



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

August 11, 2022

Mr. Daniel G. Stoddard
Senior Vice President and Chief Nuclear Officer
Innsbrook Technical Center
5000 Dominion Boulevard
Glenn Allen, VA 23060

**SUBJECT: NORTH ANNA POWER STATION – INTEGRATED INSPECTION REPORT
05000338/2022002 AND 05000339/2022002**

Dear Mr. Stoddard:

On June 30, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at North Anna Power Station. On July 28, 2022, the NRC inspectors discussed the results of this inspection with Ms. Lisa Hilbert and other members of your staff. The results of this inspection are documented in the enclosed report.

No NRC-identified or self-revealing findings were identified during this inspection.

A licensee-identified violation which was determined to be of very low safety significance is documented in this report. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violation or the significance or severity of the violation documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement; and the NRC Resident Inspector at North Anna Power Station.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,



Signed by Fannon, Matthew
on 08/11/22

Matthew S. Fannon, Chief
Reactor Projects Branch 4
Division of Reactor Projects

Docket Nos. 05000338 and 05000339
License Nos. NPF-4 and NPF-7

Enclosure:
As stated

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SUBJECT: NORTH ANNA POWER STATION – INTEGRATED INSPECTION REPORT
05000338/2022002 AND 05000339/2022002 August 11, 2022

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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Numbers: 05000338 and 05000339

License Numbers: NPF-4 and NPF-7

Report Numbers: 05000338/2022002 and 05000339/2022002

Enterprise Identifier: I-2022-002-0029

Licensee: Dominion Energy

Facility: North Anna Power Station

Location: Mineral, VA

Inspection Dates: April 1, 2022 to June 30, 2022

Inspectors: K. Carrington, Senior Resident Inspector
T. Fanelli, Senior Reactor Inspector
L. Jones, Senior Reactor Inspector
B. Kellner, Senior Health Physicist
J. Rivera, Health Physicist
A. Wilson, Senior Project Engineer

Approved By: Matthew S. Fannon, Chief
Reactor Projects Branch 4
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at North Anna Power Station, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. A licensee-identified non-cited violation is documented in report section: 71152S.

List of Findings and Violations

No findings or violations of more than minor significance were identified.

Additional Tracking Items

None.

PLANT STATUS

Unit 1 began the inspection period operating at rated thermal power (RTP). On April 14, 2022, the unit experienced a high neutron flux rate, automatic, reactor trip from 100 percent RTP. The unit was restarted on April 16, 2022, and returned to rated thermal power on April 20, 2022, where it continued to operate for the remainder of the inspection period.

Unit 2 began the inspection period shutdown for a planned refueling outage. Unit 2 was restarted on April 10, 2022. The unit returned to rated thermal power on April 17, 2022, where it continued to operate for the remainder of the inspection period.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed activities described in IMC 2515, Appendix D, "Plant Status," observed risk significant activities, and completed on-site portions of IPs. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Seasonal Extreme Weather Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of extreme high temperatures for the following systems:
 - Station blackout diesel generator system
 - Unit 1 auxiliary feedwater (AFW) system
 - Unit 1 casing cooling system

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) Unit 2 turbine-driven AFW system during Unit 2 'B' motor-driven AFW (MDAFW) system planned maintenance, on April 9, 2022
- (2) Unit 1 'A' and 'B' charging systems during Unit 1 'C' charging system planned maintenance, on April 26, 2022
- (3) Unit 1 'A' MDAFW system during Unit 1 'B' MDAFW system planned maintenance, on April 27, 2022

- (4) Unit 2 component cooling water system during Unit 1 'A' component cooling water system planned maintenance, on June 4, 2022

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

- (1) 2-FS-C-1, Unit 2 containment, elevations 262' and 291', on April 4, 2022
- (2) 1-FS-S-3, Unit 1 emergency switchgear instrument rack and air conditioning rooms, service building elevation, on May 27, 2022
- (3) 1-FS-QS-1, Unit 1 quench spray pump building, elevation 274', on June 27, 2022
- (4) 1-FS-MS-1, Unit 1 main steam valve house, all elevations, on June 27, 2022

71111.06 - Flood Protection Measures

Inspection Activities - Internal Flooding (IP Section 03.01) (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the:

- (1) Manhole 1-BLD-MBAR-4MH03, on May 25, 2022

71111.07A - Heat Exchanger/Sink Performance

Annual Review (IP Section 03.01) (1 Sample)

The inspectors evaluated readiness and performance of:

- (1) Unit 2 'J' emergency diesel generator (EDG) lube oil cooler, on June 2, 2022

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

- (1) The inspectors observed and evaluated licensed operator performance in the main control room during Unit 2 startup from Refuel Outage (RFO) 2R28, on April 9-10, 2022.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

