339/2012002
w/ Attachment: Supplemental Information

cc w/ encl. (See next page)

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Letter to David A. Heacock from Gerald J. McCoy dated May 10, 2012

SUBJECT: NORTH ANNA POWER STATION – NRC INTEGRATED INSPECTION REPORT 05000338/2012002 and 05000339/2012002

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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:	05000338/2012002 and 05000339/2012002
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, 2012 through March 31, 2012
Inspectors:	G. Kolcum, Senior Resident Inspector R. Clagg, Resident Inspector M. Meeks, Operations Engineer, Section 1R11.3 K. Schaaf, Operations Engineer, Section 1R11.3 J. Reece, Senior Resident Inspector, VC Summer Nuclear Station R. Hamilton, Senior Health Physicist, Sections 2RS2, 2RS4, and 4OA1.2 W. Pursley, Health Physicist, Section 2RS5 R. Kellner, Health Physicist, Sections 2RS1, 2RS3, and 4OA3.5 L. Lake, Senior Reactor Inspector, Section 1R08
Accompanied By:	M. Levine, Nuclear Safety Professional Development Program (Training) J. Rivera, Health Physicist (Training)
Approved by:	Gerald J. McCoy, Chief Reactor Projects Branch 5 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000338/2012-002, 05000339/2012-002; 01/01/2012 – 03/31/2012; North Anna Power Station, Units 1 and 2; Other Activities

The report covered a 3 month period of inspection by resident inspectors, health physics inspectors, and reactor inspectors from the region. One finding was identified and it did not involve a violation of NRC requirements. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process" Revision 4, dated December 2006.

A. NRC Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green: An NRC-identified, Green, finding (FIN) was identified by the inspectors for the licensee's failure to provide continuous standby power and sufficient power for a minimum 25 minutes of system operation for seismic instruments as required by a licensee self-imposed standard documented in the licensee's Updated Final Safety Analysis Report (UFSAR) which resulted in required seismic alarms and indications not being received in the main control room. Specifically, the licensee failed to provide the required power for both a triaxial response-spectrum recorder capable of providing signals for immediate control room indication and for the control room annunciator for the seismic switch. The licensee entered this issue into their corrective action program as CR468442. Immediately following the August 23, 2011 seismic event the licensee completed a temporary modification to connect an uninterruptible power supply to the seismic monitoring panel. In addition, the licensee is executing a design change to upgrade the site seismic monitoring equipment.

  The inspectors reviewed IMC 0612, Appendix B and determined that the performance deficiency was more than minor because it adversely impacted the Design Control 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. The inspectors reviewed IMC0609, Attachment 4 and determined that the finding was of very low safety significance, Green, because it did not screen as potentially risk significant using the seismic screening criteria contained in Attachment 4. The cause of this finding did not involve a cross-cutting aspect as it is not indicative of current licensee performance. (Section 4OA3)

B. Licensee Identified Violations

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

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at full Rated Thermal Power (RTP). The Unit was shutdown for a refueling outage on March 11, 2012.

Unit 2 began the period at full RTP and operated at full power for the entire report period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

a. Inspection Scope

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

- Unit 1 'B' Low Head Safety Injection (LHSI) System during planned maintenance on 'A' LHSI pump breaker testing
- Unit 1 MCR/Emergency Switchgear Room air conditioning system during 4B chiller maintenance
- Unit 1 '1J' Emergency Diesel Generator (EDG) and support systems during planned maintenance on the '1H' EDG

b. Findings

No findings were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors conducted focused 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 fleet procedures CM-AA-FPA-100, Revision 5, "Fire Protection/Appendix R (Fire Safe Shutdown) Program," Revision 5, 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.

- Auxiliary Building (includes Z-18 and Z-20) (fire zone 11a / AB)
- Normal Switchgear Room Unit 1 (fire zone 5-1 / NSR-1) and Normal Switchgear Room Unit 2 (fire zone 5-2 / NSR-2)
- Turbine Building (includes Chiller Rooms and Z-21B, Z-21C, Z-22, Z-34, Z-35, Z-36, Z-46B)(fire zone 8a / TB) and Turbine Building Lube Oil Room (fire zone TB-LOR)
- Main Control Room (fire zone 2a / CR)
- Cable Tray Spreading Room Unit 1 (fire zone 4-1b / CSR-1) and Cable Tray Spreading Room Unit 2 (fire zone 4-2b / CSR-2)
- Emergency Switchgear Room Unit 1 (fire zone 6-1a / ESR-1)
- Emergency Switchgear Room Unit 2 (fire zone 6-2a / ESR-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), and Battery Room 2 – IV Unit 2 (fire zone (7D-2 / BR2-IV)
- Quench Spray Pump House and Safeguards Area, Unit 1 (includes Z-16-1) (fire zone 15-1a / QSPH-1)

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 Cable Vault and Cable Tunnel 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 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. Documents reviewed during the inspection are documented in the Attachment to this report.

b. Findings

No findings were identified.

1R07 Heat Sink Performance

Annual Heat Sink Review

a. Inspection Scope

For an annual review, the inspectors selected the risk significant and the safety related service water reservoir which is used as the licensee's ultimate heat sink and reviewed documentation associated with the licensee's implementation of biofouling controls. Procedures and records were also reviewed to verify that they were consistent with Generic Letter 89-13 licensee commitments and Electric Power Research Institute Heat Exchanger Performance Monitoring Guidelines for water treatment and to verify that biofouling controls were effective. Documents reviewed during the inspection are documented in the Attachment to this report.

b. Findings

No findings were identified.

1R08 Inservice Inspection Activities

An NRC review of inservice inspection (ISI) activities was initiated this quarter and is still on-going at the end of this inspection period. The ISI will be completed and the results of the inspection documented in NRC inspection report 05000338, 339/2012003.

1R11 Licensed Operator Requalification Program

.1 Resident Inspector Quarterly Review

a. Inspection Scope

The inspectors reviewed licensed operator performance during a simulator scenario which involved a small break loss of coolant accident in containment. 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 were identified.

.2 Operator Observations

a. Inspection Scope

During the inspection period, the inspectors conducted observations of licensed reactor operator actions and activities to ensure that the activities were consistent with the licensee procedures and regulatory requirements. These observations took place during both normal and off-normal plant working hours. As part of this assessment, the inspectors observed the following elements of operator performance: (1) operator compliance and use of plant procedures including technical specifications; (2) control board/in-plant component manipulations; (3) use and interpretation of plant instruments, indicators and alarms; (4) documentation of activities; (5) management and supervision of activities; and, (6) communication between crew members.

The inspectors observed and assessed licensed operator performance during the following events:

- during a seismic event on January 30, 2012
- in response to a component cooling system leak on February 6, 2012
- in response to a control rod bank C group step control failure on February 9, 2012
- licensed operator actions during control rod bank C group step counter trouble shooting and repair on February 15, 2012

Documents reviewed during these observations are listed in the Attachment to this report.

b. Findings

No findings were identified.

.3 Licensed Operator Requalification

a. Inspection Scope

The inspectors reviewed the facility operating history and associated documents in preparation for this inspection. During the week of January 09-13, 2012, the inspectors reviewed documentation, interviewed licensee personnel, and observed the administration of 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 facility licensee in implementing requalification requirements identified in 10 CFR Part 55, "Operators' Licenses." The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG-1021, "Operator Licensing Examination Standards for

Power Reactors," and NRC inspection procedure 71111.11, "Licensed Operator Requalification Program." The inspectors also evaluated the licensee's simulation facility for adequacy for use in operator licensing examinations using ANSI/ANS-3.5-1998, "American National Standard for Nuclear Power Plant Simulators for use in Operator Training and Examination." The inspectors observed three crews during the performance of the operating tests. Documentation reviewed included written examinations, Job Performance Measures, simulator scenarios, licensee procedures, on-shift records, simulator modification request records, simulator performance test records, operator feedback records, licensed operator qualification records, remediation plans, watchstanding records, and medical records. The records were inspected using the criteria listed in NRC inspection procedure 71111.11. Documents reviewed during the inspection are documented in the Attachment to this report.

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. Other documents reviewed during the inspection are documented in the Attachment to this report.

- MRE 014647, "MRE to engineering for 1-MS-TV-101B which has an instrument air leak near actuator"
- CR463748, "1-EG-C-1JB loading issues during return to service," of 1J EDG air start compressor 'B'

b. Findings

No findings were identified.

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 in compliance 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.

- Maintenance risk assessment during emergent work on 2-CH-170
- Maintenance risk assessment during work activities the week of January 16, 2012, during the Unit 1 and Unit 2 Reactor Coolant Pump UV / UF testing
- Maintenance risk assessment during post seismic event activities on January 30, 2012
- Maintenance risk assessment during 1-CC-RV-112A leak on February 6, 2012
- Maintenance risk assessment during entry into Technical Specifications 3.1.6, control bank insertion limits for control bank 'C' on February 9, 2012

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments

a. Inspection Scope

The inspectors reviewed six 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 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. Documents reviewed during the inspection are listed in the Attachment to this report.

