



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

May 7, 2020

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 05000336/2020001 AND 05000423/2020001**

Dear Mr. Stoddard:

On March 31, 2020, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Millstone Power Station, Units 2 and 3. On April 9, 2020, the NRC inspectors discussed the results of this inspection with John Daugherty, Site Vice President and other members of your staff. The results of this inspection are documented in the enclosed report.

Two findings of very low safety significance (Green) are documented in this report. Both of these findings involved violations of NRC requirements. We are treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations or the significance or severity of the violations 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.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; 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 <https://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 Reactor Projects

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 05000336/2020001 AND 05000423/2020001 DATED MAY 7, 2020

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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: 05000336/2020001 and 05000423/2020001

Enterprise Identifier: I-2020-001-0059

Licensee: Dominion Energy Nuclear Connecticut, Inc.

Facility: Millstone Power Station, Units 2 and 3

Location: Waterford, CT 06385

Inspection Dates: January 1, 2020 to March 31, 2020

Inspectors: J. Fuller, Senior Resident Inspector
E. Allen, Resident Inspector
C. Highley, Resident Inspector
K. Mangan, Senior Reactor Inspector
S. Wilson, Senior Health Physicist

Approved By: Daniel L. Schroeder, Chief
Reactor Projects Branch 2
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 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.

List of Findings and Violations

Millstone Unit 2 'A' Emergency Diesel Generator Service Water Gasket Leak			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000336/2020001-01 Open/Closed	[H.7] - Documentation	71111.18
<p>The inspectors identified a finding of very low safety significance (Green) and an associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings because Dominion did not perform an activity affecting quality in accordance with procedures that included appropriate acceptance criteria to determine that the activity was satisfactorily completed. Specifically, Dominion installed service water bypass line inlet flange (2-SW-241) in accordance with maintenance procedure number C MP-715E1, which did not include appropriate acceptance criteria for tightening this joint. The failure to provide appropriate tightening acceptance criteria resulted in degradation of the gasket material and a service water leak and inoperability of the Unit 2 'A' emergency diesel generator (EDG) on December 1, 2019.</p>			

Unit 3 Service Water Pump Strainer Worm Gear Failure			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000423/2020001-02 Open/Closed	None (NPP)	71111.19
<p>A finding of very low safety significance (Green) and an associated non-cited violation (NCV) of Millstone Power Station Unit 3 Technical Specification 6.8.1.a, Procedures and Programs, was self-revealed on January 27, 2019, when the 'C' service water strainer motor worm gear failed, rendering the 'C' service water pump and associated service water loop inoperable. The licensee failed to establish procedures covering the activities referenced in Regulatory Guide 1.33, Revision 2, Appendix A, Section 9 for the preventive maintenance inspection of the safety-related service water strainer components that are designed to wear.</p>			

Additional Tracking Items

None.

PLANT STATUS

Unit 2 and Unit 3 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 <https://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/>. 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." From January 1 – March 19, 2020, the inspectors performed plant status activities described in IMC 2515, Appendix D, "Plant Status," and conducted routine reviews using IP 71152, "Problem Identification and Resolution." 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 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 and during that time conducted plant status activities as described in IMC 2515, Appendix D; and observed risk significant activities when warranted. 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 the cases where it was determined the objectives and requirements could not be performed remotely, management elected to postpone and reschedule the inspection to a later date.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

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

- (1) The inspectors evaluated readiness for impending adverse weather conditions for a winter storm with high winds and snow on January 17, 2020.

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 auxiliary feedwater system on January 6, 2020
- (2) Unit 2 'A' containment spray pump on February 20, 2020
- (3) Unit 3 engineered safety features building ventilation (ACUS1B) heat exchanger and fan on January 22, 2020

- (4) Unit 3 charging pump cooling system 'B' train on February 3, 2020

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (7 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 instrument and controls storage area (Fire Area T-5) on January 27, 2020
- (2) Unit 2 Ion chromatography room (Fire Area T-1G) on January 27, 2020
- (3) Unit 2 east and west DC switchgear room (Fire Areas A-20 and A-21) on February 5, 2020
- (4) Unit 3 turbine building turbine shaft area, and general support area (Fire Areas TB-2E, and TB-2F) following fire header rupture on January 5, 2019
- (5) Unit 3 west fuel oil vault (Fire Area EG-2) on January 14, 2020
- (6) Unit 3 engineered safety features building north air conditioning unit / safety injection surge tank cubicle (Fire Area ESF-10) on January 22, 2020
- (7) Unit 3 auxiliary building charging pumps and reactor building component cooling water system (Fire Area AB-1D) with focus on transient combustibles on February 25, 2020

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

- (1) The inspectors evaluated the onsite fire brigade training and performance during an unannounced fire drill at the Unit 2 'A' condensate pump motor on January 22, 2020.