- (1) The inspectors observed and evaluated operator performance in the plant simulator during just-in-time training for Unit 2 startup from RFO 2R28, on April 1, 2022, and Emergency Plan Drill, "NJUN22EPD," on June 21, 2022.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (1 Sample)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components (SSCs) remain capable of performing their intended function:

- (1) Unit 2 'A' charging pump associated with a maintenance preventable functional failure on August 5, 2021

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed:

- (1) Unit 1 containment isolation valve, 1-SI-TV-1842, stuck in the open position, on May 12, 2022
- (2) Pennsylvania, New Jersey, Maryland (PJM) transmission company hot weather alert, Anticipated Transient Without a Scram mitigation system actuation circuitry (AMSAC) testing, severe thunderstorm warning, and tornado watch, on May 27, 2022
- (3) PJM hot weather alert and increased seismic activity, on May 30, 2022
- (4) Unit 1 power ascension from 97 to 100 percent rated thermal power and Unit 2 containment entry to investigate an increase in reactor coolant pump (RCP) seal leakage, on June 14, 2022
- (5) Emergent repair of Unit 2 'J' EDG keep warm pump coupling and oil leak from Unit 2 'C' charging pump speed increaser oil gearbox, on June 16, 2022

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (8 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

- (1) Various condition reports (CRs) associated with Unit 1 'H' EDG exhaust issues- past operability review, on April 1, 2022
- (2) CR1195505, 2-MS-TV-211A slow to stroke open and CR1195506, 2-MS-TV-211B failed to stroke full open, on April 6, 2022
- (3) Operability of Unit 1 'B' MDAFW pump following pump run, on April 27, 2022
- (4) CR1197863, Station blackout diesel generator failed acceptance criteria of 0-PT-82.14, on April 28, 2022
- (5) CR1201843, Unit 1 terry turbine trip throttle valve trip latch appears to be less than fully engaged, on June 16, 2022
- (6) CR1201351, Small [60 drops per minute] oil leak Unit 2 'J' EDG, on June 22, 2022
- (7) CR1175825, AFW motor-operated valve (MOV) and hand control valve headers pressurizing, on June 23, 2022
- (8) Service water MOVs operating above nameplate voltage and current, on June 29, 2022

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Unit 1 'H' EDG 3-way valve removal associated with crank case vacuum pressure trips, on April 1, 2022

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the following post-maintenance testing activities to verify system operability and/or functionality:

- (1) Work Order 59203300990 associated with Unit 2 service water MOV 204D testing following planned maintenance during 2R28, on April 8, 2022
- (2) 1-PT-71.3Q, Unit 1 'B' MDAFW test following AFW system planned maintenance, on April 27, 2022
- (3) 2-PT-138, Unit 2 low head safety injection post maintenance testing following planned maintenance during 2R28, on June 10, 2022
- (4) 2-OP-6.9, Unit 2 'J' EDG slow start test following Unit 2 'J' EDG keep warm pump coupling repair, on June 16, 2022

71111.20 - Refueling and Other Outage Activities

Refueling/Other Outage Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated RFO 2R28 activities from April 1 to April 17, 2022.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance testing activities to verify system operability and/or functionality:

Surveillance Tests (other) (IP Section 03.01) (2 Samples)

- (1) 2-PT-64.1.1, Outside Recirculation Spray Pump 2-RS-P-2A, on April 11, 2022
- (2) 2-PT-71.1Q, 2-FW-P-2, Turbine Driven Auxiliary Feedwater Pump and Valve Test, on June 15, 2022

Inservice Testing (IP Section 03.01) (1 Sample)

- (1) 2-PT-78.3B, Inservice Inspection- Residual Heat Removal System Pump 2-RH-P-1B, on June 16, 2022

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated how the licensee identifies the magnitude and extent of radiation levels and the concentrations and quantities of radioactive materials and how the licensee assesses radiological hazards.

Instructions to Workers (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated how the licensee instructs workers on plant-related radiological hazards and the radiation protection requirements intended to protect workers from those hazards.