- OD 000466 "Determine operability of 2-FW-HCV-200C with recent leak concern"
- CR461874, "1J EDG Engine Driven Fuel Oil Pump relief valve has minor fuel oil seepage at the cap"
- CR461754, "Charging spring motor sounded slow when recharging after 1549 breaker closed for a low head SI pump"
- CR462131, "While performing 2-PT-17.1, Control Bank 'C' Group 2, group bank demand did not move"
- CR465015, "Loose bolt on 1H EDG scavenging air flange" located between the blower and the turbocharger inlet
- Review of the operability of seismic instrumentation during replacement of seismic instruments under DC-NA-11-01213

b. Findings

No findings were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

The inspectors reviewed four post maintenance test procedures and/or test activities 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. Documents reviewed during the inspection are listed in the Attachment to this report.

- WO 59102424665, "Repair leaking weld on 2-CH-170"
- WO 59102184660, "Replace 4" Pacific Gate valve"
- CR463748, "1-EG-C-1JB loading issues during return to service," of 1J EDG air start compressor 'B'
- WO 59102444397, "1H EDG Automatic Voltage Regulator Card replacement"

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities

a. Inspection Scope

The inspectors reviewed the Outage Safety Review (OSR) and contingency plans for the Unit 1 refueling outage, which began March 11, 2012, 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 NRC inspection procedure 71111.20, "Refueling and Outage Activities," to observe portions of the shutdown, cooldown, and maintenance 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, including daily outage reports, to evaluate maintenance of defense-in-depth commensurate with the OSR 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 equipment appropriately configured to safely support the work or testing.
- 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.
- Monitoring of decay heat removal.
- Controls to ensure that outage work was not impacting the ability of the operators to operate the spent fuel pool cooling system.
- Reactor water inventory controls including flow paths, configurations, and alternative means for inventory addition, and controls to prevent inventory loss.
- Controls over activities that could affect reactivity.
- Licensee identification and resolution of problems related to refueling outage activities.

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the ten 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 during the inspection are documented in the Attachment to this report.

In-Service Test:

- 1-PT-81.1B.1, “Emergency Diesel Generator Fuel Oil Transfer Pumps 1-EG-P-1Ja and 1-EG-P-1JB Comprehensive Test,” Revision 1

Other Surveillance Tests:

- 1-PT-71.16, “1-FW-P-2 Turbine Driven Auxiliary Feedwater Pump and Valve Test,” Revision 57-P1
- 1-PT-82.2A, “1H Diesel Generator Test (Simulated) Loss of Off-Site Power,” Revision 48
- 2-PT-82H, “2H Emergency Diesel Generator Slow Start,” Revision 51

- 1-PT-14.1, “Charging Pump 1-CH-P-1A,” Revision 50
- 2-PT-23, “Quadrant Power Tilt Ratio Determination,” Revision 25
- 1-PT-23, “Quadrant Power Tilt Ratio Determination,” Revision 29
- 1-PT-82J, “1J Emergency Diesel Generator Slow Start Test,” Revision 46
- 1-PT-30.1, “NIS Intermediate Range Channel Operational Test,” Revision 47
- 1-PT-82H, “1H Emergency Diesel Generator Slow Start Test,” Revision 47

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

On January 11, 2012, the inspectors observed the licensee simulator based training that involved a power range nuclear instrument failure and a loss of component cooling which required an Alert to be declared. The inspectors assessed emergency procedure usage, emergency plan classification, notification, and the licensee’s identification and entry of any problems into their corrective action program (CAP). This inspection evaluated the adequacy of the licensee’s conduct of the drill and critique performance. No drill issues were identified.

b. Findings

No findings were identified.

RADIATION SAFETY

Cornerstone: Occupational/Public Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Control

a. Inspection Scope

Hazard Assessment and Instructions to Workers: During facility tours, the inspectors directly observed labeling of radioactive material and postings for radiation areas, high radiation areas (HRAs), and airborne radioactivity areas established within the radiologically controlled area (RCA) of the Unit 1 (U1) containment, U1 and Unit 2 (U2) auxiliary buildings, and radioactive waste (radwaste) processing and storage locations. The inspectors independently measured radiation dose rates or directly observed conduct of licensee radiation surveys for selected RCA areas. The inspectors reviewed survey records for several plant areas including surveys for alpha emitters, hot particles, airborne radioactivity, gamma surveys with a range of dose rate gradients, and pre-job

surveys for upcoming tasks. The inspectors also discussed changes to plant operations that could contribute to changing radiological conditions since the last inspection. For selected outage jobs, the inspectors attended pre-job briefings and reviewed radiation work permit (RWP) details to assess communication of radiological control requirements and current radiological conditions to workers.

Hazard Control and Work Practices: The inspectors evaluated access barrier effectiveness for selected U1 and U2 Locked High Radiation Area (LHRA) and Very High Radiation Area (VHRA) locations. Changes to procedural guidance for LHRA and VHRA controls were discussed with health physics (HP) supervisors. Controls and their implementation for storage of irradiated material within the spent fuel pool (SFP) were reviewed and discussed in detail. Established radiological controls (including airborne controls) were evaluated for selected U1 Refueling Outage 22 (1R22) tasks including transfer canal blind flange removal, transfer canal up-ender cable replacement and repairs, and valve work in a charging pump room. In addition, licensee controls for areas where dose rates could change significantly as a result of plant shutdown and refueling operations were reviewed and discussed.

Occupational workers' adherence to selected RWPs and HP technician (HPT) proficiency in providing job coverage were evaluated through direct observations and interviews with licensee staff. Electronic dosimeter (ED) alarm set points and worker stay times were evaluated against area radiation survey results for RWPs reviewed and jobs observed. ED alarm logs were reviewed and worker response to dose and dose rate alarms during selected work activities was evaluated. For HRA tasks involving significant dose rate gradients, e.g. transfer canal work, the inspectors evaluated the use and placement of whole body and extremity dosimetry to monitor worker exposure.

Control of Radioactive Material: The inspectors observed surveys of material and personnel being released from the RCA using small article monitor, personnel contamination monitor, and portal monitor instruments and discussed equipment sensitivity, alarm setpoints, and release program guidance with licensee staff. The inspectors compared recent 10 Code of Federal Regulations (CFR) Part 61 results for the Dry Active Waste radioactive waste stream with radionuclides used in calibration sources to evaluate the appropriateness and accuracy of release survey instrumentation. The inspectors also reviewed records of leak tests on selected sealed sources and discussed nationally tracked source transactions with licensee staff.

Problem Identification and Resolution: Condition Reports (CRs) associated with radiological hazard assessment and control were reviewed and assessed. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedure PI-AA-200, "Corrective Action," Revision 17. The inspectors also reviewed recent internal assessment results.

Radiation protection activities were evaluated against the requirements of UFSAR Section 12; TS Sections 5.4 and 5.7; 10 CFR Parts 19 and 20; and approved licensee procedures. Licensee programs for monitoring materials and personnel released from the RCA were evaluated against 10 CFR Part 20 and IE Circular 81-07, Control of

Radioactively Contaminated Material. Documents reviewed are listed in Section 2RS1 of the Attachment to this report.

The inspectors completed all specified line-items detailed in IP 71124.01 (sample size of 1).

b. Findings

A licensee identified violation is documented in Section 4OA7.

2RS2 Occupational ALARA Planning and Controls

a. Inspection Scope

ALARA Program Status: The inspectors reviewed and discussed plant exposure history and current trends including the site's three-year rolling average (TYRA) collective exposure history for calendar year (CY) 2008 through CY 2010. Current and proposed activities to manage site collective exposure and trends regarding collective exposure were evaluated through review of previous TYRA collective exposure data and review of the licensee's 5-year ALARA program implementing plan. Current ALARA program guidance and recent changes, as applicable, regarding estimating and tracking exposure were discussed and evaluated.

Radiological Work Planning: The inspectors reviewed a number of ALARA Plans (APs) associated with the current Unit 1 refueling outage (N1R22). The inspectors reviewed several APs from the previous refueling outages at both units (N1R21 and N2R21) as well as the packages resulting from the seismic event that led to both units being shut down for inspections. The APs were reviewed with respect to activity evaluation, exposure estimates, exposure mitigation requirements, incorporation of lessons learned, and reasonableness of dose goals. For work activities associated with Unit 1 Refueling, the inspectors' tracked dose-to-date on select jobs, comparing estimates with actual dose received, and observed development of selected in-progress reviews. APs assessed included work on air operated valves, scaffolding, shielding, decontamination, reactor disassembly, and hot leg weld overlays. The inspectors reviewed the Work In Progress Reviews associated with various tasks that were affected by the bundle stuck in the upper internals and the indications that were discovered in the hot leg after machining in preparation for the weld overlay.

Verification of Dose Estimates and Exposure Tracking Systems: For the ALARA work plans reviewed, the inspectors evaluated the assumptions and basis for the dose rate and man-hour estimates. The inspectors discussed with ALARA staff the means by which wrench-hours were derived from the work order hours provided by craft supervision to ALARA staff. The inspectors reviewed licensee methodology for tracking and trending doses for ongoing work activities. The inspectors observed discussions between ALARA staff and job owners related to in-progress reviews and re-planning work when dose/hour budgets were exceeded or when emergent work and/or changes in scope were encountered.

Source Term Reduction and Control: The inspectors evaluated the historical trends and current status of the plant source term through review of records. Through interviews and document review, the inspectors assessed the licensee's current activities and future plans related to source term reduction, including shutdown chemistry and response to problems with fuel in previous cycles.

