



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

February 12, 2025

Eric Carr
President - Nuclear Operations
and Chief Nuclear Officer
Dominion Energy Corporation
5000 Dominion Boulevard
Glen Allen, VA 23060

SUBJECT: NORTH ANNA POWER STATION - UNITS 1 AND 2 – INTEGRATED
INSPECTION REPORT 05000338/2024004 AND 05000339/2024004

Dear Eric Carr:

On December 31, 2024, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at North Anna Power Station - Units 1 and 2. On January 16, 2025, the NRC inspectors discussed the results of this inspection with Lisa Hilbert, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

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

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 Baptist, James
on 02/12/25

James B. Baptist, Chief
Projects Branch 4
Division of Operating Reactor Safety

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

Enclosure:
As stated

cc w/ encl: Distribution via LISTSERV

U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers: 05000338 and 05000339

License Numbers: NPF-4 and NPF-7

Report Numbers: 05000338/2024004 and 05000339/2024004

Enterprise Identifier: I-2024-004-0018

Licensee: Dominion Energy Corporation

Facility: North Anna Power Station - Units 1 and 2

Location: Mineral, VA

Inspection Dates: October 01, 2024, to December 31, 2024

Inspectors: K. Carrington, Senior Resident Inspector
D. Turpin, Resident Inspector
M. Donithan, Senior Operations Engineer

Approved By: James B. Baptist, Chief
Projects Branch 4
Division of Operating Reactor Safety

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 - Units 1 and 2, 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.

List of Findings and Violations

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

Additional Tracking Items

None.

PLANT STATUS

Unit 1 operated at or near rated thermal power for the entire inspection period.

Unit 2 operated at or near rated thermal power for the entire 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 seasonal cold temperatures for the following systems:
 - Unit 1 refueling water storage tank, and Unit 2 refueling water storage tank, on November 25, 2024.

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (1 Sample)

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

- (1) Unit 2 'H' emergency diesel generator (2H EDG) system prior to 2H EDG fast start quarterly surveillance, on December 31, 2024.

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) Fire Zone 10A, fuel oil pump house room A, on December 20, 2024
- (2) Fire Zone 10B, fuel oil pump house room B, on December 20, 2024

- (3) Fire Zone 10C, fuel oil pump house motor control center, on December 20, 2024
- (4) Fire Area, 9A-1, Unit 1 emergency diesel generator 1J room, on December 27, 2024

71111.06 - Flood Protection Measures

Flooding Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated external flooding mitigation protections in the:
 - 2MH03 manhole, on December 9, 2024

71111.11A - Licensed Operator Requalification Program and Licensed Operator Performance

Requalification Examination Results (IP Section 03.03) (1 Sample)

The licensee completed the annual requalification operating examinations required to be administered to all licensed operators in accordance with Title 10 of the *Code of Federal Regulations* 55.59(a)(2), "Requalification Requirements," of the NRC's "Operator's Licenses." The inspector performed an in-office review of the overall pass/fail results of the individual operating examinations, and the crew simulator operating examinations in accordance with Inspection Procedure (IP) 71111.11, "Licensed Operator Requalification Program and Licensed Operator Performance." These results were compared to the thresholds established in Section 3.03, "Requalification Examination Results," of IP 71111.11.

- (1) The inspectors reviewed and evaluated the licensed operator examination failure rates for the requalification annual operating exam completed on February 2, 2024.

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 1, 'B' main feedwater pump uncoupled runs, on November 6-7, 2024, and troubleshooting of Unit 1, 'A' motor generator (MG) set, on December 13, 2024.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (3 Samples)

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

- (1) the North Anna spillway emergency diesel generator system (CR1258873, CR1255172, CR1245845, CR1260353), on October 17, 2024
- (2) Unit 1 and Unit 2 shared component cooling water system, on October 22, 2024
- (3) 2-CH-MOV-2350, emergency boration valve and 2-CH-158 relief line leak (CR1264744, CA12781370), on November 29, 2024