Contamination and Radioactive Material Control (IP Section 03.03) (3 Samples)

The inspectors observed/evaluated the following licensee processes for monitoring and controlling contamination and radioactive material:

- (1) Licensee surveys of potentially contaminated material leaving the radiologically controlled area (RCA)
- (2) Workers exiting the RCA at Unit 2 during a refueling outage
- (3) Workers staging and loading radioactive material and potentially contaminated equipment through the Unit 2 containment equipment hatch and exiting the RCA

Radiological Hazards Control and Work Coverage (IP Section 03.04) (5 Samples)

The inspectors evaluated the licensee's control of radiological hazards for the following radiological work:

- (1) As low as reasonably achievable (ALARA) Post Job Review Evaluation Number: 20-009, RWP/Task Number: 20-2251-1,2,3,4, Disassemble/Reassemble Reactor Head During U-2 2020 RFO, 01/13/2021
- (2) ALARA Plan # 22-015, Repair 2-RC-MOV-2592 [2B loop stop valve], Radiation Work Permit # 22-2269
- (3) ALARA Plan # 22-018, Perform NDE & ISI Exams During N2R28 U-2 2022 RFO [High Radiation Areas and Locked High Radiation Areas], Radiation Work Permit # 22-2220
- (4) North Anna Power Station 2021 Unit One Refueling Outage N1R28 ALARA Report
- (5) Installation of Unit 2 upper internals (RWP 2252, Task 2, Work Order 59203323585)

High Radiation Area and Very High Radiation Area Controls (IP Section 03.05) (4 Samples)

The inspectors evaluated licensee controls of the following High Radiation Areas and Very High Radiation Areas:

- (1) Unit 2 containment sump access hatch (Very High Radiation Area)
- (2) Unit 2 containment - reactor head (on stand) access doors (4 doors) (Locked High Radiation Area)
- (3) Unit 2 containment regenerative heat exchanger room (Locked High Radiation Area)
- (4) Unit 2 containment 262'/241' elevations – RCP motor cubes and SG loop rooms (High Radiation Area)

Radiation Worker Performance and Radiation Protection Technician Proficiency (IP Section 03.06) (1 Sample)

- (1) The inspectors evaluated radiation worker and radiation protection technician performance as it pertains to radiation protection requirements.

71124.03 - In-Plant Airborne Radioactivity Control and Mitigation

Permanent Ventilation Systems (IP Section 03.01) (2 Samples)

The inspectors evaluated the configuration of the following permanently installed ventilation systems:

- (1) Unit 1 and 2 auxiliary building ventilation system test records
- (2) Main control room ventilation system test records (flowrate, HEPA, and charcoal filter testing)

Temporary Ventilation Systems (IP Section 03.02) (2 Samples)

The inspectors evaluated the configuration of the following temporary ventilation systems:

- (1) 500 cfm HEPA Unit #18 setup for code safety removal
- (2) 500 cfm HEPA Unit #27 setup for loop stop valve work

Use of Respiratory Protection Devices (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated the licensee's use of respiratory protection devices.

Self-Contained Breathing Apparatus for Emergency Use (IP Section 03.04) (1 Sample)

- (1) The inspectors evaluated the licensee's use and maintenance of self-contained breathing apparatuses.

71124.04 - Occupational Dose Assessment

Source Term Characterization (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated licensee performance as it pertains to radioactive source term characterization.

External Dosimetry (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated how the licensee processes, stores, and uses external dosimetry.

Internal Dosimetry (IP Section 03.03) (2 Samples)

The inspectors evaluated the following internal dose assessments:

- (1) Reviewed the whole-body count record for an individual who had facial contamination (facial Personnel Contamination Event)

- (2) Reviewed the whole-body count records for a declared pregnant worker

Special Dosimetric Situations (IP Section 03.04) (2 Samples)

The inspectors evaluated the following special dosimetric situations:

- (1) Multi-badging for 2-RC-MOV2592 (B Loop stop valve) internals work
- (2) Reviewed monitoring records for a declared pregnant worker from 2020

71124.05 - Radiation Monitoring Instrumentation

Walkdowns and Observations (IP Section 03.01) (8 Samples)

The inspectors evaluated the following radiation detection instrumentation during plant walkdowns:

- (1) Two Telepole radiation survey meters ready for use in the instrumentation lab
- (2) RO-20 ionization chamber survey meter ready for use in the instrumentation lab
- (3) RadEye survey meter ready for use in the instrumentation lab
- (4) An AMP-100 area monitor ready for use in the instrumentation lab
- (5) Small articles monitor (SAM) at the radiologically controlled area (RCA) exit
- (6) Personnel contamination monitor (PCM) at the RCA exit
- (7) Portal monitor (PM) at the protected area (PA) exit
- (8) Area radiation monitors (ARMs) in the auxiliary building

Calibration and Testing Program (IP Section 03.02) (15 Samples)

The inspectors evaluated the calibration and testing of the following radiation detection instruments:

- (1) Count room LS-6000 liquid scintillation counter, serial no. 7065032
- (2) Count room MCA detector no. 3
- (3) Count room G-5000 alpha and beta counter, serial no. 121703
- (4) Fast Scan Apex whole body counter
- (5) AMP-100 area monitor, serial no. 5007-219/219
- (6) SAM-11, serial no. 369
- (7) GEM-5 PM, serial no. 1810-288-GEO-500G
- (8) Telepole radiation survey meter, serial no. 6607-043
- (9) RadEye-G survey meter, serial no. 30051
- (10) AMS-4 continuous air monitor (CAM), serial no. 778
- (11) RO-20 ionization chamber, serial no. 182AA
- (12) PCM-2, serial no. 389
- (13) Ludlum 2000 scalar, serial no. 310621
- (14) Portable air sampler (gooseneck) no. 5630
- (15) Containment High Range Radiation Monitoring System (CHRRMS) no. RMS-266

Effluent Monitoring Calibration and Testing Program Sample (IP Sample 03.03) (3 Samples)

The inspectors evaluated the calibration and maintenance of the following radioactive effluent monitoring and measurement instrumentation:

- (1) Unit 1, Liquid waste evaporator radiation monitor, RM-LW-110
- (2) Vent Stack A normal and high range effluent radiation monitor, VG-RM-179
- (3) Vent Stack B normal and high range effluent radiation monitor, VG-RM-180

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

MS07: High Pressure Injection Systems (IP Section 02.06) (2 Samples)

- (1) Unit 1 (April 1, 2021 through March 31, 2022)
- (2) Unit 2 (April 1, 2021 through March 31, 2022)

MS10: Cooling Water Support Systems (IP Section 02.09) (2 Samples)

- (1) Unit 1 (April 1, 2021 through March 31, 2022)
- (2) Unit 2 (April 1, 2021 through March 31, 2022)

OR01: Occupational Exposure Control Effectiveness Sample (IP Section 02.15) (1 Sample)

- (1) March 1, 2021 through March 31, 2022

PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences (RETS/ODCM) Radiological Effluent Occurrences Sample (IP Section 02.16) (1 Sample)

- (1) March 1, 2021 through March 31, 2022

71152S - Semiannual Trend Problem Identification and Resolution

Semiannual Trend Review (Section 03.02) (1 Sample)

- (1) The inspectors reviewed the licensee’s corrective action program for potential adverse trends in the area of human performance related to implementation of the North Anna Fire Protection Program that might be indicative of a more significant safety issue.

INSPECTION RESULTS

Licensee-Identified Non-Cited Violation	71152S
This violation of very low safety significance was identified by the licensee and has been entered into the licensee corrective action program and is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.	
Violation: North Anna, Unit 2, Technical Specifications, Section 5.4.1, "Procedures," requires in part that procedures be established and implemented for Fire Protection Program implementation. Dominion procedure, CM-AA-FPA-100, "Fire Protection/Appendix R (Fire Safe Shutdown) Program," was established for implementation of the North Anna Fire Protection Program. Attachment 2, "North Anna Power Station and Surry Power Station Program Requirements," Step 3.6.2.a, states, "A fire watch will be required when any fire	

protection feature is degraded or declared nonfunctional, as outlined in Technical Requirements Manual (TRM).” TRM 3.3.6, Condition A.1, requires in part, that a fire watch patrol be established within one hour and in accordance with TRM Table 7.1, to inspect the zone (specified in Table 3.3.6-2) with the nonfunctional equipment. TRM Table 3.3.6-2, "Unit 2 Fire Detection Instrumentation," specifies that detectors are required in the Unit 2 primary cable vault and tunnel to automatically initiate CO2 or halon. TRM Table 7.1, "Compensatory Measures," specifies that for any barrier, suppression system, detection system, or passive fire protection item that is nonfunctional, establish an hourly or continuous fire watch, based on the noted number of conditions and Appendix R applicability.

Contrary to the above, from 0835 to 1400 on January 13, 2022, North Anna, Unit 2, failed to implement the requirements of its Fire Protection Program as specified by TRM 3.3.6, Condition A.1, when it did not establish a fire watch patrol for the Unit 2 cable vault and tunnel, within one hour of removing fire protection panel 1-FP-CB-97B from service, rendering the fire detection instrumentation for that zone nonfunctional.