Radiation Worker Performance: The inspectors observed radiation worker performance through direct observation, via remote camera monitoring, and via telemetry. Job observation was problematic as the majority of the work was being restricted due to a fuel bundle stuck in the upper internals. Limited observations of valve work and initial prep work was observed. Radiation worker performance was also evaluated under IP 71124.01.

Problem Identification and Resolution: The CAP documents associated with ALARA planning and controls were reviewed and assessed. This included review of selected CRs, self-assessments, and audits. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure PI-AA-200, "Corrective Action," Revision 17.

Radiation protection activities were evaluated against the requirements of UFSAR Section 12; 10 CFR Parts 19 and 20; and approved licensee procedures. Records reviewed are listed in Sections 2RS1 and 2RS2 in the Attachment to this report.

The inspectors completed all specified line-items detailed in IP 71124.02 (sample size of 1).

b. Findings:

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation

a. Inspection Scope

Engineering Controls: The inspectors reviewed the use of temporary and permanent engineering controls to mitigate airborne radioactivity inside U1 containment during the 1R22 refueling outage. The inspectors observed the use of negative pressure units (NPUs) and vacuums to control contamination during charging system valve repairs, reactor head nozzle inspection, and reviewed NPU testing records. Use of containment purge to reduce airborne levels in general areas was reviewed. The inspectors evaluated the effectiveness of continuous air monitors and air samplers placed in work areas and "breathing zones" to provide indication of increasing airborne levels

.

Respiratory Protection Equipment: The inspectors reviewed the use of respiratory protection devices to limit the intake of radioactive material. This included review of devices used for routine tasks and devices stored for use in emergency situations. The inspectors reviewed ALARA evaluations for the use of respiratory protection devices during

Alloy 600 weld overlay work and work on the up-ender in the transfer canal. Selected Self-Contained Breathing Apparatus (SCBA) units and negative pressure respirators (NPR)s staged for routine and emergency use in the Main Control Room and other locations were inspected for material condition, SCBA bottle air pressure, number of units, and number of spare masks and air bottles available. The inspectors reviewed maintenance records for selected SCBA units for the past two years and evaluated SCBA and NPR compliance with National Institute for Occupational Safety and Health certification requirements. The inspectors also reviewed records of air quality testing for supplied-air devices and SCBA bottles.

The inspectors observed a respirator fit test and PAPR Just In Time training and discussed respiratory protection equipment use with radworkers and control room operators including SCBA bottle change-out and the use of corrective lens inserts. Training, fit testing, and medical qualifications for selected Main Control Room operators, HP, maintenance, and support staff were reviewed. In addition, qualifications for individuals responsible for testing and repairing SCBA vital components were evaluated through review of training records.

Problem Identification and Resolution: CRs associated with airborne radioactivity mitigation and respiratory protection were reviewed and assessed. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedure PI-AA-200, "Corrective Action," Revision 17.

Licensee activities associated with the use of engineering controls and respiratory protection equipment were reviewed against 10 CFR Part 20; UFSAR Chapter 12; TS Section 5.4, Procedures; RG 8.15, Acceptable Programs for Respiratory Protection; and applicable licensee procedures. Documents reviewed during the inspection are listed in Section 2RS3 of the Attachment to this report.

The inspectors completed all specified line-items detailed in IP 71124.03 (sample size of 1).

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment

a. Inspection Scope

External Dosimetry: The inspectors reviewed National Voluntary Laboratory Accreditation Program (NVLAP) certification data (including thermoluminescent dosimeter (TLD) testing for neutron, gamma, and beta exposures) and discussed program guidance for storage, processing, and evaluation of results for active and passive personnel dosimeters currently in use. The use of DADs to assign dose in the event of abnormal or unattainable TLD results was discussed.

Internal Dosimetry: The inspectors reviewed program guidance, instrument detection capabilities, and assessment results for internally deposited radionuclides. The

inspectors reviewed the procedural guidance for WBCs. Capabilities for collection and analysis of special bioassay samples were evaluated and discussed with licensee staff.

Special Dosimetric Situations: The inspectors evaluated the licensee's use of multi-badging, extremity dosimetry, and dosimeter relocation within non-uniform dose rate fields and discussed worker monitoring in neutron areas with licensee staff. The inspectors evaluated the use of TLDs at the Restricted Area fence surrounding the Independent Spent Fuel Storage Installation (ISFSI). The inspectors also reviewed records of monitoring for declared pregnant workers from January 2011 to March 2012 and discussed monitoring guidance with dosimetry staff.

Problem Identification and Resolution: The inspectors reviewed and discussed selected CAP documents associated with occupational dose assessment. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedure PI-AA-200, "Corrective Action," Revision 17. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results.

Occupational dose assessment activities were evaluated against the requirements of UFSAR Section 12; TS Section 5.4; 10 CFR Parts 19 and 20; and approved licensee procedures. Records reviewed are listed in Section 2RS4 of the Attachment to this report.

The inspectors completed all specified line-items detailed in IP 71124.04 (sample size of 1).

b. Findings

No findings were identified.

2RS5 Radiation Monitoring Instrumentation

a. Inspection Scope

Radiation Monitoring Instrumentation: During tours of the auxiliary building, and RCA exit point, the inspectors observed installed radiation detection equipment including the following instrument types: area radiation monitors (ARM), continuous air monitors (CAM), liquid and gaseous effluent monitors, personnel contamination monitors (PCM), small article monitors (SAM), and portal monitors (PM). The inspectors observed the physical location of the components, noted the material condition, and compared sensitivity ranges with UFSAR requirements.

In addition to equipment walk-downs, the inspectors observed or reviewed source checks and alarm setpoint testing of various portable and fixed detection instruments, including ion chambers, telepoles, PCM, SAM, and PM, and a whole body counter (WBC). For the portable instruments, the inspectors observed the use of a high-range calibrator and discussed periodic output value testing with a radiation protection

technician. The inspectors reviewed calibration records and evaluated alarm setpoint values for selected ARM, PCM, PM, SAM, effluent monitors, laboratory counting systems, and WBC systems. This included a sampling of instruments used for post-accident monitoring such as containment high-range ARMs, and effluent monitor high-range noble gas and iodine channels. Several radioactive sources used for calibration or radiation instruments were evaluated for traceability to national standards. Calibration stickers on portable survey instruments and air samplers were noted during inspection of storage areas for ready-to-use equipment and instruments located throughout the plant. The most recent 10 CFR Part 61 analysis for DAW was reviewed to determine if calibration and check sources are representative of the plant source term. The inspectors also reviewed count room quality assurance records for HPGe, gross alpha, gross beta, and liquid scintillation detectors.

Effectiveness and reliability of selected radiation detection instruments were reviewed against details documented in the following: 10 CFR Part 20; NUREG-0737, Clarification of TMI Action Plan Requirements; TS Section 3.3 and 3.7; UFSAR Chapters 11&12; and applicable licensee procedures.

Problem Identification and Resolution: The inspectors reviewed and discussed selected CAP documents associated with radiological instrumentation. The reviewed items included CRs, and self-assessment documents. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve identified issues in accordance with licensee procedure PI-AA-200, "Corrective Action," Revision 17. Documents reviewed are listed in section 2RS5 of the Attachment to this report.

The inspectors completed all specified line-items detailed in IP 71124.05 (sample size of 1).

b. Findings:

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Initiating Events

a. Inspection Scope

The inspectors performed a periodic review of the three following Unit 1 and 2 initiating events PIs 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 January 1, 2011, through December 31,

2011. Documents reviewed included applicable NRC inspection reports, licensee event reports, operator logs, station performance indicators, and related CRs.

- Unplanned Scrams per 7000 Critical Hours
- Unplanned Power Changes (Transients) per 7000 Critical Hours
- Unplanned Scrams With Complications

b. Findings

No findings were identified.

.2 Occupational/Public Radiation Safety

a. Inspection Scope

Occupational Radiation Safety Cornerstone: The inspectors reviewed the Occupational Exposure Control Effectiveness PI results for the Occupational Radiation Safety Cornerstone from January 2011 through March 2012. For the assessment period, the inspectors reviewed DAD alarm logs and selected CRs related to controls for exposure significant areas. Documents reviewed are listed in Section 4OA1 of the Attachment to this report.

Public Radiation Safety Cornerstone: The inspectors reviewed the Radiological Control Effluent Release Occurrences PI results for the Public Radiation Safety Cornerstone from January 2011 through March 2012. For the assessment period, the inspectors reviewed cumulative and projected doses to the public contained in liquid and gaseous release permits and CRs related to Radiological Effluent Technical Specifications/ODCM issues. Documents reviewed are listed in Section 4OA1 of the Attachment to this report.

The inspectors completed two of the required samples specified in Inspection Procedure (IP) 71151.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution

.1 Review of Items Entered into the Corrective Action Program

As required by NRC 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 CR443690, Post Seismic Event Inspection of Unit 1 and 2 Electrical Manholes

a. Inspection Scope

The inspectors performed a review regarding the licensee's assessments and corrective actions for CR443690, "Post seismic event inspection of Unit 1 and 2 electrical manholes" 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," Revision 10, and 10 CFR 50, Appendix B.

b. Findings and Observations

No findings of significance were identified. In general, the inspectors verified that the licensee had identified problems at an appropriate threshold and entered them into the CAP database, and had proposed or implemented appropriate corrective actions.