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) Unit 2 flood zone A-15 ('A' EDG room, elevation 14'6")

71111.07A - Heat Sink Performance

Annual Review (IP Section 03.01) (1 Sample)

The inspectors evaluated readiness and performance of:

- (1) Unit 3 3HVQ*ACUS1B, engineered safety features building self-contained air conditioning unit heat exchanger on January 22, 2020

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 a fire panel trouble alarm, turbine driven auxiliary feedwater pump surveillance run, operator control room rounds, and dilution of the reactor coolant system on January 22, 2020.
- (2) The inspectors observed and evaluated licensed operator performance in the Unit 3 control room during a reactor power reduction and manual control of the pressurizer system for turbine control valve testing on February 7, 2020.

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

- (1) The inspectors observed and evaluated Cycle 21 examination on failure of steam generator pressure instrument, loss of a traveling screen due to high differential pressure, dropped rod, loss of an off-site power supply due to under voltage, loss of steam generator feed pump, trip of the reactor, starting the turbine driven auxiliary feed pump critical task, loss of all off-site power, and emergency classifications in the Unit 2 simulator on January 28, 2020.
- (2) The inspectors observed and evaluated licensed operator performance on service water pump failure, steam generator tube rupture, loss of off site power, manual reactor trip failure, automatic reactor trip failure, and safety injection automatic actuation failure in the Unit 3 simulator on January 14, 2020.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (2 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 3 maintenance rule functional failure evaluation of the 'A' EDG signal generator, which failed on December 12, 2019 (CR 1137571 and CA 7804990)
- (2) Unit 3 maintenance rule functional failure evaluation for containment isolation valve 3MSS*MOV17A failure to close during surveillance testing on December 27, 2019 (CR 1138564)

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 atmospheric dump valve troubleshooting on January 8, 2020

- (2) Unit 2 increased risk associated with the online control element assembly (CEA) 68 power supply replacement on line on January 15, 2020
- (3) Unit 3 increased risk and associated approval for working on valve 3SIH*MV8920 (safety injection pump minflow isolation valve), which was on the protected train on January 22, 2020
- (4) Unit 3 elevated risk during planned high risk switch-yard work, planned reserve station transformers medium risk work, planned work on the 'C' service water pump replacement, and planned work on 'B' EDG on February 18, 2020
- (5) Unit 3 increased risk associated with identification of small leak on the 'A' service water header from March 11 to March 16, 2020

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (7 Samples)

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

- (1) Unit 2 steam generator auxiliary feedwater regulating valves 2-FW-43A and 2-FW-43B on January 1, 2020 (CR 1138682)
- (2) Unit 2 control room envelope for control room air conditioning system on February 6, 2020 (CR 1140157)
- (3) Unit 2 and Unit 3 station blackout diesel generator functionality assessment and reasonable assurance of safety with one bank of starting air isolated due to air leak on March 9, 2020 (CR 1139434)
- (4) Unit 3 operability evaluation for 3MSS*MOV17A, auxiliary feedwater pump turbine steam supply non-return valve (containment isolation valve), failure to close from the control room on December 27, 2019 (CR 1138564)
- (5) Unit 3 steam generator 'B' auxiliary feedwater flow transmitter FT-51B erratic indication when auxiliary feedwater pumps are not running on January 15, 2020 (CR 1139572)
- (6) Unit 3 quench spray system 4160 kV breaker (34C6-2) returned to service with cracked striker plate weld on February 5, 2020 (CR 1140705)
- (7) Unit 3 structural integrity assessment of 'A' service water header upon identification of small through-wall leak on March 11, 2020 (CR 1142973)

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (3 Samples)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Unit 2 'A' EDG service water gasket leak and the associated design change to replace the EDG service water cooler and discharge lines with AL-6N material (MP2-14-01001) on January 13, 2020
- (2) Unit 2 moisture carryover calorimetric constant change to increase output by 20 MWth on January 31, 2020
- (3) Unit 3 temporary modification to replace service water valve-18 due to through wall leak with fabricated spool piece on January 31, 2020.

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 'A' service water pump motor re-installation of the old motor due to discovery of new motor having abnormal noise after installation during a hand rotate on January 11, 2020 (WO 53102273177)
- (2) Unit 2 'C' high pressure safety Injection pump breaker on January 14, 2020 (WO 53102663686)
- (3) Unit 2 power supply replacement for CEA 68 on January 15, 2020 (WO 53203260776)
- (4) Unit 3 3HVQ*ACUS1B, engineered safety features (self-contained air conditioning unit building ventilation for 'B' safety injection, quench spray and residual heat removal pump areas) on January 22, 2020 (WO 53203251525)
- (5) Unit 3 valve 3SIH*MV8920 (safety injection pump minflow isolation valve) after motor starter preventive maintenance on January 22, 2020 (WO 53102997654)
- (6) Unit 3 service water strainer 'C' repair entailing the replacement of the motor drive box worm gear on January 29, 2020 (WO 53203261846)
- (7) Unit 3 service water strainer 'C' following ocean debris removal on March 25, 2020 (WO 53203264909)