Significance/Severity: Green. The inspectors assessed the significance of the finding using Appendix F, "Fire Protection and Post-Fire Safe Shutdown SDP," and determined this issue was associated with the "Fixed Fire Protection Systems" category because fire watches were required to be posted as a compensatory measure for the 1-CP-97-A/B outage which impacted a fixed fire protection system. The inspectors determined a Phase 2 assessment was required since the finding could not be assigned a low degradation rating and the deficiency (reduced frequency fire watch) adversely affected the ability of the system to protect equipment important to safe shutdown. Additionally, North Anna does not have an approved fire probabilistic risk assessment available to screen the issue in accordance with Step 1.5. For the Phase 2 assessment, the inspectors conducted a bounding risk quantification using the following inputs and assumptions:

- Duration factor of 5.5 hours, which is based on the time that the station did not have a fire watch from the time the fire panel was deenergized until the issue was identified and corrected based upon station logs and condition reports ($5.5/8760=6.28E-4$)
- Fire ignition frequencies for the Unit 2 cable tunnel and vault as listed in NA-NOTE BK-PRA-NAPS-FA.2 - Fire Ignition Frequencies is $5.83 E-3$
- Bounding values of 1.0 for adjustment factor, severity factor, and non-suppression probability
- Conditional core damage probability for a fire in the Unit 2 cable vault and tunnel is $6.78E-3$ since TDAFW and all EDGs were available (NRC SPAR MODEL)
- A fire in the Unit 2 cable vault and tunnel will result in a loss of the 2J and 2H emergency buses and control power to the EDG fuel oil transfer pumps so Unit 2 EDGs would be lost once the day tank is depleted
- Safe Shutdown procedures credit Unit 1 EDGs cross-connected to support Unit 2 loads. A train of MDAFW, a charging pump, and train of service water would be lost as well.

Based on the above, the inspectors determined that the change in core damage frequency is conservatively $2.48 E-8$, which is of very low safety significance (i.e., Green).

Corrective Action References: CR1189272

Observation: Semi-Annual Trend Related to Fire Watch Implementation

71152S

The inspectors reviewed the licensee's corrective program to determine if a potentially adverse trend existed in human performance with respect to implementation of fire watches in accordance with the station's Fire Protection Program which could be indicative of a more significant safety concern. Specifically, the inspectors reviewed the following condition reports generated over the last six months related to missed fire watches:

CR1201892, Fire watch missed for Unit 1 emergency switchgear room and cable vault and tunnel due to card reader issues;
CR1200625, Fire watch stuck in auxiliary building elevator;
CR1199303, Hourly fire watch missed in 2H emergency diesel generator room due to room being inaccessible;
CR1193608, Hourly fire watch requirement not met;
CR1191733, Service water pump house door caused fire watch delays;
CR1191305, Fire watch missed due to self-reading dosimeter WACS stations being down;
CR1190596, Hourly fire watch at service water pumphouse missed due to door lock issues;
CR1189272, Hourly fire watch not established for U2 cable vault and tunnel; and
CR1188858, 1 hour of U-2 cable vault/tunnel hourly fire watch missed.

The inspectors noted that in the aforementioned cases, the fire watches were reinstated within a reasonable timeframe and were not easily foreseeable due to equipment malfunctions or mitigating factors outside the watch's control. Since the watches were immediately reinstated at the most available opportunity in each of these cases, the issues were determined not to adversely affect nuclear safety. While the inspectors determined that the missed fire watches constituted minor violations of North Anna's Technical Specifications and Technical Requirements Manual, the inspectors noted that only one issue constituted a performance deficiency of more than minor significance. This issue is documented as a Green (very low safety significance) licensee-identified violation in this report. The inspectors continue to monitor the impact of equipment and other mitigating factors on the licensee's ability to implement its fire protection program.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On July 28, 2022, the inspectors presented the integrated inspection results to Ms. Lisa Hilbert and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Procedures	0-AP-41	Severe Weather Conditions	57
71111.04	Corrective Action Documents	CR	1171958	
	Corrective Action Documents Resulting from Inspection	CA017909		
	Drawings	11715-FM-079A	Flow/Valve Operating Numbers Diagram Component Cooling Water System North Anna Power Station Unit 2	33
		PI N-2005-1336		
Procedures	2-OP-51.1A	Valve Checkoff- Component Cooling, Auxiliary Building and Main Steam Valve House	24	
71111.05	Engineering Evaluations	ETE-NA-2011-0071		
	Fire Plans	1-FS-MS-1	Main Steam Valve House Unit 1	
		1-FS-QS-1	Quench Spray Building 274' (SG-74) Unit 1	
		2-FS-C-1	Loss Prevention Fire Strategy, Containment – Unit 2	Rev. 4
Miscellaneous	NAS-3014			
71111.07A	Miscellaneous		Supplemental NDE Personnel Certification Review Checklist for Employee ID: 04344	03/07/2022
			Personnel Certification Summary Record for Employee ID 04344	11/24/2020
			Personnel Certification Summary Record for Employee ID: T2010	07/25/2019
			Supplemental NDE Personnel Certification Review Checklist for Employee ID: T2010	03/18/2022
			Supplemental NDE Personnel Certification Review Checklist for Employee ID: F1670	03/07/2022
			Personnel Summary Certification Record for Employee ID: F1670	09/12/2021
71111.11Q	Miscellaneous		Emergency Plan Drill NJun22EPD	
			Reactivity Plan for N2C29 BOC Reactor Startup	0