4OA3 Event Followup

.1 Seismic Activity on January 30, 2012

The inspectors responded to the declaration of a Notice of Unusual Event (NOUE) following seismic activity felt on the site and confirmed by the United States Geological Survey on January 30, 2012. The inspectors followed up on actions taken in response to the Notice of Unusual Event (NOUE) and monitored operator actions. The inspectors reviewed operator actions taken in accordance with licensee procedures and reviewed unit and system indications to verify that actions and system responses were as expected. The inspectors also reviewed the initial licensee notifications to verify that the requirements specified in NUREG-1022, "Event Reporting Guidelines" were met.

.2 Fuel Assembly Lifted with Upper Internals on March 18, 2012

The inspectors responded to a call about a condition with a fuel assembly on Unit 1, which was found during the upper guide structure lift, in preparation for defueling/refueling. The fuel assembly was stuck to the upper internals and was inadvertently removed partially from the core when the lift began for the upper guide structure. The inspectors followed up on actions taken, participated in meetings on the subject to develop the correction action plan, reviewed vendor equipment, and monitored licensee actions during the recovery process.

.3 Seismic Activity on March 25, 2012

The inspectors responded to the declaration of a Notice of Unusual Event (NOUE) following seismic activity felt on the site and confirmed by the United States Geological Services on March 25, 2012. The inspectors followed up on actions taken in response

to the NOUE and monitored operator actions. The inspectors reviewed operator actions taken in accordance with licensee procedures and reviewed unit and system indications to verify that actions and system responses were as expected. The inspectors also reviewed the initial licensee notifications to verify that the requirements specified in NUREG-1022, "Event Reporting Guidelines" were met.

.4 (Closed) Licensee Event Report (LER) 05000338/2011-002-00: Condition Prohibited by Technical Specifications When a Non-Seismic System was Aligned to a Seismic System

On June 29, 2011, with both Units 1 and 2 operating at 100 percent power, Mode 1, a condition prohibited by the Technical Specifications was identified. The licensee had a long standing proactive process of aligning the non-seismic Refueling Purification system to the Refueling Water Storage Tank for purification purposes prior to outages. The direct cause of the event was incorrect application of the use of compensatory measures, i.e. manual operator actions, when placing the non-seismic RP system in service on seismically qualified systems/components during modes of operation when they are needed to perform their safety function. The licensee entered this problem in their CAP as CR397144. The enforcement aspects of this were discussed in NRC Inspection Report NA 2011-003, Section 1R18. This LER is closed.

.5 Follow-up of Onsite Tritium Sample Result

a. Inspection Scope

On February 21, 2012, the licensee submitted a non-emergency report (Event Number 47682) to the NRC in accordance with 10 CFR Part 50.72(b)(2)(xi) due to offsite notification of other government agencies regarding an onsite tritium sample result that exceeded the voluntary Groundwater Protection Initiative reporting threshold of 20,000 pCi/l. On February 17, 2012, the licensee received vendor laboratory results indicating 53,300 pCi/L tritium in a recently collected ground water well sample. The sample was obtained as part of the effort to determine the source of tritium reported to the state and NRC on October 29, 2010 (EN 46377). The licensee identified the U-1 Refueling Water Storage Tank (RWST) as the likely source of tritium due to proximity of the sampling well to the RWST, levels of tritium in the tank, and identification and repair of several small above ground leaks (< 5 ml/hr) during inspections following the seismic event in August 2011. The licensee attributes the tritium activity in the vicinity of well GWP-6 to above ground leaks.

The inspectors reviewed the details surrounding the event, reviewed tritium sample results for groundwater wells located inside (10 locations) and outside (8 locations) the protected area, and discussed past and current corrective actions with the licensee. The inspectors noted that sample results confirm that the groundwater containing elevated tritium remains contained within the owner controlled area and is not expected to migrate to the offsite environs. The licensee is continuing corrective actions including identification and repair of leak(s), increasing groundwater sampling to twice a week for locations adjacent to the RWST, adding two to three additional groundwater monitoring wells around the RWST during the second quarter of CY 2012, and submitting a 30-Day

Special Report to the NRC (ML11088A042) per the NEI 07-07 guidance. The NRC has designated groundwater contamination as an "issue of agency-wide concern" and has implemented requirements to document the review of voluntary reports concerning spills and leaks.

b. Findings

No findings were identified.

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 Institute of Nuclear Power Operations (INPO) Plant Assessment Report Review

a. Inspection Scope

The Senior Resident Inspector and the DRP Branch Chief reviewed the final report for the INPO plant assessment of North Anna Power Station issued in June 2011. The report was reviewed to ensure that issues identified were consistent with the NRC perspectives of licensee performance and to verify if any significant safety issues were identified that required further NRC follow-up.

b. Findings

No findings were identified.

.3 (Closed) Unresolved Item (URI) 05000338, 339/2011011-01: Seismic Instrumentation Implementation

a. Inspection Scope

As described in Unresolved Item (URI) 05000339/2011011-01, the inspectors identified issues related to seismic instrumentation implementation.

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

b. Findings

Introduction: An NRC-identified, Green finding (FIN) was identified by the inspectors for the licensee's failure to provide continuous standby power and sufficient power for a minimum 25 minutes of system operation for seismic instruments as required by a licensee self-imposed standard documented in the licensee's UFSAR which resulted in required seismic alarms and indications not being received in the main control room.

Description: The inspectors reviewed the licensee's condition report (CR) 439052, "Dual Unit trip following Magnitude 5.8 Earthquake", and the associated root cause evaluation (RCE) 1061, "Dual Unit trip following Magnitude 5.8 Earthquake". In addition the inspectors reviewed Dominion's letter to the NRC 11-520, "Summary Report of August 23, 2011 Earthquake Response and Restart Readiness Determination Plan", dated September 17, 2011.

The inspectors noted that the Engdahl peak shock annunciator located on the seismic monitoring panel (1-EI-CB-151) did not provide an alarm due to the loss of power to the panel during the seismic event on August 23, 2011. The inspectors also noted that the main control room control board annunciator "Earthquake Instrument Panel Trouble" activates only from the activation of the seismic switch on a loss of power to the seismic monitoring panel and that this annunciator will not function during a loss of offsite power. The licensee initiated CR439735, "Possible momentary loss of power to the Earthquake Panel during dual unit trip" and corrective action (CA) 210772, "CA to Eng to investigate 1-EI-CB-151 possible loss of power". The inspectors noted that CA210772 documented that the Engdahl peak shock annunciator would not alarm with a loss of power. During interviews with licensee personnel the inspectors confirmed that the Engdahl peak shock annunciator is activated by input from the triaxial response-spectrum recorder (PSR-1200) located in the Unit 1 containment basement.

The inspectors reviewed the licensee's UFSAR and identified that Section 3.7.4, "Criteria for Seismic Instrumentation Program" states "The program complies with the requirements of AEC Regulatory Guide 1.12, Revision 1, dated April 1974 (Regulatory Guide 1.12), except as noted in Section 3A.11.". The inspectors reviewed the licensee's UFSAR Section 3A.11 Instrumentation for Earthquakes (Regulatory Guide 1.12) and

identified that the stated exceptions to Regulatory Guide 1.12 did not involve seismic instrument power requirements.

The inspectors reviewed Regulatory Guide (RG) 1.12, “Instrumentation for Earthquakes”, Revision 1 and identified that it states that ANSI N18.5-1974, “Earthquake Instrumentation Criteria for Nuclear Power Plants” (ANSI N18.5), in addition to the conditions described in RG 1.12, is acceptable for satisfying the seismic instrumentation requirements for assuring the safety of nuclear power plants. RG 1.12 Section C.1.b states, in part, that one triaxial response-spectrum recorder capable of providing signals for immediate control room indication should be provided at the containment foundation. ANSI N18.5 Sections 3.5 and 6.5 requires a seismic switch capable of providing a remote immediate indication that a specified acceleration has been exceeded and that the remote indication be an annunciator in the control room. The inspectors also noted that ANSI N18.5 Section 5.1.2 states, in part, that instrument power source shall have sufficient capacity to provide required continuous standby power and sufficient power for a minimum 25 minutes of system operation at any time. The inspectors also noted that triaxial-response spectrum recorders and triaxial time history accelerograph recorders functioned properly during the seismic event and provided information regarding the seismic response of plant systems.

The inspectors concluded that the statements made in the licensee’s UFSAR Section 3.7.4 regarding seismic instrumentation represented a self-imposed standard that the licensee failed to meet when continuous standby power and sufficient power for a minimum 25 minutes of system operation was not provided for the peak shock annunciator and seismic switch annunciator.

Analysis: The inspectors determined that the licensee’s failure to provide continuous standby power and sufficient power for a minimum 25 minutes of system operation for seismic instruments was a performance deficiency. Specifically, the licensee failed to provide the required power for both a triaxial response-spectrum recorder capable of providing signals for immediate control room indication and the control room annunciator for the seismic switch. The inspectors reviewed IMC 0612, Appendix B and determined that the performance deficiency was more than minor because it adversely impacted the Design Control 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. The inspectors reviewed IMC0609, Attachment 4 and determined that the finding was of very low safety significance, Green, because it did not screen as potentially risk significant using the seismic screening criteria contained in Attachment 4. The cause of this finding did not involve a cross-cutting aspect as it is not indicative of current licensee performance.

