



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

April 29, 2021

Mr. Daniel G. Stoddard
Senior Vice President and Chief Nuclear Officer
Dominion Energy, Inc.
Innsbrook Technical Center
5000 Dominion Blvd.
Glenn Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION, UNITS 2 AND 3 – INTEGRATED INSPECTION
REPORT 05000336/2021001 AND 05000423/2021001

Dear Mr. Stoddard:

On March 31, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Millstone Power Station, Units 2 and 3. On April 15, 2021, the NRC inspectors discussed the results of this inspection with Mr. John Daugherty, Site Vice President 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 I; the Director, Office of Enforcement; and the NRC Resident Inspector at Millstone Power Station Units 2 and 3.

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,

X /RA/

Signed by: Daniel L. Schroeder
Daniel L. Schroeder, Chief
Reactor Projects Branch 2
Division of Operating Reactor Safety

Docket Nos. 05000336 and 05000423
License Nos. DPR-65 and NPF-49

Enclosure:
As stated

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SUBJECT: MILLSTONE POWER STATION, UNITS 2 AND 3 – INTEGRATED INSPECTION REPORT 05000336/2021001 AND 05000423/2021001 DATED APRIL 29, 2021

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

Docket Numbers: 05000336 and 05000423

License Numbers: DPR-65 and NPF-49

Report Numbers: 05000336/2021001 and 05000423/2021001

Enterprise Identifier: I-2021-001-0082

Licensee: Dominion Energy Nuclear Connecticut, Inc.

Facility: Millstone Power Station, Units 2 and 3

Location: Waterford, CT 06385

Inspection Dates: January 1, 2021 to March 31, 2021

Inspectors: J. Fuller, Senior Resident Inspector
E. Allen, Resident Inspector
E. Bousquet, Resident Inspector
J. Brand, Reactor Inspector
J. Kulp, Senior Reactor Inspector
B. Pinson, Reactor Inspector
J. Schoppy, Senior Reactor Inspector
S. Wilson, Senior Health Physicist

Approved By: Daniel L. Schroeder, Chief
Reactor Projects Branch 2
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 Millstone Power Station, Units 2 and 3, 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: 71153.

List of Findings and Violations

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

Additional Tracking Items

None.

PLANT STATUS

Unit 2 operated at or near 100 percent rated thermal power (RTP) for the entire inspection period.

Unit 3 began the inspection period at 0 percent RTP due to in-progress repairs to the 5C feedwater heater. The unit was returned to 100 percent RTP on January 8, 2021.

On January 29, 2021, during maintenance on the turbine control system, a turbine transient caused reactor power to unexpectedly lower from 99 percent RTP to 90 percent RTP and then back up to 95 percent RTP without operator action. Operators evaluated plant conditions and restored power to 99 percent RTP on the same day. On February 4, 2021, while removing temporary monitoring instrumentation associated with the turbine control system, a turbine transient caused reactor power to unexpectedly lower from 99 percent RTP to 90 percent RTP and back up to 95 percent RTP without operator action. Operators evaluated plant conditions and restored power to 99 percent RTP on the same day and remained at or near RTP 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 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. Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), resident and regional inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time the resident inspectors performed periodic site visits each week, increasing the amount of time on site as local COVID-19 conditions permitted. As part of their onsite activities, resident inspectors conducted plant status activities as described in IMC 2515, Appendix D; observed risk significant activities; and completed on site portions of IPs. In addition, resident and regional baseline inspections were evaluated to determine if all or portion of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In some cases, portions of an IP were completed remotely and on site. The inspections documented below met the objectives and requirements for completion of the IP.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Impending Severe Weather Sample (IP Section 03.02) (2 Samples)

- (1) The inspectors evaluated the adequacy of the overall preparations to protect risk-significant systems from impending severe winter weather (low temperature and heavy snow) on January 31, 2021.

- (2) The inspectors evaluated the adequacy of the overall preparations to protect risk-significant systems from impending severe weather (high winds and low temperatures) on March 1, 2021.

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (5 Samples)

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

- (1) Unit 2 charging and boric acid system on January 8, 2021
- (2) Unit 2 low pressure safety injection system ('A' Train) from the refueling water storage tank to the containment wall on February 10, 2021
- (3) Unit 2 vital switchgear ventilation system on March 26, 2021
- (4) Unit 3 quench spray system ('A' Train) from the refueling water storage tank to the containment wall on January 20, 2021
- (5) Unit 3 chemical and volume control system from the volume control tank to the 'A' and 'C' charging pumps on February 22, 2021

Complete Walkdown Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated system configurations during a complete walkdown of the Unit 2 high pressure safety injection system (outside containment) on February 16, 2021.