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Reactivity Plan for N1C29 Dropped Rods Startup	0
71111.13	Miscellaneous	Plan of Week		April 1 to June 30, 2022
71111.15	Calculations	59-02-PT-213.20	Valve Inservice Testing 2-MS-TV-211A and 2-MS-TV-211B	Rev. 13
		ET No. ISI 02-0004	System Stroke Time Design Requirements for Air Operated Valves in the North Anna Station, Units 1 and 2 Inservice Testing Programs	Rev. 0
	Corrective Action Documents	CR 1195505	2-MS-TV-211A Slow to Stroke Open	
		CR 1195506	2-MS-TV-211B Failed to Stroke Open	
		CR1175825		
	Procedures	CR1201351		
DNES-NA-EE/MOV-1001		Over-Current and Voltage Phase Imbalance Analysis for MOVs	2	
71111.19	Procedures	ER-AA-IST-102	ASME IST Program – Inservice Testing of Valves	Rev. 8
		1-PT-71.3Q	1-FW-P-3B, B Motor-Driven AFEW Pump, and Valve Test	58, 59
71111.20	Miscellaneous	2-OP-6.9	Slow Start and Operation of 2J Emergency Diesel Generator	40
			Work Schedule for Covered Worker- Operations - Employee ID 45994	03/03/2022 to 03/11/2022
			Work Schedule for Covered Worker - Chemistry - Employee IDs 93554, 43278	03/07 to 03/15/2022; 03/23 to 03/29/2022
			Work Schedule for Covered Worker - Rad Protection/ Health Physics - Employee IDs 50609, 111372, 3383, 512, 25473, 59818, 53062	03/23/2022 to 03/29/2022
			Work Schedule for Covered Worker - Security - Employee IDs 60228, 113193, 110597, 34578, 44725	04/11/2022 to 04/20/2022
		Work Schedule for Covered Workers- Maintenance- Employee IDs 68273, 44963, 1099, 51462, 61632, 82873	04/03/2022 to 04/09/2022	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Work Schedule for Covered Worker - Rad Protection/Health Physics - Employee Ids 50609, 111372, 3383, 512, 25473, 59818	03/07/2022 to 03/15/2022
		N2C29 RxManPO3.3	BOC Startup	0
	Procedures	1-OP-1.5	Unit Startup from Mode 3 to Mode 2	94
		1-OP-1.5A	Mode 3 to Mode 2 Checklist	33
		2-OP-1.7	Unit Startup from Mode 3 to Mode 2 Following Refueling	38
		2-OP-2.1	Unit Startup form Mode 2 to Mode 1	131
		LI-AA-700	Fatigue Management and Work Hour Limits for Covered Workers	14
71111.22	Procedures	2-PT-64.1.1	Outside Recirculation Spray Pump 2-RS-P-2A	
		2-PT-71.1Q	2-FW-P-2, Turbine Driven Auxiliary Feedwater Pump and Valve Test	
		2-PT-78.3B	Inservice Inspection- Residual Heat Removal System Pump 2-RH-P-1B	
71124.01	ALARA Plans		North Anna Power Station 2021 Unit One Refueling Outage N1R28 ALARA Report	
		22-014	Perform Valve Maintenance To Include; Repack, Adjustment, Cut Out, Inspection Of Valves During N2R28 RFO	Revision 0
		22-015	Repair 2-RC-MOV-2592, Revision 0 [including in-progress review #1 & 2]	Various
		22-018	Perform NDE & ISI Exams During N2R28 U-2 2022 RFO, Revision 0 [including in-progress review #1]	Various
	Corrective Action Documents		CR1155152, CR1157526, CR1157862, CR1158379, CR1168649, CR1168779, CR1169946, CR1170025, and CR1172881	Various
	Miscellaneous		North Anna Power Station Radiological Survey Location and Frequency (RP-AA-220, Attachment 1).	03/17/2022
			ALARA Daily Outage Report(s) - 03/15/2022 through 3/31/2022	Various
			Unit 2 Outage Day 2 and Day 7 dose rate assessment [2017 thru 2022 containment dose rate/source term trending]	Various