Enforcement: This finding does not represent a violation of regulatory requirements; therefore, enforcement action does not apply. Statements made in the licensee’s UFSAR Section 3.7.4 regarding seismic instrumentation represent a self-imposed standard that continuous standby power and sufficient power for a minimum 25 minutes of system operation be provided for seismic instruments. Contrary to the above, on August 23, 2011, the licensee failed to provide the required power for the peak shock

annunciator and seismic switch annunciator, and, as a result, required seismic alarms and indications were not received in the main control room. Immediately following the August 23, 2011 seismic event the licensee completed a temporary modification to connect an uninterruptible power supply to the seismic monitoring panel. In addition, the licensee is executing a design change to upgrade the site seismic monitoring equipment. Because this finding is of very low safety significance (Green) and it was entered into the licensee's CAP as CR468442, it is being treated as a finding, consistent with Section 2.3.2 of the NRC Enforcement Policy: FIN 05000338, 339/2012002-01, Failure to Provide Required Power for the Seismic Instrumentation Annunciators.

.4 (Closed) URI 05000338, 339/2011011-04: 1J EDG Frequency Oscillation

a. Inspection Scope

As described in URI 05000339/2011011-04, the inspectors identified issues related to 1J EDG frequency oscillations. The inspectors interviewed station personnel and performed an extensive review of the licensee's procedures, documents associated with the seismic instrumentation, and corrective action program documents regarding this issue. This URI is closed.

b. Findings

The inspectors reviewed CR 440231, "Investigate 1-III and 1-IV trouble alarms while energizing pressurizer heaters." The inspectors determined that the response of the 1J EDG during the event was within specification of 59.5 -60.5 hertz. The licensee performed maintenance on the 1J EDG in accordance with 0-ECM-0706-01, Woodward Governor Adjustment," Revision 4, and 0-MPM-0706-01,"EDG Woodward Governor Changeout," Revision 10. The licensee confirmed the frequency oscillations observed during the event through testing in isochronous mode on September 24, 2011. Although within specification, the licensee decided to replace the mechanical governor and electronic governor as a part of preventative maintenance. 1J EDG successfully completed its PMT, 1-PT-82.12J, "1J Diesel Generator Isochronous Mode (Start by ESF Actuation)," Revision 33, on September 26, 2011. In addition, the licensee replaced the sensor for reporting the PCS data point for engine speed. The engine speed indication was due to an erratic output identified during the event. The inspectors concluded that, regarding this URI, no performance deficiency exists.

4OA6 Meetings, Including Exit

.1 Licensed Operator Requalification Exit

An exit meeting was conducted on January 13, 2012, to discuss the findings of this inspection. The inspectors confirmed that no proprietary information was reviewed during the inspection.

.2 Quarterly Exit Meeting Summary

On April 25, 2012, the senior resident inspector presented the inspection results to Mr. G Bischof and other members of his 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.

.3 Radiation Safety Inspection Exit

On March 29, 2012, an exit was held with Mr. M. Crist and other responsible members of the plant staff to discuss the results of this inspection.

4OA7 Licensee-Identified Violations

The following Licensee Identified Violation (LIV) of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which met the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a Non-Cited Violation (NCV).

TS 5.7.2 requires, that each High Radiation Area (HRA) with dose rates greater than 1.0 rem/hour at 30 centimeters shall be provided with a locked or continuously guarded door or gate that prevents unauthorized entry and that access to, and activities in, each such area shall be controlled by means of an RWP. Contrary to the above, on August 14, 2011, a security officer performing verification of equipment status for a security alarm test outside the U1 personnel hatch inadvertently entered a posted Locked High Radiation Area (LHRA) under an incorrect Radiation Work Permit (RWP). An HP technician entered the LHRA to perform a pre-job survey in preparation for the alarm testing and was out of visual control of the LHRA door. After performing the survey, the HP technician discovered the officer had inadvertently crossed the LHRA boundary and escorted him out. Immediate corrective actions were taken upon discovery and documented in CR437863. The violation was evaluated using the Occupational Radiation Safety Significance Determination Process and was determined to be of very low safety significance (Green) because this finding did not involve ALARA planning or work controls, was not an over-exposure, did not have a substantial potential for over-exposure, and the ability to access dose was not compromised.

ATTACHMENT: SUPPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:
L. Baron, Licensed Operator Requalification Program Lead Instructor
M. Becker, Manager, Nuclear Outage and Planning
J. Bischof, Site Vice President
M. Bradley, Supervisor HP Operations
C. Combs, System Engineer – Radiation Monitoring
M. Crist, Plant Manager
J. Crossman, Operations Training Supervisor
J. Daugherty, Manager, Nuclear Maintenance
R. Evans, Manager, Radiological Protection
R. Fleshman, Safety Supervisor
B. Gaspar, Manager, Nuclear Site Services
C. Gum, Manager, Nuclear Protection Services
E. Hendrixson, Director, Nuclear Engineering
S. Hughes, Manager, Nuclear Operations
M. Lane, RP Supervisor
J. Leberstien, Technical Advisor Licensing
P. Kemp, Project Manager, Station Improvement Initiatives
F. Mladen, Director, Nuclear Safety and Licensing
N. Nicholson, Nuclear Oversight Department – Nuclear Specialist
J. Plossl, Supervisor, Nuclear Station Procedures
B. Gaspar, Manager, Nuclear Site Services
J. Schlesser, Manager, Nuclear Organizational Effectiveness
B. Scott, Initial Licensed Operator Training Supervisor
J. Scott, Supervisor, Nuclear Shift Operations
G. Simmons, Supervisor, Technical RP Services
J. Slattery, Assistant Operations Manager
D. Taylor, Supervisor, Station Licensing
R. Wesley, Manager, Nuclear Training
M. Whalen, Technical Specialist Licensing
L. Wilson, Supervisor, Security Operations

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Closed

05000338/2011-002-00	LER	Condition Prohibited by Technical Specifications When a Non-Seismic System was Aligned to a Seismic System (Section 4OA3.4)
05000338, 339/2011011-01	URI	Seismic Instrumentation Implementation (Section 4OA5.3)
05000338, 339/2011011-04	URI	1J EDG Frequency Oscillation (Section 4OA5.4)

Opened and Closed

05000338, 339/2012002-01	FIN	Failure to Provide Required Power for the Seismic Instrumentation Annunciators (Section 4OA5.3)

LIST OF DOCUMENTS REVIEWED

Section 1R06: Flood Protection Measures

- ET-N-10-0014, "Development of Flooding TRM," Revision 0
- DWG 11715-FAR-205-SH3, "Equipment Location – Appendix R Auxiliary Building Plan Elev 259-6," Revision 17
- DWG 11715-FAR-206-SH6, "Equipment Location – Appendix R Service Building Plan Elev 252-0 and 254-0," Revision 16
- DWG 11715-FAR-206-SH7, "Equipment Location – Appendix R Service Building Plan Elev 252-0 and 254-0," Revision 17

Section 1R07 Heat Sink Performance

- NA-GARDNA-000-ER-AA-SYS-1003, System Performance Monitoring, Revision 3
- ER-NA-SYS-320, Generic Letter 89-13 Program, Revision 0
- CO-PROC-000-VPAP-0811, Service Water System Inspection and Maintenance Program, Revision 6
- SDBD-NAPS-SW, Design Basis Document for Service Water System, Revision 7
- 0-MOP-49.12, Service Water System Chemical Treatment, Revision 10
- 0-PT-75.15, Generic Letter 89-13 Service Water System Testing Requirements Coordination, Revision 6, completed September 9, 2011
- CH-32.939, Service Water Chemical Addition System: Operation, Revision 9

Section 1R11: Licensed Operation Requalification

Operator Observations

- OP-AA-1800, "Operator Fundamentals," Revision 3
- OP-AA-100, "Conduct of Operations," Revision 18
- OP-AP-300, "Reactivity management," Revision 12
- 0-AP-36, "Seismic Event," Revision 22

Records
- License Reactivation Packages, OP-AA-103 (complete records of two licensed operators were reviewed)
- LORP Training Attendance records ('D' shift records from last two years were reviewed)
- Medical Files (10 complete medical records were reviewed)
- Remedial Training Records, TR-AA-400 (last two years of records were reviewed)
- Remedial Training Examinations (last two years of records were reviewed)
- Feedback Summaries, TR-AA-500 (last two years of records were reviewed)
- Simulator Work Orders (last two years of records were reviewed)

Written Examinations
- 2011 A Shift RO Part A
- 2011 A Shift RO Part B
- 2011 A Shift SRO Part A
- 2011 A Shift SRO Part B
- 2011 B Shift RO Part A
- 2011BShiftROPartB 2011 B Shift SRO Part A
- 2011 B Shift SRO Part B

Procedures
- Functional Implementation Guidance (FIG) 30, Developing Simulator Scenarios, Revision 9
- FIG 41, Simulator Scenario Based Testing, Revision 0
- Licensed Operator Requalification Program Guide, April 2001
- TR-AA-710, NRC Exam Security Requirements Revision 1
- TR-AA-730, Licensed Operator Biennial and Annual Operating Requalification Exam Process, Revision 3
- TR-AA-SIM-100, Simulator Modification Process, Revision 2
- TR-AA-SIM-200, Simulator Hardware Management, Revision 2
- TR-AA-SIM-300, Simulator Software Management, Revision 1
- TR-AA-SIM-400, Simulator Performance Testing, Revision 2