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (8 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) Unit 2 railroad bay area on the 14'-6" elevation (fire area A-14B) on January 7, 2021
- (2) Unit 2 variable frequency drive buildings 229A and 229B (fire areas PDC1 and PDC2) on March 11, 2021
- (3) Unit 2 west and east cable vaults on the 45'-6" elevation (fire areas T-8 and T-9) on March 19, 2021
- (4) Unit 3 auxiliary building filter bank 1A on the 79'-8" elevation (fire area AB-10) on January 7, 2021
- (5) Unit 3 auxiliary building filter bank 2A on the 79'-8" elevation (fire area AB-3) on February 3, 2021
- (6) Unit 3 auxiliary building west motor control center and rod control areas on the 45'-6" elevation (fire area AB-6A) on February 22, 2021
- (7) Unit 3 auxiliary building floor area on the 43'-6" elevation (fire area AB-1E) and waste disposal building floor area on the 43'-6" elevation (fire area WDB-1A) on March 2, 2021
- (8) Unit 3 condensate polishing facility all elevations (fire areas CP-1 and CP-2) on March 22, 2021

Fire Brigade Drill Performance Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated the onsite fire brigade training and performance during an announced fire drill on January 21, 2021.

71111.06 - Flood Protection Measures

Inspection Activities - Internal Flooding (IP Section 03.01) (2 Samples)

The inspectors evaluated internal flooding mitigation protections in the:

- (1) Unit 2 turbine building general area elevation 14'-6" (flood zone T-1AB) on March 26, 2021
- (2) Unit 3 north piping area - elevation 4'-6" (flood compartment ESF-3X1) on March 19, 2021

Cable Degradation (IP Section 03.02) (1 Sample)

The inspectors evaluated cable submergence protection in:

- (1) Manhole numbers 8 and 9 on March 18, 2021

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (2 Samples)

- (1) The inspectors observed and evaluated licensed operator performance in the Unit 2 control room during turbine valve testing and associated down-power on February 19, 2021.
- (2) The inspectors observed and evaluated licensed operator performance in the Unit 3 control room during preparations for reactor startup, operation of the main steam system, and entry into annunciator response procedures on January 3, 2021.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (2 Samples)

- (1) The inspectors observed and evaluated licensed operator requalification training in the Unit 2 simulator on January 5, 2021.
- (2) The inspectors observed and evaluated licensed operator requalification training in the Unit 3 simulator on January 12, 2021.

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) Unit 2 maintenance rule functional failure evaluation associated with inverter 2 and inverter 6 being out of sync on January 5, 2021 (CR1160748 and CA8232994)

- (2) Unit 3 maintenance rule functional failure evaluation for plant level event (unplanned down-power greater than 20 percent of RTP) due to the feedwater heater 5C tube leak that occurred on December 28, 2020 (CA8323766)
- (3) Unit 3 maintenance preventable functional failure and condition monitoring failure evaluation for leakage from the 3B charging pump seal (primary coolant leakage outside of containment) greater than analyzed limit on January 22, 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 2 elevated risk due to 'A' bay outage, 'B' reactor building closed loop cooling water pump out of service, and 'B' primary make up water pumps out of service, on January 6, 2021
- (2) Unit 2 operational decision-making checklist and risk plan associated with the failure of the 'B' motor generator to maintain required voltage within the required band on January 29, 2021 (CR1164447)
- (3) Unit 3 elevated risk and high-risk plan review during turbine control system power supply voltage adjustments on January 21, 2021
- (4) Unit 3 elevated risk associated with maintenance on the 3B charging pump with primary system leakage past the pump's suction isolation valve in excess of the analyzed limit on February 19, 2021
- (5) Unit 3 increased trip risk and medium risk plan associated with the 'C' circulating water bay outage concurrent with a high wind advisory on March 1, 2021

71111.15 - Operability Determinations and Functionality Assessments

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

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

- (1) Unit 2 reactor building closed loop cooling water cross tie valve (2-RB-251A) showing dual indication while closed on January 5, 2020 (CR1163401)
- (2) Unit 2 operational decision-making checklist for leakage past 3RCS*PCV455A ('A' power operated relief valve) on February 17, 2021 (CR1165713)
- (3) Unit 3 unable to maintain low pressure safety injection accumulator nitrogen pressure at expected pressure and low pressure alarm setpoint less than technical specification (TS) limit on January 13, 2020 (CR1163734 and CR1163820)
- (4) Unit 3 'B' charging pump seal leakage greater than analyzed limit for primary system leakage on January 22, 2021 (CR1164414)
- (5) Unit 3 rod position indication non-urgent failure for control bank A rod L-11 and shutdown bank A rod H-12 on January 26, 2021 (CR1164375, CR1164639, and CR1164751)
- (6) Unit 3 use-as-is evaluation and operability assessment for cracking identified on the inside diameter of the 3A service water pump discharge elbow shaft penetration on February 9, 2021 (CR1165447)

- (7) Unit 3 'D' steam generator pressure high negative rate lead/lag card (MSS*PY-455C), which failed its TS surveillance on February 25, 2021 (CR1166514)
- (8) Unit 3 degradation of a supplemental leak collection and release system silicone foam shake space penetration seal between the auxiliary and waste disposal buildings on March 1, 2021 (CR1166720)