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Station ALARA Committee Meeting Minutes (2-RV-MOV-2592 update and new dose projection)	03/24/2022
	Procedures	RP-AA-201	Access Controls for High and Very High Radiation Areas	Revision 10
		RP-AA-202	Radiological Posting	Revision 13
		RP-AA-225	Unrestricted Release of Material	Revision 8
		RP-AA-300	ALARA Reviews and Reports	Revision 10
		RP-AA-5001	RP Department Survey and Surveillance Verification	Revision 0
	Radiation Surveys		Unit 2 Upper Internal Lift Rig	03/28/2022
			Temporary Reactor Vessel Cover (TRVC) pre and post decontamination surveys [multiple surveys on 3/28 and 3/29/2022]	Various
			Remote Continuous Coverage Log and Stay Time Tracking Form for Unit 2 Blind Flange Removal	03/10/2022
			Unit 2 Initial Entry radiation, contamination and airborne survey(s), all elevations.	03/06/2022
			Unit 2 Transfer Canal, containment side surveys prior to Blind Flange removal [including dose rate gradient assessment]	Various
		2-RC-MOV-2592	Multiple radiation, contamination surveys for loop stop valve work performed from 3/16/2022 through 3/25/2022.	Various
		22-2251-0307-0330	Unit 2 Reactor Cavity air sample during deck plate installation and Transfer Canal survey (PAPRs worn). Analysis for beta, gamma, iodine, and alpha.	03/07/2022
		22-2252-0311-0956	Air sample in the Unit 2 Cavity during the Reactor Head Lift (respiratory protection worn (PAPH)). Analysis for beta, gamma, iodine, and alpha.	03/11/2022
		22-2252-0311-1014	Air sample at the Unit 2 Cavity Edge during the Reactor Head Lift. Analysis for beta, gamma, iodine, and alpha.	03/11/2022
		Radiation Work Permits (RWPs)	22-2015	Valve Maintenance in Radiation Areas
	22-2220		Perform ultrasonic, magnetic particle and liquid penetrant examination for the ASME XI in service inspection program in LHRA.	Revision 0
	Self-Assessments		Radiological Work Control Program Review November 2019 - June 2021	10/26/2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Audit 20-06	Nuclear Oversight Audit 20-06: Radiation Protection, Process Control Program, and Chemistry	09/16/2020
71124.03	Calibration Records	8030084224	PortaCount Pro Model 8030 Calibration Certificate	08/09/2021
		L01129	Posi3 USB Calibration Report, Certificate of Calibration, Certificate # 56071921L01129	07/19/2021
		L02179	Posi3 USB Calibration Report, Certificate of Calibration, Certificate # 56061621L02179	06/16/2021
		LAC174787	SCBA Pack #23 Test Record	01/28/2022
		LAC182418	SCBA Pack #17 Test Record	01/31/2022
		LAC182447	SCBA Pack #4 Test Record	02/01/2022
	Corrective Action Documents		CR1142555, and CR1153635	Various
	Miscellaneous	0-HSP-BSRD-001, Attachment 2	North Anna Internal Exposure Control Program Surveillance - May 2020 through December 2020	03/09/2021
		0-PT-114	Emergency Kit Respirator Inspections [Quarterly, Monthly emergency kit respirator inspections] - 12/19/2021, 01/13/2022, 02/27/2022, and 03/16/2022	Various
		RP-AA-163, Attachment 2	Radiological Use SCBA Inspection Record - 12/19/2021, 01/13/2022, 02/15/2022, and 03/16/2022	Various
		RP-AA-226, Attachment 1	North Anna Unit 2 Alpha Source Term Characterization for N2R28 (Routine Facility Characterization of Alpha Source Term - North Anna Power Station, June 2020 to December 2021)	02/15/2022
	Procedures	HP-1033.620	Portable Air Samplers Calibration and Operation	Revision 9
		HP-1042.122	Quantitative Fit Testing: PortaCount Pro Fit Testing System	Revision 12
		HP-1042.451	Self-Contained Breathing Apparatus Maintenance	Revision 5
		HP-1042.520	Respiratory Protection Program Equipment Criteria and Verification	Revision 6
		RP-AA-162	Issue and Control of Respiratory Protection Equipment	Revision 7
		RP-AA-163	Inspection and Inventory of Respiratory Protection Equipment	Revision 8
RP-AA-226		Alpha Monitoring	Revision 5	
RP-AA-243	Portable HEPA Ventilation Units	Revision 4		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Radiation Surveys	HP-1042.510, Attachment 3	Breathing Air Quality Verification Record [Grade D breathing air analysis results] for Air Compressor 2-SA-111 and 2-SA-109 dated 03/09/2021 and 08/20/2021	Various
		HP-1042.510, Attachment 3	Breathing Air Quality Verification Record [Grade D breathing air analysis results] for Paint Shop Air Compressor dated 03/09/2021 and 08/20/2021	Various
		HP-1042.520, Attachment 1	Respiratory Equipment Certification Record [Grade D breathing air analysis results] for Diving Gas Mixture 35% Oxygen/ Balance Nitrogen used for atmospheric containment entry	Various
	Self-Assessments	PA7793969	Internal Radiation Exposure Control Program Review 12/2018 - 8/2020	08/31/2020
	Work Orders	59203296734	0-PT-77.4A, Laboratory Analysis - 1-HV-FL-3A- ECCS PREACS [Charcoal Radioiodine Sample]	02/10/2020
		59203296795	0-PT-95.3, Fuel Building Ventilation - Negative Pressure Test	05/05/2021
		59203316776	0-PT-77.14B, ECCS PREACS Train B Filter In-Place Test (1-HV-FL-38) [HEPA and charcoal filter test]	11/03/2021
71124.04	Corrective Action Documents		CR1159911, CR1165985, CR1179245, and CR1183875	Various
	Miscellaneous		Whole Body Counter nuclide libraries [multiple libraries for various counting geometries]	Various
		C-HP-1031.023, Attachment 1	Multibadge RCA Authorization/Worksheet(s) [three individuals working on the loop stop valve internals]	03/16/2022
		NVLAP LAB CODE: 100555-0	National Voluntary Laboratory Accreditation Program Certificate of Accreditation to ISO/IEC 17025:2005	07/01/2010 through 06/30/2021
		NVLAP LAB CODE: 100555-0	National Voluntary Laboratory Accreditation Program Certificate of Accreditation to ISO/IEC 17025:2005	07/01/2019 through 06/30/2020
		NVLAP LAB CODE: 100555-0	National Voluntary Laboratory Accreditation Program Certificate of Accreditation to ISO/IEC 17025:2005	07/01/2021 through 06/30/2022
	Radiation	0-HSP-RCAD-	Restricted and Controlled Area Dose evaluation [quarterly	Various