Condition Reports
- CR363802, Quench Spray Pump House Door left unsecured, 01/03/2010
- CR371510, Operator with expired qualifications performed fire watch duties, 03/09/2010
- CR377894, Operator left DAD at step off pad and exited the auxiliary building, 04/22/2010
- CR378377, Unit 2 entered MODE 1 while in a TRM limiting action which precluded MODE changes, 04/25/2010
- CR380177, 1-SW-P-1A auto started during Unit 2 "A" Train SSPS PT, 05/06/2010
- CR382750, Primary Grade water to unit 2 blender not isolated within 15 minutes as required, 05/28/2010
- CR382875, "B" RSST disconnect 2415 was not closed during return to service of the transformer, 05/29/2010
- CR383115, GE Water Treatment Operator inadvertently mixes incorrect chemicals, 06/01/2010
- CR383249, 2-RC-P-1A motor bearing high temperature limit was exceeded prior to shutting down the pump, 05/29/2010
- CR388048, Unit 1 "C" Steam Generator (S/G) surface sample line tagout error, 07/15/2010

- CR388641, Incorrect breaker operation during 0-PT-4.1 causes loss of power to ISFSI, 07/21/2010
- CR396309, 1-HV-AC-6 and 1-HV-AC-7 were tagged out without a Maintenance Rule evaluation being performed, 09/24/2010
- CR396987, Worker left DAD at FB step off pad, 09/30/2010
- CR403077, Violation of fatigue management rules of 10CFR26, 11/09/2010
- CR403679, Top Floor security door on the west side of Unit 1 Main Steam Valve House left unsecured, 11/14/2010
- CR405180, Hydro Test Pump (1-SI-P-2) operated with Unit 2 RWST suction valve 2-SI-16 in CLOSED position, 11/26/2010
- CR410351, Incorrect procedure used during performance of 2-PT-45.1.2, 01/13/2011
- CR411777, 1-FP-418 left in the closed position during performance of 0-PT-101.1B, 01/27/2011
- CR419601, 1-GW-239 found in the closed position during operator rounds, 03/27/2011
- CR429020, Breaker for 2-BC-MOV-221A tagged in the open position although tagout signed off as cleared, 05/29/2011
- CR429401, Line Leads for Breaker 1-EE-BKR-1H1-2N-A3 for 1-IA-C-2A, Containment Instrument Air Compressor, discovered to be energized even when the breaker was removed from the bus bars, 06/02/2011
- CR430063, OSHA recordable finger injury to employee, 06/07/2011
- CR433740, Incorrect amount of boric acid bags were used during boric acid batching to “B” BAST, 07/09/2011
- CR435262, Individual received a work hour rule violation for exceeding minimum days off requirement, 07/21/2011
- CR435263, Operator incorrectly signed procedural step as complete, 08/24/2011
- CR441557, Valve 1-CC-2, chemical addition funnel isolation for CC Surge Tank, found in the open position, 09/06/2011
- CR443866, Incorrect Electrical Safety PPE used during 34.5 kV switchyard operations, 09/20/2011
- CR448643, Valve 2-FW-9 signed for as being closed and tagged, when in fact it was chained and locked open with danger tag attached, 10/19/2011
- CR449549, Local control switch 173 for heater 1-HV-E-35A was operated in error instead of switch 174 for heater 1-HV-E-35B during 0-PT-77.15B, 10/24/2011
- CR453484, 1-FC-10 discovered to be closed instead of open, as required, during pre-job walk-down for 1-PT-97.1B, 11/20/2011

<u>Simulator Steady State Tests</u>

- 0-NA-ANS-00, 30% Steady State Power Performance Operability Steady State Test (tests performed in 2009, 2010, and 2011)
- 0-NA-ANS-00, 50% Steady State Power Performance Operability Steady State Test (tests performed in 2009, 2010, and 2011)
- 0-NA-ANS-00, 100% Steady State Power Performance Operability Steady State Test (tests performed in 2009, 2010, and 2011)

<u>Simulator Transient Tests</u>

- Transient Test 0-NA-ANS-03, Simultaneous Trip Closure of All Main Steam Isolation Valves (tests performed in 2009, 2010, and 2011)

- Transient Test 0-NA-ANS-06, Main Turbine Trip [with no Reactor Trip] (tests performed in 2009, 2010, and 2011)
- Transient Test 0-NA-ANS-07, Maximum Rate Power Ramp (tests performed in 2009, 2010, and 2011)
- Transient Test 0-NA-ANS-10, LOCA to Saturated Conditions (tests performed in 2009, 2010, and 2011)

Simulator Scenario Based Tests
- Scenario Based Test (SBT) for SXG-10 performed 12/01/2011
- Scenario Based Test (SBT) for SXG-60 performed on 12/01/2011

Scenario Packages
- SXG-2 Revision 9: Pressurizer Pressure Transmitter Failure, Loss of Instrument Air, ATWS, LBLOCA
- SXG-10 Revision 8: NI-44 Failure, Loss of CC, SBLOCA
- SXG-14 Revision 13: First Stage Pressure Transmitter Failure, Loss of Vital Bus 1-IV, Main Feed Regulating Valve Failure, Faulted Steam Generator
- SXG-60 Revision 6: Dropped Rod, Main Feed Pump Trip, Feed/Condensate system pipe break, Loss of Secondary Heat Sink

JPM Packages
- N10, Isolate the reactor coolant pump seals locally (1-ECA-0.0, 1-ECA-0.2, 1-AP-33.2, B.5.b.), 10/13/2011
- N311, Align for makeup to the spent fuel pit from either blender (1-OP-16.5, 2-OP-16.5, B.5.b.), 10/13/2011
- N461, Start the Emergency Diesel Air System in Lister-diesel-drive operation (1-OP-6.7), 12/12/2011
- N988 / 15589, Respond to a failure of the emergency diesel generator to start (1-MOP-6.70, 1-MOP-6.71), 10/13/2011
- N988 / 15589, Respond to a failure of the emergency diesel generator to start (2-MOP-6.70, 2-MOP-6.71), 10/13/2011
- N1470, Charge the 4160-volt breaker closing springs manually (0-MOP-26.11, SOER-98-2), 10/13/2011
- N1473 / 14043, Rack in a 4160-volt breaker (0-OP-26.9, 0-GOP-26.9, SOER-98-2), 10/13/2011
- R214 / 13368, Perform the immediate operator actions in response to a loss of all AC power (1-ECA-0.0), 10/13/2011
- R524, Supply feedwater to all three steam generators using the HCV header (1-AP-22.4), 10/13/2011
- R626, Respond to a steam generator water level control channel failure (1-AP-3), 10/13/2011
- R697 / 13925, Initiate forced feed and spill cooling in response to a loss of residual heat removal (1-AP-11), 10/13/201.
- S94.3, Classify the Emergency Event in accordance with EPIP-1.01, 11/30/2011
- S94.4, Classify the Emergency Event in accordance with EPIP-1.01, 11/30/2011

Section 1R12: Maintenance Effectiveness
- ER-NA-1A-INS-101, "Instrument Air system Critical Component Walkdowns," Revision 2
- ACE 18994, "1-MS-TV-101B Actuator Air Line Leak"

Section 1R15: Operability Determinations and Functionality Assessments
- UFSAR Chapter 7, Instrumentation and Control
- WO59102295724, "Online Testing of large Motors 4160V"
- DWG 11715-FE-1D, "4160V One Line Diagram, Emergency Bus 1H and 1J"
- 0-ECM-1414-04, "PDMA Online Testing of Medium Voltage Motors," Revision 2
- 0-GOP-17.0, "Time Critical Action Validation and Verification," Revision 2
- Technical Report NE-1200, "Key Operators Actions Assumed in the Safety Analyses," Revision 9
- CR457980, "Potential Leak By Concern Through 2-FW-HCV-200C (AFW to 'C' S/G HCV)"
- UFSAR Chapter 8, Electrical Power System
- UFSAR Chapter 6, Engineered Safety Features

Section 1R19: Post Maintenance Testing
- WO 00796522-01 "Replace 4 in. Pacific Gate Valve, 02-HV-MOV-213A-VALVE"
- WO59102295892, "Disassemble/Reassemble Valve for Welders, 02-HV-MOV-213-A-VALVE"
- WO59102424665, "Repair Leaking Weld, 02-CH-170-Valve"
- AD-AA-102, "Procedure Use and Adherence," Revision 5
- CM-AA-NWP-102, "Control of Welding Materials," Revision 1
- PI-AA-500, "Verification Practices," Revision 2
- PI-AA-5000, " Human Performance (HU)," Revision 1

Section 1R22: Surveillance Testing
- UFSAR Chapter 8, Electrical Power System
- VPAP-0808, "Emergency Diesel Generator Reliability Program," Revision 12
- Calculation ME-0579, "Minimum Delivered (Design Bases) AFW Flow and Acceptance Criteria for AFW Pump Operability Verification Testing," Revision 4

Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures, Guidance Documents, and Manuals
- C-HP-1081.012, Radiation Work Permits: Preparing and Approving, Revision 8
- C-HP-1081.022, Radiation Work Permits: RWP Briefing and Controlling Work, Revision 4
- C-HP-1081.040, Radiation Work Permits: Providing HP Coverage During Work, Revision 7
- RP-AA-107, Radioactive Contamination Control Program, Revision 2
- RP-AA-108, Radioactive Material Control Program, Revision 0
- RP-AA-201, Access Controls for High and Very High Radiation Areas, Revision 6
- RP-AA-202, Radiological Posting, Revision 5
- RP-AA-203, Radiological Labeling and Marking, Revision 1
- RP-AA-225, Unrestricted Release of Material, Revision 4
- RP-AA-240, Discrete Radioactive Particle Control, Revision 0