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (2 Samples)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Unit 3 temporary installation of blind flange in support of the 3B charging pump seal maintenance on February 19, 2021 (Design Change MP3-21-01016)
- (2) Units 2 and 3 procedurally controlled temporary modification of the domestic water system, which provides makeup water to the condensate storage tank, on January 21, 2021

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (7 Samples)

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

- (1) Unit 2 reactor building closed loop cooling system pump discharge cross connect valve (2-RB-251A) repair on January 11, 2021
- (2) Unit 2 motor driven auxiliary feed pump breaker removal and inspection (A406) on March 16, 2021
- (3) Unit 2 'B' low pressure safety injection pump motor oil change and 3-year grease inspection on March 18, 2021
- (4) Unit 3 'C' reactor plant component cooling water (RPCCW) pump (3CCP*P1C) motor replacement on January 12, 2021
- (5) Unit 3 'B' residual heat removal heat exchanger (HX) component cooling water outlet control valve (3CCP*FV66B) stroke time, calibration, inspection, and overhaul on January 21, 2021
- (6) Unit 3 'B' charging pump after seal replacement on March 6, 2021
- (7) Unit 3 'D' service water pump after motor preventive maintenance on March 26, 2021

71111.20 - Refueling and Other Outage Activities

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

- (1) The inspectors evaluated Unit 3 forced outage activities associated with the inspection and repair of the 'C' 5th point feedwater heater (3CNM-E5C) from January 1 to January 7, 2021

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (3 Samples)

- (1) Unit 2 chemical and volume control system surveillance testing on January 6, 2021
- (2) Unit 2 'A' auxiliary feedwater pump and recirculation check valve (2-FW-32A) inservice test on January 7, 2021
- (3) Unit 2 'A' low pressure safety injection pump and recirculation check valve (2-SI-448) on February 10, 2021

Inservice Testing (IP Section 03.01) (2 Samples)

- (1) Unit 2 'A' high pressure safety injection and check valve inservice testing on February 2, 2021
- (2) Unit 3 turbine driven auxiliary feedwater pump on January 11, 2021

RCS Leakage Detection Testing (IP Section 03.01) (1 Sample)

- (1) Unit 3 on February 23, 2021

71114.06 - Drill Evaluation

Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (1 Sample)

- (1) Unit 3 emergency planning drill on March 31, 2021

Drill/Training Evolution Observation (IP Section 03.02) (1 Sample)

- (1) The inspectors observed the emergency action level determination during a licensed operator requalification examination in the Unit 2 simulator on January 5, 2021

RADIATION SAFETY

71124.05 - Radiation Monitoring Instrumentation

Calibration and Testing Program (IP Section 03.02) (13 Samples)

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

- (1) Eberline AMS 4, Serial Number 785
- (2) Eberline E-140N, Serial Number 1354
- (3) Ludlum 12S, Serial Number 333223
- (4) Ludlum 177, Serial Number 208746
- (5) Ludlum L2241, Serial Number 195221
- (6) HPI REM 500, Serial Number 187
- (7) Eberline RM14, Serial Number 7387
- (8) Eberline RO20, Serial Number 0989

- (9) Eberline RO20AA, Serial Number 1474
- (10) Canberra ARGOS-4AB, Serial Number 095
- (11) Eberline AMS-4, Serial Number 0785
- (12) Unit 2 Containment High Range Monitor RIT-8240 and RIT-8241
- (13) Gamma Spectroscopy Crosscheck Program and Calibrations

71124.08 - Radioactive Solid Waste Processing & Radioactive Material Handling, Storage, & Transportation

Radioactive Material Storage (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated Dominion's performance in controlling, labeling and securing radioactive materials.

Waste Characterization and Classification (IP Section 03.03) (2 Samples)

- (1) The inspectors evaluated Dominion's characterization and classification of radioactive waste.
- (2) The inspectors reviewed Dominion's shipping documents and uniform low-level radioactive waste manifests (NRC forms 540 and 541) for shipment numbers 21-012, 21-013 and 19-073.

Shipping Records (IP Section 03.05) (3 Samples)

The inspectors evaluated the following non-excepted radioactive material shipments through a record review:

- (1) Unit 2 shipment number 21-012; UN 3321, LSA II, Class B waste.
- (2) Unit 3 shipment number 21-013, UN 3321, LSA II, Class AS waste.
- (3) Units 2 and 3 shipment number 19-073, UN 3321, LSA II, Class C waste.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

BI01: Reactor Coolant System (RCS) Specific Activity Sample (IP Section 03.10) (2 Samples)

- (1) Unit 2 (January 1, 2020 through December 31, 2020)
- (2) Unit 3 (January 1, 2020 through December 31, 2020)

BI02: RCS Leak Rate Sample (IP Section 03.11) (2 Samples)

- (1) Unit 2 (January 1, 2020 through December 31, 2020)
- (2) Unit 3 (January 1, 2020 through December 31, 2020)

71152 - Problem Identification and Resolution

Semiannual Trend Review (IP Section 02.02) (1 Sample)