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (3 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 and Unit 2 increased risk associated with emergency busses 2H and 2J manual transfer to alternate power supplies, 500 KV bus No. 1 planned maintenance, and Unit 2 safeguards exhaust fan emergent maintenance, on October 1, 2024
- (2) Unit 1 increased risk associated with Unit 1 'H' emergency diesel generator (EDG) emergent troubleshooting following test failure, Unit 1 'C' charging pump planned maintenance, and Unit 1 'C' main control room (MCR) chiller piping planned maintenance, the week of October 10, 2024
- (3) Unit 1 increased risk associated with emergent maintenance on the following components/systems- Unit 1 'A' MG set due to breaker tripping, Unit 1, 1-CN-PT-150B, 'B' MFW pump suction pressure transmitter following failure, and Unit 2, 2-CH-P-1B, 'B' charging pump following pump shaft contact with coupling guard during testing, the week of December 9, 2024

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (6 Samples)

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

- (1) CR1264021, During 1-PT-36.1A Relay K602 Failed to Latch when the Plunger was Depressed, on October 18, 2024
- (2) CR1272799, 1-BD-TV-100D, 'B' SG Blowdown Inside Trip Valve, Failed to Close in the Required Time Per 1-PT-213.1, on October 22, 2024
- (3) CR1252456, Improper Thread Engagement Identified on Pump Support, on November 20, 2024
- (4) CR1271640, No Remote Speed Control of 1H EDG from Control Room, on November 21, 2024
- (5) CR1278459, 2-CH-P-1B Failed 2-PT-14.2 Due to Head Curve Data Being Unsat, on December 16, 2024
- (6) CR1273480, 2-SW-MOV-223B Failed Time Stroke, on December 23, 2024

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) Design Changes, NA-19-00032 and NA-19-00033, Swing Power Supply for MCR/ESGR Chiller 1-HV-E-4C and 2-HV-E-4C, on October 18, 2024

71111.24 - Testing and Maintenance of Equipment Important to Risk

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

Post-Maintenance Testing (PMT) (IP Section 03.01) (6 Samples)

- (1) Unit 2 'A' service water pump breaker PMT following maintenance under work order (WO) 59203449273, on October 1, 2024
- (2) 1-PT-82.2A, 1H Diesel Generator Test (Simulated Loss of Off-site Power), following speed setting adjustment, on October 10, 2024
- (3) Unit 1 'C' Charging Pump PMT following maintenance under WOs 59203352115, 59102916176, 59203402483, and 59203442776, on October 12, 2024
- (4) Unit 1 'J' EDG standby lube oil pump PMT following contactor replacement under WO59203450105, on October 23, 2024
- (5) Diesel driven fire pump PMT following engine replacement under WO59203449565, on October 24, 2024
- (6) Unit 2 'B' charging pump PMT following seal replacement under WO59102803499, on December 12, 2024

Surveillance Testing (IP Section 03.01) (2 Samples)

- (1) 2-PT-74.2A, Component Cooling Pump 2-CC-P-1A Test, on October 3, 2024
- (2) 1-PT-57.1A, Emergency Core Cooling Subsystem - Low Head Safety Injection Pump (1-SI-P-1A), on November 5, 2024

Inservice Testing (IST) (IP Section 03.01) (1 Sample)

- (1) 1-PT-77.11B.1, Control Room Chiller 1-HV-E-4B IST Comprehensive Pump and Valve Test, on November 13, 2024

71114.06 - Drill Evaluation

Additional Drill and/or Training Evolution (1 Sample)

The inspectors evaluated:

- (1) Licensed operator requalification training scenario SXG-28 in the control room simulator, on December 10, and emergency preparedness drill SDEC24FS at the Dominion corporate emergency response center, on December 17, 2024.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

MS06: Emergency AC Power Systems (IP Section 02.05) (2 Samples)

- (1) Unit 1 (October 1, 2023, to September 30, 2024)
- (2) Unit 2 (October 1, 2023, to September 30, 2024)

MS09: Residual Heat Removal Systems (IP Section 02.08) (2 Samples)

- (1) Unit 1 (October 1, 2023, to September 30, 2024)
- (2) Unit 2 (October 1, 2023, to September 30, 2024)

71152A - Annual Follow-up Problem Identification and Resolution

Annual Follow-up of Selected Issues (Section 03.03) (3 Samples)

The inspectors reviewed the licensee's implementation of its corrective action program related to the following issues:

- (1) • CR1265323, I-IV Battery Charger Voltmeter Indicates Low Voltage on 'C' Phase, on October 21, 2024
- (2) • CR1269843, Potential 10 CFR Part 21 Concern for Cutler Hammer Freedom Series Contactors, on October 22, 2024
- (3) • CR1268759, Potential 10 CFR Part 21 Concern for the EDG Standby Lube Oil Pump Main Contactor, on December 26, 2024

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 to identify potential trends in containment isolation valves failing their timed stroke tests that might be indicative of a more significant safety issue.