Records and Data
- Inventory of National Source Tracking, 1/3/12

- SAR 001312 (Self-Assessment Report), Radiation Worker Practices, 10/28/11
- ISFSI Radiological Surveys, Pads and Fence, 7/8/11
- ISFSI Radiological Survey, Fence, 8/20/11
- RWP 12-3101, U-1 RC 262' Seal Table Room (including radiological surveys)
- RWP 12-3103, RS Pumps
- RWP 12-3215, Manual Valve Maintenance (Airborne)
- RWP 12-3252, Vessel Head Lift (Airborne)
- RWP 12-3253, Transfer Canal (including radiological surveys)
- RWP 12-3280-1, Welding of Steam Generator Hot Legs (Airborne)
- RWP 12-3601, Containment Incore Access (including radiological surveys)

CAP Documents
- CR415110
- CR433535
- CR437863
- CR443022
- CR443514
- CR444673
- CR445239
- CR447211

Section 2RS2: ALARA

Procedures, Guidance Documents, and Manuals
- RP-AA-300, ALARA Reviews and Reports, Revision 4
- RP-AA-301, ALARA Goals, Revision 1
- C-HP-1081.012, Radiation Work Permits: Preparing and Approving, Revision 8
- C-HP-1081.022, Radiation Work Permits: RWP Briefing and Controlling Work, Revision 4
- VPAP-2105, Temporary Shielding Program, Revision 9

Reports, Records, and Data
- 2010 Unit One Refueling Outage ALARA & Planning Report N1R21
- North Anna Power Station N2R20 2010 ALARA Report
- Spreadsheets: ALARA Goals and Projections for 2010, 2011 and 2012
- Spreadsheets: Historic Trends and Status including EPRI Channel Head Trend Data, SRMP Data, Auxiliary Building Trend Data and Day 2 Source Term Assessments.
- Station ALARA Committee Meeting Minutes for 8/25/11, 9/7/11, 9/17/11, 10/12/11, and 10/13/11
- ALARA Plan 11-005, Install & Remove Scaffolding during N2R21, U-2 2011 RFO
- ALARA Plan 11-006, Remove & Install Insulation during N2R21, Inside & Outside Reactor Containment
- ALARA Plan 11-012, Disassemble, Reassemble Reactor Head during N2R21 U-2 2011 RFO
- ALARA Plan 11-015, Inspect, Remove, And Replace Snubbers during N2R21 U-2 2011 RFO
- ALARA Plan 11-016, Health Physics Zone Coverage, Surveys, and Walkdowns during N2R21 U-2 2011 RFO

- ALARA Plan 11-020, Reactor Head Bare Metal Inspection & Cleaning During N2R21 U-2 2011 RFO
- ALARA Plan 11-021, Perform Piping NDE & ISI Exams during N2R21
- Work In Progress Review (WIPR) 1, ALARA Plan 11-026, Perform Seismic Inspections in Support of Unit 2 Outage.
- WIPR 2, ALARA Plan 11-027, Perform Seismic Inspections in Support of Unit 1 Forced Outage.
- WIPR 1, ALARA Plan 11-031, U1 FO Primary Inspection of 1-RC-E-1A
- WIPR [no number] RWP 11-3204-1, U1 FO Replace seals on 1-RC-P-1C, includes necessary support to remove & install motor for seal maintenance
- WIPR 1, ALARA Plan 11-027, Perform Seismic Inspections in Support of Unit 1 Forced Outage (scope change)
- WIPR Number: W11-018, ALARA Plan 11-030, Task 4: ISFSI Walkdowns, Inspections, and General Maintenance. All support crafts included.
- WIPR 1, RWP 11-1224-1&2, Load NUHOMS cask Dry Storage Container (DSC), Prepare cask for transport in Decon Bay, Transfer loaded cask to ISFSI pad and place in Horizontal Storage Module (HSM).

CAP Documents

- CR 394719, Multiple entries by scaffold builders into Unit 1 keyway during BMI inspection
- CR 395528, Mechanical Maintenance unable to perform stem cut on 1-RH-MOV-1720B
- CR 406595, Individual received a digital alarming dosimeter dose alarm while working waste solids.
- CR 417764, Critical observation of the bladder replacement of the Spent Fuel Pit Gate.
- CR 437863, Security Officer entered a Locked High Radiation Area under the incorrect RWP.
- CR 443411, RWP exceeding estimated dose

2RS3: In-Plant Airborne Radioactivity Control and Mitigation

Procedures, Guidance Documents, and Manuals

- C-HP-1032.051, Airborne Radioactivity Counting and Analysis, Revision 2
- C-HP-1033.610, Eberline Air Monitor AMS-4 Calibration and Operation, Revision 6
- C-HP-1033.620, Portable Air Samplers Calibration and Operation, Revision 9
- C-HP-1033.640, Portable Sampling Pumps Calibration and Operation, Revision 6
- C-HP-1042.151, Respirator Issue, Rev 2
- C-HP-1042.210, Respiratory Hazards Evaluation and Respiratory Protection Selection, Revision 3
- C-HP-1042.321, Powered Air-Purifying Respirator Hood Use, Revision 2
- C-HP-1042.410, Full Facepiece Respirator Maintenance, Revision 3
- C-HP-1042.451, Self Contained Breathing Apparatus Maintenance, Revision 1
- C-HP-1042.520, Respiratory Protection Program Equipment Criteria and Verification, Revision 5
- C-HP-1042-525, Posicheck3, Use of the Posicheck 3 Computerized Performance Tester to Verify Performance of Respiratory Protection Equipment, Revision 2
- C-HP-1091.242, Radiological Respiratory Protection Program: Surveillance and Evaluation, Revision 5
- EPIP-4.05, Respiratory Protection and KI Assessment, Revision 10

- HP-1042.451, Self-Contained Breathing Apparatus Maintenance, Revision 1
- RP-AA-110, Radiological Respiratory Protection Program, Revision 0
- RP-AA-224, Airborne Radioactivity Surveys, Revision 1
- RP-AA-226, Alpha Monitoring, Revision 1

Records and Data

- Radiological Respiratory Protection Program Evaluation [C-HP-1091.242, Attachment 1], 04/11/11
- Compressed Air/Gas Quality Testing Analysis Results, dated 02/10/11, 02/11/11, 08/14/11, and 08/16/11.
- Industrial and Grade D, Certificate of Conformance, for Lot numbers GB00X211A and GB00W232A, 3/27/12
- Inspection Result, Inspection Lot 000000166240, Gas, breathing air, 33% to 37% oxygen, 2/14/11
- Inspection Result, Inspection Lot 000000177258, Gas, breathing air, 33% to 37% oxygen, 10/10/11
- North Anna Power Station, Facility Characterization of Alpha Source Term, 2/18/12
- Memorandum, Air Sample Flow Test Employing Tygon Tubing, 6/23/05
- Memorandum, AMS-4 Set Point Calculations, 5/10/09
- Radiological Protection Group Briefing, Respiratory Equipment Review in preps for the 2012 U1 Refueling Outage, 3/13/12
- 0-PT-77.14A, ECCS PREACS Train A Filter In-Place Test (1-HV-FL3A), Revision 28, 10/20/11
- North Anna Power Station DAC Report [Air Sample Results], Air sample numbers; 12-3280-0314-1785, 12-3280-0315-0000, 12-3253-0313-1545, 12-3253-0314-1210, and 12-3253-0314-2146.
- SCBA Repair Log [HP-1042.451 Attachment 2], Posicheck3 Test Results, for the following SCBA Regulator S/N's:
  - LAC17460, 1/4/11 & 1/10/12
  - LAC175824, 11/3/10 & 8/8/11
  - LAC182456, 11/3/10, 8/8/11, & 11/2/11
  - LAC174787, 1/4/11 & 1/10/12
- MSA High Pressure Firehawk MMR SCBA, Training Status
- Health Physics Technician Respirator Qualification, Training Status
- Calibration Certificate - Eberline AMS-4 for the following:
  - S/N 1032, 11/8/11
  - S/N 1032, 3/24/11
  - S/N 1027, 8/2/11
  - S/N 1029, 8/2/11
  - S/N 1033, 8/2/11
  - S/N 1550, 8/2/11
- Calibration Certificate - Portable Air Sampler for the following:
  - S/N 5629, 3/3/11
  - S/N 8276, 5/23/11
  - S/N 5763, 7/21/11
  - ID# KIT 15, 10/11/11
  - S/N 8074, 17/7/10

S/N 2185-1, 12/7/10
- Calibration Certificate - Sampling Pump for the following:
  S/N 13730, 8/24/11
  S/N 13738, 8/24/11
  S/N 13741, 8/24/11
  S/N 13747, 8/24/11
  S/N 13724, 11/1/11

Self-Assessments
- SAR001311, Alpha Monitoring Program, Date 04/08/11

CAP Documents
- CR394879
- CR404034
- CR410072
- CR410073
- CR425999
- CR434799
- CR441159
- CR445777
- CR448265
- CR462600
- Condition Reports generated by licensee during the course of the Inspection:
  CR466330, Incorrect protection Factor identified on C-HP-1042.520
  CR467852, Revised Provider recommendations for use of Max-Air PAPH