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

- (1) Relief valve testing failures

Annual Follow-up of Selected Issues (IP Section 02.03) (3 Samples)

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

- (1) Unit 3 RPCCW HX 'A' outlet valve repeat failure (CR1160381 and CR1161085)
- (2) Unit 3 emergency generator load sequencer (EGLS) 'B' failure and inadvertent emergency core cooling systems (ECCS) actuation in November 2020 (CR1160321)
- (3) Unit 3 reactor trip due to turbine trip on low condenser vacuum (CR1144771)

71153 - Follow-up of Events and Notices of Enforcement Discretion

Event Report (IP Section 03.02) (2 Samples)

The inspectors evaluated the following licensee event reports (LERs):

- (1) LER 05000423/2020-005-00, Loss of Safety Function - Secondary Containment (ADAMS Accession No. ML20324A632). The inspection conclusions associated with this LER are documented in this report under Inspection Results Section.
- (2) LER 05000423/2020-003-00, Reactor Trip Due to Turbine Trip on Low Condenser Vacuum (ADAMS Accession No. ML20171A393). In reviewing the plant equipment performance and operator response to the degrading environmental conditions at the Millstone Unit 3 intake on April 13, 2020, the inspectors did not identify a performance deficiency or violation of regulatory requirements. The inspection conclusions associated with this LER are documented in this report under Inspection Results Section 71152.

Personnel Performance (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated the plant response and operator performance when a turbine control valve went closed and re-opened resulting in an RCS pressure and temperature transient at Unit 3 on January 29 and February 4, 2021

Reporting (IP Section 03.05) (1 Sample)

- (1) The inspectors reviewed the circumstances surrounding a potential report issue involving an issue with primary system leakage outside containment, through the Unit 3 'B' charging pump seal, which resulted in the plant being in an unanalyzed condition on January 22, 2021

INSPECTION RESULTS

Observation: Relief Valve Testing Failures	71152
<p>The inspectors reviewed a risk-informed sample of recent Unit 2 and Unit 3 relief valve test failures. Based on the sample reviewed, the inspectors noted that Dominion staff consistently entered the test failures into the corrective action program; expanded the sample scope as required; repaired and/or replaced the affected valves, as applicable; performed as-left testing, as applicable; and trended relief valve performance. Engineering's cause and effect evaluations for the as-found test failures were timely, sufficiently thorough, and based on the sound judgment and relevant operating experience. Engineering's associated cause and effect evaluations resulted in relief valve design changes, the installation of replacement valves, the initiation of internal inspection periodic preventive maintenance tasks, and more frequent testing. Dominion's assigned corrective actions were aligned with the engineering evaluations, adequately tracked, appropriately documented, and completed as scheduled.</p> <p>The inspectors concluded that, in general, Dominion had taken timely and appropriate actions in accordance with Dominion's corrective action program procedure PI-AA-200; relevant maintenance procedures; 10 CFR Part 50, Appendix B (Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants); 10 CFR 50.65 (Requirements for monitoring the effectiveness of maintenance at nuclear power plants); and Mandatory Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," of the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code 2012 edition, which is required by 10 CFR 50.55a(b)(3).</p> <p>However, the inspectors identified that Dominion staff did not perform ASME Code cause and effect evaluations following as-found test failures for four safety-related relief valves (2-SI-231, 2-SI-241, 2-CS-154, and 2-SI-469). Specifically, for Class 1 pressure relief valves, Mandatory Appendix I, section I-1320(c)(3) of the ASME OM code directs that the Owner shall evaluate the cause and effect of valves that fail to comply with the set pressure acceptance criteria established in subparagraph I-1320(c)(1) or the Owner-established acceptance criteria for other required tests, such as compliance with the Owner's seat tightness criteria, to determine the need for additional testing. Similarly, Section I-1350(c)(3) requires that the Owner shall evaluate the cause and effect of test failures for Class 2 and Class 3 pressure relief valves. Dominion staff initiated CR1166947 to document that these evaluations had not been performed and took prompt action to perform the required evaluations and to address performance gaps.</p> <p>Based on the samples of Unit 2 and Unit 3 relief valve test failures reviewed, the inspectors noted that these four test failures from the previous Unit 2 refueling outage in May 2020 appeared to represent an isolated break down in Dominion's process for performing these Code required cause and effect evaluations. The inspectors determined that the failure to perform the regulatory required evaluations represented a minor performance deficiency in accordance with IMC 0612, Appendix E, as it was not a programmatic issue and there was no adverse impact on the availability, reliability, and capability of the associated systems. In these four instances, Dominion staff completed actions to replace as appropriate and retest the valves to verify as-left performance was within specification.</p>	