INSPECTION RESULTS

Observation: Semi-Annual Trend Review of Containment Isolation Valve Stroke Test Failures	71152S
The inspectors performed a review of eight condition reports (CRs) written between January 2023 and December 2024 associated with containment isolation valve (CIV) stroke time test failures. The review was performed to determine 1) if a trend existed, 2) identified issues were not indicative of a more significant safety concern, and 3) issues were captured and trended by the licensee. In all cases, upon discovery of the failures, the affected CIVs were declared inoperable and their penetration flowpaths isolated within 4 hours, and verified isolated every 31 days, as required by North Anna, Units 1 and 2, Technical Specifications (TS) Limiting Condition of Operation (LCO) 3.6.3, "Containment Isolation Valves." In total, six valves were reviewed- unit 1, condenser air ejector divert (discharge) to containment inside CIV (1-SV-TV-103); unit 1, pressurizer vapor space sample outside CIV (1-SV-TV-101B); unit 1, 'B' steam generator blowdown inside CIV (1-BD-TV-100D); unit 1, 'A' containment air recirculation fan condensate return inside CIV (1-CC-TV-105A); unit 2, pressurizer relief tank gas space inside CIV (2-SS-TV-204A), and unit 2, primary drain tank transfer pump discharge outside CIV (2-DG-TV-204A). Three of which (1-SV-TV-103A, 2-SS-TV-204A, 2-DG-TV-200A), had multiple, repetitive test failures. A summary of the CRs reviewed and the inspectors' observations are below: <ul style="list-style-type: none">• CR1272799 documents a failure of 1-BD-TV-100D to stroke within its test acceptance criteria of 4.16 seconds (s) to 12.48s. In this instance, the licensee identified 1-BD-TV-	

100D and nine other valves had been previously rebaselined; however, the test acceptance criteria had not been appropriately updated. Per American Society of Mechanical Engineers (ASME) Operation (OM) and Maintenance 2012 Code Edition, reference values (acceptance criteria) may be rebaselined or revised following maintenance that changes the performance characteristics of a valve. Once this issue was identified, the licensee updated its test procedure, retested the valve satisfactorily using new acceptance criteria, and the valve was declared operable. Based on this information, the inspectors concluded no adverse trend existed.

- CR1254980 documents failure of 1-CC-TV-105A to stroke within its test acceptance criteria (8.5 seconds versus 11.99s to 19.97s). This issue was similar to the issue in CR1272799. The test acceptance criteria was ultimately rebaselined, procedure updated, and valve satisfactorily tested and declared operable. The CR also listed several other CRs that were unrelated to stroke time testing; however, the CRs were reviewed to ensure no performance issues existed. These CRs included CR1209302 (as-found Type C leakage exceeded), CR1178939 (valve operable but degraded due to exceeding weak link analysis and operating in plastic deformation region thus warranting replacement/upgrade), and CR1170124 (wear noted at valve shaft to valve lever arm). None of the CRs were indicative of an adverse trend. A fourth CR was also reviewed which discussed a post-maintenance (PMT) Type C test failure that was evaluated for rework. A vendor investigation of the failure noted a lack of sealant on the valve's pins, and pin manipulation from their original vendor-as-left state. The inspectors concluded the licensee's failure to ensure design changes, i.e. pin modification, were subject to design controls was a violation, and contrary to 10 CFR 50, Appendix B, Criterion III, "Design Control." This issue was assessed as minor since the system was not required to be operable at the time the issue was identified.
- CR1218600 documents failure of 2-SS-TV-204A to open during testing. Following the test failure, the valve's limit switch was replaced, and the valve was satisfactorily tested and restored to operable. A review of prior CRs written in the 2022 to 2023 timeframe noted two additional instances in which 2-SS-TV-204A lost indication or failed to indicate open during testing. A corrective action was created to address the limit switch issues; this included revising the preventive maintenance strategy for limit switch replacement from 48 refueling outages (72 years) to 9 refueling outages (13.5 years). Additionally, the licensee's review of past performance issues including prior limit switch replacements revealed this valve's limit switch was last replaced in 2007 due to corrosion and similar issues to those identified in the recent replacement. The inspectors concluded that the licensee's failure to promptly identify and correct a condition adverse to quality was a violation and contrary to 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions." The inspectors assessed this issue to be minor because it was similar to Examples 4.f and 4.g in Inspection Manual Chapter (IMC) 0612, Appendix E, "Examples of Minor Issues," in that the failure to identify a condition adverse to quality had no adverse impact on the valve's function. Based on their review, the inspectors determined no significant adverse trends existed.
- CR1216398 documents failure of 1-SV-TV-101B to stroke within its test acceptance criteria (5.53s versus 1.65s to 4.93s). Based on this failure, troubleshooting was conducted which determined a limit switch adjustment was needed. Following the adjustment, the valve was satisfactorily tested and restored to operable. During their adjustments, the licensee noted the limit switch was aged and starting to degrade,