2RS4: Occupational Dose Assessment

Procedures and Guidance Documents
- C-HP-1031.023, RWP Dosimetry: Exposure Control Support, Revision 7
- C-HP-1031.025, Dosimetry Requirements for Site Restricted Areas, Revision 5
- C-HP-1041.011, Evaluating and Tracking Intakes of Radioactive Material, Revision 6
- C-HP-1041.023, Internal Dose Calculation Based On Radionuclide Intake, Revision 9
- C-HP-1041.025, Declared or Expected Pregnant Woman, Revision 3
- C-HP-1041.057, Whole Body Counting Individuals Using the PM-7, Revision 1
- RP-AA-104, Internal Radiation Exposure Control Program, Revision 0
- RP-AA-105, External Radiation Exposure Control Program, Revision 0
- RP-AA-230, Personnel Contamination Monitoring and Decontamination, Revision 4

Records and Data Reviewed
- NVLAP National Voluntary Laboratory Accreditation Program Certificate effective 7/1/2011-6/30/2012
- Memorandum: To Supervisor Health Physics Technical Service from Supervisor Exposure Control, Subject: 2010 TLD Confirmatory Measurements, Dated 1/5/2011

CAP Documents
- CR 440788
- CR 444342

- CR 443878
- CR 455717

Section 2RS5: Radiation Monitoring Instrumentation

Procedures, Guidance Documents, and Manuals

- 1-PT-38.2.1.15, High Capacity Steam Generator Blowdown Radiation monitor (RM-SS-125) Calibration, Revision 02
- 0-PT-44.2.50, Vent Stack A Normal and High Range Effluent Radiation Monitor (VG-RM-179) Channel Calibration, Revision 01
- HP-3010.040, Radiation Monitoring System Setpoint Determination, Revison 23
- HPAP-1033, Radiation Protection Instrumentation Program, Revision 12
- C-HP-1033.021, Reference Sources for Radiation Protection Instrumentation, Revision 0
- C-HP-1033.532, AMP-100/200: Calibration and Operation, Revision 2
- C-HP-1033.533, MGP TelePole: Calibration and Operation, Revision 3
- C-HP-1033.711, Eberline Personnel Monitor Model PM-7, Calibration and Operation, Revision 2
- C-HP-1033.440, NE Technology SAM-9/SAM-11 Calibration and Operation, Revision 8
- HP-1033.020, Radiation Protection Instrumentation Calibration Facility Use, Revision 9
- HP-3010.040, Radiation Monitoring System Setpoint Determination, Revision 23
- HP-1041.046, Accuscan II Whole Body Counter: Operation and Performance Checks, Revision 5
- HP-1041.064, Standup Whole Body Counter: Calibration, Revision 7
- 0-HSP-INST-002, Health Physics Assessment of Radioactive Waste Stream Changes, Revision 2
- 0-HSP-INST-001, Maintenance of Instrument Calibrators, Revision 2

Records and Data

- Calibration Certificate – Canberra Apex MCA, S/N 45-P41053A, Dated 08/1/10
- Calibration Certificate – Eberline PCM-1B, S/N 328, Dated 09/15/11
- Calibration Certificate – Eberline PCM-2, S/N 494, Dated 08/09/11
- Calibration Certificate – Eberline PM-7, S/N 396, Dated 08/23/11
- Calibration Certificate - NE Technology SAM-9/SAM-11 S/N 369, Dated 01-10-12
- Calibration Certificate – Beckman LS-6000SC, S/N 7065032, Dated 01-23-12
- Calibration Certificates - Eberline AMS-4, S/N 1027, Dated 08/03/11
- Calibration Certificate – MGP TelePole, S/N 6609-141, Dated 08/09/11
- Calibration Certificate – MGP TelePole, S/N 6607-038, Dated 09/23/11
- Calibration Certificate – MGP AMP-100/200, S/N 5097-052, Dated 08/15/11
- Calibration Certificate – Eberline E-520, S/N 3937, Dated 07/14/11
- Calibration Certificate – Eberline RO-20, S/N 157, Dated 08/09/11
- Calibration Certificate – Eberline Teletector 6112, S/N 111995, Dated 09/23/11
- Dosimeter Calibration Certificates – MGP DMC2000S, S/Ns 199245 & 200317, Dated 03/28/12
- Control Room equipment status report, “Active Status for Visual Cues,” dated 03/27/11
- ET-N-09-0046, Evaluation of Calibration Source for the Area Radiation Monitoring System, dated 08/09/10
- Calibration Source Certificate No. 128366 – RU 374, (Co-60 Calibration Source for Area Monitors) dated 02/24/09

- Calibration of 1- RM 1-125, High Capacity Steam Generator Blowdown Radiation Monitor, dated 03/27/11
- Condenser Air Ejector Radiation Monitor 2-RM-SV-221 High Alarm Setpoint change per 2-PT-46.3A.3, Primary-To-Secondary Leak Rate Alarm Setpoint Calculation, dated 12/16/10
- ICP-MS-1RM-170, Main Steam Loop A Noble Gas High Range Effluent Radiation Monitor (1MS-RM-170) Calibration, Revision 18
- Vendor Technical Manual 59-N001-00001, Calibration of TA-900 Area Radiation Monitors, Revision N/A
- Vendor Technical Manual 59-N001-00001, Instruction Manual AX-400 Calibrator and AX-401 EL Signal Calibrator, Revision N/A
- 10CFR61 Waste Stream Reports, Common DAW 2011, U-1 DAW 2010, and U-2 DAW 2010 dated 02/07/12
- Instrument Calibration, RMS-159 Containment Particulate Radiation Monitor Calibration, Dated 09/13/11
- Instrument Calibration, 1-RMS-165 Containment High Rand Radiation Monitor System, Dated 07/30/10
- Instrument Periodic Test, Containment Area Radio Gas Radiation Monitor (1-RM-RMS-160) Channel Operational Test, Dated 09/15/11

Self-Assessments

- SAR001311, Alpha Monitoring Program, Date 04/08/2011

CAP Documents

- CR413822
- CR445660
- CR454206
- CR418427
- CR425762
- CR450825
- CR405923
- CR104807
- CR453223
- CR459609
- CR465264
- Condition Reports generated by licensee during the course of the Inspection:
  CR468424, Validation of AX-400 Calibrator (MS Line RM calibrator) not performed.

Section 4OA1: Performance Indicator Verification

Procedures

- RP-AA-112, Radiation Safety Performance Indicator Reporting, Revision 4

Records

- Performance indicator data for Occupational Radiation Safety Performance Indicator From 1/1/2011 thru 2/6/2012
- Performance indicator data for Public Radiation Safety Performance Indicator From 1/1/2011 thru 2/6/2012
- Gaseous Effluents Cumulative Dose Summary for year 2011

- Liquid Effluent Cumulative Dose Summary for year 2011
- Quarterly Gaseous Effluent % Tech Spec Worksheet 1st through 4th Quarter 2011
- Quarterly Liquid Effluent % Tech Spec Worksheet 1st through 4th Quarter 2011
- Alarming dosimeter logs for 2011 through 2/5/2012

Attachment

LIST OF ACRONYMS

ADAMS	Agencywide Document Access and Management System
ALARA	As Low As Reasonably Achievable
ARM	Area Radiation Monitor
AP	ALARA Plan
CA	Corrective Action
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Report
DAD	Digital Alarming Dosimeter
EDG	Emergency Diesel Generator
HP	Health Physics
HPGe	High-Purity Germanium
HPT	HP Technician
HRA	High Radiation Area
IMC	Inspection Manual Chapter
IP	Inspection Procedure
ISFSI	Independent Spent Fuel Storage Installation
JPM	Job Performance Measures
LHRA	Locked High Radiation Area
LHSI	Low Head Safety Injection
N1R21	North Anna Unit 1 Refueling outage 21
N1R22	North Anna Unit 1 Refueling outage 22
N2R21	North Anna Unit 2 Refueling outage 21
NCV	Non-cited Violation
NPR	Negative Pressure Respirator
NRC	Nuclear Regulatory Commission
NVLAP	National Voluntary Laboratory Accreditation Program
OA	Other Activities
OD	Operability Determination
ODCM	Offsite Dose Calculation Manual
PARS	Publicly Available Records
PCE	Personnel Contamination Event
PCM	Personnel Contamination Monitor
PI	Performance Indicator
PM	Portal Monitor
QS	Quench Spray
RADWASTE	Radioactive Waste
RCA	Radiologically Controlled Area
RCE	Root Cause Evaluation
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System

RG	Regulatory Guide
RP	Radiation Protection
RTP	Rated Thermal Power
RWP	Radiation Work Permit
RWST	Refueling Water Storage Tank
SAM	Small Article Monitor
SCBA	Self-contained Breathing Apparatus
SDP	Significance Determination Process
SFP	Spent Fuel Pool
SR	Surveillance Requirements
TDAFWP	Turbine Driven Auxiliary Feedwater Pump
TLD	Thermoluminescent Dosimeter
TS	Technical Specifications
U1	Unit 1
U2	Unit 2
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
VEPCO	Virginia Electric and Power Company
VHRA	Very High Radiation Area
VPAP	Virginia Power Administrative Procedure
WBC	Whole Body Count
WO	Work Order