Observation: Review of Unit 3 Emergency Generator Load Sequencer 'B' Failure and Inadvertent Emergency Core Cooling Systems Actuation	71152
<p>The inspectors reviewed Dominion’s evaluation and corrective actions associated with a failure of the Unit 3 'B' train EGLS. Specifically, in November 2020, an inadvertent ECCS actuation was determined to be caused by a failed circuit card in the Unit 3 'B' train EGLS (CR1160321). During troubleshooting and repair, Dominion staff determined that a logic chip on the XA93 circuit card prematurely failed and caused an “SIS Only” signal, which led to actuation of 'B' train ECCS components. Following identification, the failed circuit card was replaced and tested satisfactorily, and the components were returned to service. Dominion performed a Level of Effort Evaluation (LEE) in accordance with station procedures in order to evaluate the causes and any extent-of-condition related to the issue.</p> <p>Inspectors performed a review of CR1160321, the associated LEE (Corrective Action (CA)8225144), the circuit card troubleshooting and repair documentation, and relevant preventive maintenance procedures. Additionally, inspectors discussed the issues with Dominion engineering and instrumentation and controls personnel. The aging management strategy for these components was reviewed, as replacement cards and parts are no longer readily available.</p> <p>As part of the review, inspectors evaluated Dominion’s plan to replace the EGLS system. In 2019, Dominion engineering staff initiated a review to upgrade and/or replace the aging EGLS system. The option of a full system replacement was approved by the plant health steering committee in 2020 and is planned for implementation in 2025 and/or 2026. As part of a bridging strategy until system replacement, additional testing of the circuit cards during refurbishment and installation has been implemented.</p> <p>Inspectors determined that Dominion’s identification, evaluation and response to the issues was appropriate. The testing performed during the circuit card refurbishment process, as well as operational testing was determined to be in accordance with expected industry standards and guidance. The inspectors also determined that the storage and handling of the components both prior to and during installation into the system was appropriate and in accordance with Dominion’s guidance.</p>	

Observation: Unit 3 Reactor Plant Component Cooling Water Heat Exchanger 'A' Outlet Valve Repeat Failure	71152
<p>The Unit 3 reactor plant component cooling water (RPCCW) system is a closed loop cooling system that transfers heat from reactor auxiliaries to the service water system during plant operation and during normal and emergency cool downs and shutdowns. RPCCW pump 3CCP*P1C and heat exchanger (HX) are designated as the swing pump and swing HX and are normally aligned to the train 'B' flow path in a standby status. RPCCW HX outlet temperature is normally maintained between 82°F and 88°F, by automatic operation of the associated HX temperature control valve (3CCP*TV32A/B/C).</p> <p>The inspectors determined that on November 7, 2020, control room operators received a “RPCCW HX Outlet Temp Hi” alarm. Operators promptly dispatched a plant equipment operator (PEO) to the field to investigate, initiated a correct action condition report (CR1160381), and entered the Technical Specification (TS) 3.7.3 limiting conditions for operation (LCO) action statement for the 'A' train of RPCCW. The PEO reported that the 3CCP*TT32A was closed (with all flow bypassing the HX) and that the valve did not respond when placed in manual control. Approximately four minutes later, the PEO reported that the</p>	

CCP*TV32A valve was responding in manual, but that control was limited to gross adjustments. With the valve re-opened in manual, operators noted that the 'A' train RPCCW temperature lowered as expected. Dominion's short-term corrective actions included: a check of the local gauges and pressure regulator, air-operated valve (AOV) diagnostic testing (including a comprehensive flow scan), a calibration check of the associated temperature transmitter, a positioner calibration, a calibration check of the control loop, and placing the 'C' RPCCW pump and HX on the A Train of RPCCW (allowing operators to exit the TS action statement). The AOV diagnostic testing found no abnormalities in the valve operation. The positioner was in calibration. Valve traces were normal when compared to previous test traces. Several strokes of the valve could not repeat the conditions observed by operations. The calibration of the control loop found the transmitter slightly out of calibration; however, not enough to explain the as-found condition. Dominion staff could not repeat the failure or determine a definitive cause of the failure. As part of their CR1160381 corrective actions, engineering personnel initiated an assignment (CA8229471) to further evaluate the issue, determine the cause, and identify corrective actions necessary to correct the deficiency. In addition, engineering personnel initiated an assignment (CA8229496) to perform a Maintenance Rule (MR) functional failure evaluation for the condition. Following satisfactory post-maintenance and operational tests on November 10, 2020, operators placed the 'A' RPCCW pump and HX on the 'A' train of RPCCW and declared the 'A' train operable.