warranting future replacement. The inspectors noted commonality between this CR and other CRs documenting limit switch issues and considered this a trend.

- CR1236161 documents failure of 1-SV-TV-103 to open during testing. Licensee troubleshooting determined the valve's solenoid operated valve (SOV) failed. The licensee replaced the SOV and air supply regulator, and the valve was satisfactorily tested and restored to operable. During their review of this CR, the inspectors identified a minor finding associated with the station's failure to maintain the valve's solenoid in accordance with vendor qualification report AQR-21678, when it did not ensure the solenoid was maintained in its vendor-qualified, normally energized configuration resulting in the valve's failure to open. This issue was assessed to be minor because it was similar to Example 3.a in IMC 0612, Appendix E, in that the failure of the valve to open was inconsequential since this was not a safety function of the valve and did not adversely affect the barrier integrity cornerstone objective to protect the public against radionuclide releases.
- CR1272357 documents failure of 1-SV-TV-103 to stroke open within its test acceptance criteria (51.31s versus less than or equal to 30s). Due to its long history of stroke issues, the licensee created an assignment for engineering to review valve maintenance and performance history, including previous corrective actions. Based on the pending assignment, engineering will recommend or initiate follow-on actions to improve equipment reliability. No additional trends were identified.
- CR1217915 documents test failure of 2-DG-TV-200A due to indicating mid-position. Following satisfactory limit switch adjustment and PMT, the valve was declared operable. The licensee flagged this issue for trending due to occurring four times in 3 years. Several engineering assignments were created to perform an aggregate review of limit switch issues; initiate actions to improve equipment reliability; recommend long-term corrective actions; and develop refresher training for limit switch setting and adjustments based on other CRs written. One long-term corrective action was to replace limit switches at shorter intervals due to vendor information that the switches would not last the duration of their environmentally qualified life. A review of past occurrences noted no limit switch issues until 2021; since then, four CRs were written. Similar issues were identified in 2007 when limit switches were found corroded and in need of replacement.
- CR1216955 documents 1-SV-TV-103 experiencing continued issues while stroking and a history of multiple stroke attempts using the test pushbutton. Based on this occurrence, the licensee performed a historic review of valve performance to identify any trends and noted a 2020 CR that cited a failure of 1-SV-TV-103 to stroke open. The test pushbutton was later replaced in 2021 and a corrective action was assigned to review the failure. An investigation revealed the 2020 failure was attributed to contacts failing on the pushbutton. These contacts were noted as not being part of the circuit for auto operation or isolation of the valve; thus, the failure only impacted the test function.

Based on their review, the inspectors concluded a negative trend existed that was not indicative of a more significant safety concern as there was no complete loss of safety function of any system. Additionally, the inspectors noted corrective actions were taken or

planned to address and evaluate equipment reliability and programmatic/trend concerns. While some test failures were foreseeable or preventable, none were of significant consequence.

EXIT MEETINGS AND DEBRIEFS

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

- On January 16, 2025, the inspectors presented the integrated inspection results to Lisa Hilbert, Site Vice President, and other members of the licensee staff.