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Surveys	001, Attachment 1	area monitoring TLD results] - First quarter 202 through third quarter 2021	
	Self-Assessments	PA7793973	RP-AA-111-1005, Attachment 1, External Radiation Exposure Control Program Review - 9/1/2017-9/25/2020	09/25/2020
71124.05	Calibration Records		FastScan Whole Body Counter Calibration Records (2020 and 2021)	Various
		116575	Standard Reference Source Certificate of Calibration [Multi-Line gamma]	07/01/2020
		119329	Standard Reference Source Certificate of Calibration [Multi-Line gamma]	07/01/2021
	Corrective Action Documents	CRs 1182030, 1186087, 1187806, and 1189016		Various
	Corrective Action Documents Resulting from Inspection	CR1195175	Missing Whole Body Counter Calibration Source Certificate	03/20/2022
	Miscellaneous	94810A	Source 94810A (CI-36) Transfer Calibration Data	11/21/2013
	Procedures	EP-AA-303	Equipment Important to Emergency Response	Rev. 21
PI-AA-200		Corrective Action	Rev. 38	
71151	Calculations	G-20220319-533-B	Gaseous Radioactive Release Permit, U-2 RWST Gas (Vent)	03/25/2022
		G-20220319-534-B	Gaseous Radioactive Release Permit, U-2 Equipment Hatch Gas	03/25/2022
		G-2022039-535B	Gaseous Radioactive Release Permit, U-2 Reactor Containment	03/25/2022
	Corrective Action Documents		CR1167145, and CR1169039	Various
	Engineering Evaluations	ETE-NA-2015-0031	Review of Routine Surveillance Testing for Impact to MSPI Unavailability of HPSI and RHR	1
	Miscellaneous		URI and UAI MSPI Derivation Report- MSPI High Pressure Injection System for Units 1 and 2	April 1, 2021 to March 31, 2022

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			RCS Identified Leakage spreadsheet for Units 1 and 2	April 1, 2021 to March 31, 2022
			Electronic Dosimeter Dose and Dose Rate Alarm Logs - Jan 2021 through March 2022	Various
			Liquid Effluents Cumulative Dose Summary - January 2021 through January 2022	Various
			Gaseous Effluents Cumulative Dose Summary - January 2021 through January 2022	Various
			URI and UAI MSPI Derivation Report- MSPI Cooling Water System for Units 1 and 2	April 1, 2021 to March 31, 2022
		NAPS MSPI Basis Document	NRC Mitigating System Performance Index (MSPI) Basis Document - North Anna Power Station Units 1 and 2	9
71152S	Corrective Action Documents	CR1199303		
		CR1200625		
		CR1201892		
	Miscellaneous		Station Performance Improvement Report - North Anna Power Station (January 1, 2022 - April 30, 2022)	06/14/2022
		Audit Report 21-08	Audit 21-08: NAPS Fire Protection QA Program and Implementation	10/19/2021
		Audit Report 22-01	Audit 22-01: Cyber Security, Fitness for Duty, and Unescorted Access Authorization	03/22/2022