The inspectors determined that on November 18, 2020, control room operators received a "RPCCW HX Outlet Temp Hi" alarm. Operators dispatched a PEO to the field to investigate, initiated CR1161085, and entered the TS 3.7.3 limiting condition for operation action statement for the 'A' train of RPCCW. The PEO reported that the 3CCP*TT32A was closed (with all flow bypassing the HX) and that the valve did not respond when placed in manual control. Approximately eight minutes later, the PEO reported that the CCP*TV32A valve fully re-opened after taking the positioner to the "vent" position. With the valve re-opened, operators noted that the 'A' train RPCCW temperature lowered as expected. Dominion's short-term corrective actions included: AOV diagnostic testing (including a comprehensive flow scan), a calibration check of the associated temperature transmitter, a positioner calibration, and placing the 'C' RPCCW pump and HX on the 'A' train of RPCCW (allowing operators to exit the applicable TS action statement). The AOV diagnostic testing found no abnormalities in the valve operation. The positioner and transmitter were in calibration. Valve traces were normal when compared to previous test traces. Several strokes of the valve could not repeat the conditions observed by operations. Based on discussions with operators and a review of the control circuit, engineering personnel determined that the most probable cause of both failures was the positioner spool valve sticking in its housing, preventing the actuator air from venting when the temperature control signal required the valve to be open. Maintenance staff installed a new spool valve (WO 53203301924) on November 20, 2020. Following a satisfactory post-maintenance test, operators placed the 'A' RPCCW pump and HX on the 'A' train of RPCCW and declared the 'A' train operable. In addition, engineering personnel initiated an assignment (CA8236112) to perform a MR functional failure evaluation for the condition. Dominion staff initiated additional long-term corrective actions which included: enhancing the guidance in the 4-year overhaul preventive maintenance (PM) task, developing an 8-year PM replacement for 3CCP*TV32A/B/C valves, performing an extent-of-condition review of other AOV positioners with similar spool valves, and enhancing the RPCCW high temperature alarm response procedure to direct venting the positioner when applicable.

Based on a review of the most recent overhaul PM task for each of the RPCCW temperature control valves (3CCP*TV32A/B/C), the inspector determined that Dominion maintenance

personnel implemented the PMs at the specified frequency and that the PMs were aligned with the vendor's recommendations. The inspectors determined maintenance staff had inspected the 3CCP*TV32A positioner in October 2017 and documented no abnormal wear. Maintenance staff had inspected the 3CCP*TV32B positioner in May 2017, identified wear on some internal parts, and replaced the spool valve. Maintenance staff had inspected the 3CCP*TV32C positioner in June 2018, identified wear on some internal parts, and replaced the spool valve. Based on this review, the inspector concluded that it was not reasonable for Dominion personnel to foresee and correct the worn spool valve prior to the failure on November 7, 2020. Based on the nature of the intermittent failure and the corrective actions taken following each failure, the inspector concluded that Dominion staff had taken prompt and appropriate corrective actions, commensurate with the safety significance, in accordance with Dominion's corrective action program procedure PI-AA-200, "Corrective Action"; maintenance procedures; 10 CFR Part 50 ,Appendix B; Unit 3 TSs; and the Maintenance Rule. The inspectors further determined that Dominion's associated engineering evaluations were sufficiently thorough and based on the best available information, and relevant operating experience. The inspectors determined Dominion's assigned corrective actions were aligned with their engineering evaluations, adequately tracked, appropriately documented, and completed as scheduled. Finally, based on the documents reviewed, RPCCW system walkdowns, and discussions with engineering personnel, the inspectors concluded that Dominion personnel identified these problems and entered them into the corrective action program at an appropriately low threshold consistent with their procedures.

Observation: Unit 3 Reactor Trip due to Turbine Trip on Low Condenser Vacuum	71152
<p>The inspectors reviewed the corrective actions associated with CR1144771, which described a Unit 3 reactor scram that resulted from a loss of vacuum in the condenser. The cause of the loss of vacuum was determined to be rapidly degrading environmental conditions, specifically a large intrusion of biological debris which fouled the intake traveling screens causing two circulating water pumps trip offline, removing enough cooling water from the condenser to allow the vacuum to degrade to the turbine trip/reactor trip setpoint. The inspectors determined that the problems were self-revealing and the Dominion staff entered the issues into their corrective action program. The inspectors determined that Dominion's corrective actions included cleaning the screen wash system pump discharge strainers and the intake traveling screens, backwashing the condenser inlet heads, instituting procedural changes which provide additional guidance to operators on circulating water pump operations, and submitting a request to upgrade the Unit 3 screen wash system.</p> <p>The inspectors concluded Dominions staff's evaluation was systematic and of sufficient technical depth to identify the cause of the trip involved rapidly degrading environmental conditions and subsequent biological fouling of the intake traveling screens and associated system strainers. A contributing cause was that the biological fouling was caused by a finer seaweed than normally encountered which passed through the intake trash racks matted on the traveling screens and clogged screen wash water pump strainers.</p> <p>Additionally, the inspectors reviewed Dominion's Intake Systems Collective Significance Review (CA8099788), which evaluated the cause of four unplanned plant down powers and two events involving reactor trips of Millstone Unit 3 on April 13, 2020 and Unit 2 on August 11, 2016. These events were associated with environmental challenges to the intake involving severe weather and subsequent fouling of intake traveling screens and associated water strainers with biological material. The fouled screens lowered the ability to draw water from the ultimate heat sink and resulted in operational challenges such as a reactor trips or</p>	

down powers. Dominion's Collective Significance Review evaluated the plant events associated with the down powers and scrams and developed an integrated list of corrective actions encompassing potential modifications, benchmarking other licensees, changes to operating procedures and practices, more frequent maintenance activities as well as additional pre-storm preparations to address the biological fouling and performance of the equipment installed to remove debris from the intake. The inspectors noted corrective actions resulting from the Collective Significance Review were tracked by Dominion staff for implementation.

Licensee-Identified Non-Cited Violation	71153
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: Title 10 of the <i>Code of Federal Regulations</i> (10 CFR) Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, requires that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings.	
Millstone Power Station general operating procedure OP 3261, Response to Door Inoperability, Revision 16 requires that "site personnel are responsible for ensuring the shift manager is notified of discrepancies found on plant doors and for not blocking open or performing work on a door unless specific authorization from shift manager or unit supervisor is granted."	
Contrary to the above, from October 1, 2020 at 6:42 pm to October 2, 2020 at 9:55 am, with Millstone Power Station Unit 3 in Mode 1, door 311 was blocked open without notifying the shift manager. Door 311 was part of the secondary containment boundary and was required to be operable in Mode 1 per TS 3.6.6.2; therefore, the secondary containment was inoperable for approximately 15 hours and Dominion had not entered the appropriate TS action statement.	
Significance/Severity: Green. The inspectors determined the violation to be of very low safety significance because the finding did not: 1) affect the design or qualification of a mitigating SSC, 2) represent the loss of a system or function, 3) represent an actual loss of function of a single train for greater than its TS allowed outage time, and 4) represent an actual loss of function of one or more non-TS trains of equipment designated as high safety significant in accordance with the licensee's MR program for greater than 24 hours.	
Corrective Action References: CR1156931 and Level of Effort Evaluation CA8156935	

EXIT MEETINGS AND DEBRIEFS

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

- On January 14, 2021, the inspectors presented the RP Radiological Instrumentation Inspection Debrief inspection results to Mr. John Daugherty, Site Vice President and other members of the licensee staff.

- On March 4, 2021, the inspectors presented the Problem Identification and Resolution sample inspection results to Mr. John Stoddard, Plant Engineering Manager and other members of the licensee staff.
- On March 4, 2021, the inspectors presented the RP Inspection Rad Waste and Transportation Debrief inspection results to Mr. John Daugherty, Site Vice President and other members of the licensee staff.
- On March 11, 2021, the inspectors presented the Unit 3 Emergency Generator Load Sequencer "B" Failure and Inadvertent Emergency Core Cooling Systems Actuation inspection results to Mr. Daniel Beachy and other members of the licensee staff.
- On March 18, 2021, the inspectors presented the Problem Identification and Resolution sample inspection results inspection results to Mr. Rodger Beal, Maintenance Manager and other members of the licensee staff.
- On April 15, 2021, the inspectors presented the integrated inspection results to Mr. John Daugherty, Site Vice President and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.04	Drawings	25203-26017 Sheet 3	Piping & Instrumentation Diagram Boric Acid System	
	Procedures	OP 3309-002	Quench Spray System Train A Valve Lineup	Revision 7
		OP 3309-004	Quench Spray Electrical Lineup	Revision 5
71111.06	Calculations	12179-P(R)-1196	U-3, Evaluate the Potential for Cross Cubicle/Building Flooding via the Equipment and Floor Drainage Systems for ESF Buildings	Revision 0
		98-ENG-02411-C2	MP2 Evaluation of Flooding Outside Containment	Revision 1
	Engineering Evaluations	ETE-CPR-2017-10005	U-2, Beyond Design Basis Flooding Focused Evaluation and Integrated Assessment	Revision 0
	Work Orders	53203293264	Manhole number 8 dewatering and inspection	Revision 0
71111.11Q	Procedures	OP 3316A	Main Steam	Revision 18
		OP 3353.MB6A	Main Board 6A Annunciator Response	Revision 16
71111.12	Corrective Action Documents	8323766		
71111.13	Corrective Action Documents	1163019		
	Miscellaneous	Troubleshooting Plan for CR 1164447		Revision 0
71111.15	Engineering Evaluations	ETE-MP-2021-1019	MP3 Service Water Pump (M33SWP*P1A) Discharge Elbow Shaft Penetration	Revision 1
71152	Corrective Action Documents	1069685 1073860 1076602 1076691 1115776 1160381 1161085		
		1114317 1120712		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		1120827		
		1121378		
		1121930		
		1121996		
		1133269		
		1139915		
		1145907		
		1145967		
		1146087		
		1146610		
		1146611		
		1146616		
		1147287		
		1149116		
		1154946		
		1157586		
		1158005		
		1158019		
		1158335		
		1158005		
		1158727		
		1159827		
		1133355		
		1134811		
		1144771		
		1152862		
		1152866		
		1160321		
		1160879		
		8099788	Millstone Power Station Intake Systems Collective Significance Review	Revision 0
		LEE-CA8225144		
	Corrective Action Documents	1166939		
		1166947		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
	Resulting from Inspection	1166976			
		1166995			
			1167226		
			1167682		
			1167701		
			1167757		
			1167815		
	Engineering Evaluations			3330A-CCP-3CCP*TV32A (a)(1) Action Plan	01/11/2021
				Fisher 3710 Positioners PM Recurring Task Evaluation (RTE) Request	01/29/2021
			CA3058885	3SWP*RV132B MCC Rod Control A/C Unit "B" Relief Valve Causal Evaluation	08/10/2017
			CA7579850	M33RHS*RV37B MRule Functional Failure Evaluation	05/24/2019
			CA7602404	3RHS*RV37B Failed As-Found Testing – SP Lifted High Causal Evaluation	07/12/2019
			CA7841373	3SWP*RV132B MCC Rod Control A/C Unit "B" Relief Valve Causal Evaluation	03/04/2020
			CA7920079	2-SI-211 As-Found Setpoint Test Failure Causal Evaluation	05/24/2020
			CA8053943	2-CH-986 Regenerative Heat Exchanger Thermal Relief Valve Causal Evaluation	08/28/2020
			CA8053944	2-CH-986 Regenerative Heat Exchanger Thermal Relief Valve MRule Functional Failure Evaluation	06/23/2020
			CA8163244	3SWP*RV93A As-Found Setpoint Test Failure Causal Evaluation	11/25/2020
		CA8168448	3SWP*RV90A As-Found Setpoint Test Failure Causal Evaluation	11/30/2020	
		CA8172439	3SWP*RV96A Failed As-Found Set pressure High Causal Evaluation	12/18/2020	
		CA8172444	M33EGA*RV24A1 Failed As-Found Seat Tightness Test Causal Evaluation	12/18/2020	
		CA8173454	M33EGA*RV24A1 MRule Functional Failure Evaluation	11/11/2020	
		CA8216876	M33DGS*RV51 Failed As-Found Set Pressure Testing Causal Evaluation	12/18/2020	
	CA8229496	3CCP*TV32A Failed to control A train CCP Temperature	Revision 3		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date		
			MRule Functional Failure Evaluation			
		CA8236102	Repeat Failure of 3CCP*TV32A Level of Effort Evaluation	Revision 2		
		CA8236112	Temperature control valve for "A" Train CCP, 3CCP*TV32A Failed Closed MRule Functional Failure Evaluation	Revision 3		
		MP2-16-01085	Unit 2 ECCS Suction Header Relief Valves	Revision 6		
	Miscellaneous			Millstone Unit 3 eSOMS Station Narrative Logs	11/06/2020 – 11/19/2020	
		3DBS-NSS-007		Design Bases Summary for the Reactor Plant Component Cooling Water System	Revision 0	
		EPRI TR-105872		Safety and Relief Valve Testing and Maintenance Guide	August 2015	
		MP-VTM-000-25212-185-001		Installation, Operation and Maintenance of Control Valves and Accessories	Revision 16	
		SP 21167-001		Relief Valve Testing (IST)	05/12/2020	
		SP 31167-001		Relief Valve Testing (IST)	07/11/2019	
		SP 3630A.7		3CCP*TV32A Valve Stroke Test	11/10/2020 & 11/21/2020	
		U2-24-IST-ISTBD-INTERVAL 5		Millstone Unit 2 Inservice Testing Pump and Valve Bases Document	Revision 0	
		U3-24-IST-ISTBD-INTERVAL 4		Millstone Unit 3 Inservice Testing Pump and Valve Bases Document	Revision 1	
		AOP 3561		Loss of Reactor Plant Component Cooling Water	Revision 17	
		C MP 727A		Testing and Setting Pressure Relief Valves	Revision 7	
		CBM 114		Testing and Adjustment of Air Operated Valves Utilizing AOV Diagnostic Test Equipment	Revision 9	
		Procedures	ER-AA-ISTPRD-103		ASME IST Program - Inservice Testing of Pressure Relief Devices Implementation	Revision 1
			MA-AA-103		Conduct of Troubleshooting	Revision 16
			MP 3762BK		Bettis Model 500C and 700C Series Actuator Maintenance	Revision 7
	OP 3326			Service Water System	Revision 37	
	OP 3330A			Reactor Plant Component Cooling Water	Revision 29	
	OP 3353.MB1C			RPCCW HX Out Temp Hi/Lo	Revision 15	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
		PI-AA-200	Corrective Action	Revision 36	
		PI-AA-300	Cause Evaluation	Revision 17	
		SP 21167	Relief Valve Testing (IST)	Revision 11	
		SP 31167	Relief Valve Testing (IST)	Revision 4	
	Work Orders	53102270837 53102676830 53102716356 53203300405 53203300529 53203301924			
		53102402129 53102630451 53203163554 53203269623 53203269624			
	71153	Corrective Action Documents	1144771		
		Miscellaneous	20-170	Dominion Energy Nuclear Connecticut, Inc. Millstone Power Station Unit 3 Licensee Event Report 2020-003-00 Reactor Trip Due to Turbine Trip on Low Condenser Vacuum	06/12/2020
		Procedures	OP 3261	Response to Door Inoperability	Revision 16