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (4 Samples)

- (1) Unit 2 SP 2106D for calibration of the nuclear instruments and delta temperature power to calorimetric power for the moisture carryover calorimetric constant change to increase output by 20 MWth on January 31, 2020
- (2) Unit 3 'A' EDG sequencer actuation logic test SP 3448E31 on January 7, 2020
- (3) Unit 3 'B' EDG operational test 3646A.2 on January 21, 2020
- (4) Unit 3 SP 3611A.1 reactor plant sampling SSR-CTV19D valve stroke time and remote position indication on March 24, 2020

Inservice Testing (IP Section 03.01) (2 Samples)

- (1) Unit 2 turbine driven auxiliary feed pump on January 22, 2020
- (2) Unit 2 'A' core spray pump on February 6, 2020

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

- (1) Unit 3 reactor coolant system leakage detection surveillance February 26, 2020

71114.06 - Drill Evaluation

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

- (1) The inspectors evaluated a Unit 3 earthquake and reactor cavity seal failure training drill and critique at the emergency off site facility on March 3, 2020

RADIATION SAFETY

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 2 auxiliary building and fuel storage
- (2) Unit 3 auxiliary building and fuel storage

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

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

- (1) Unit 3 reactor coolant pump seal rebuild enclosure temporary high-efficiency particulate air ventilation system
- (2) High-efficiency particulate air vacuum cleaners in storage and deployed for use in Unit 2 and Unit 3

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

- (1) The inspectors evaluated the licensee's use of respiratory protection devices. The inspectors observed the storage and issue of respiratory protection devices at the Unit 2 and Unit 3 radiologically controlled area control points.

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

- (1) Licensee's use and maintenance of self-contained breathing apparatuses.

71124.04 - Occupational Dose Assessment

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

The inspectors evaluated licensee performance as it pertains to radioactive source term characterization.

- (1) Unit 2 and Unit 3 dry active waste stream analysis and scaling factors dated November 7, 2019

External Dosimetry (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated licensee performance as it pertains to external dosimetry that was used to assign occupational dose.

Internal Dosimetry (IP Section 03.03) (1 Sample)

The inspectors evaluated the following internal dose assessments for actual internal exposures:

- (1) Evaluation completed on January 10, 2019, of internal dose calculation RP-18-22 for an individual who ingested contamination while working on Unit 2 refueling upper cavity ladder platform.
Evaluation completed on May 15, 2019, of internal dose calculation RP-19-06 in-vitro bioassay for Unit 3 spent fuel pool divers.

Special Dosimetric Situations (IP Section 03.04) (1 Sample)

The inspectors evaluated the following special dosimetric situations:

- (1) The inspectors reviewed the licensee's method of assigning dose exposure when gradients are a factor.
Dose assessment for one declared pregnant worker dated July 18, 2018.

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 02.10) (2 Samples)

- (1) Unit 2 (January 1 - December 31, 2019)
- (2) Unit 3 (January 1 - December 31, 2019)

BI02: RCS Leak Rate Sample (IP Section 02.11) (2 Samples)

- (1) Unit 2 (January 1 - December 31, 2019)
- (2) Unit 3 (January 1 - December 31, 2019)

71152 - Problem Identification and Resolution

Annual Follow-up of Selected Issues (IP Section 02.03) (2 Samples)

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

- (1) 10 CFR Part 21 Concerning Crane Chapman Valves (CR 1106628 and CR 1106948)
- (2) 10 CFR Part 21 Notice for Fisher Controls Butterfly Valve Taper Pins (CR 1129753)

INSPECTION RESULTS

Millstone Unit 2 'A' Emergency Diesel Generator Service Water Gasket Leak			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000336/2020001-01 Open/Closed	[H.7] - Documentation	71111.18
<p>The inspectors identified a finding of very low safety significance (Green) and an associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings because Dominion did not perform an activity affecting quality in accordance with procedures that included appropriate acceptance criteria to determine that the activity was satisfactorily completed. Specifically, Dominion installed service water bypass line inlet flange (2-SW-241) in accordance with maintenance procedure number C MP-715E1, which did not include appropriate acceptance criteria for tightening this joint. The failure to provide appropriate tightening acceptance criteria resulted in degradation of the gasket material and a service water leak and inoperability of the Unit 2 'A' emergency diesel generator (EDG) on December 1, 2019.</p> <p><u>Description:</u> On December 1, 2019, the safety-related service water supply to the Millstone Unit 2 'A' EDG began to leak from joint number 2-SW-241. This portion of the service water system provides cooling water to the EDG lube oil and jacket water heat exchangers.</p> <p>A security officer on rounds discovered the leak and promptly notified the control room. The fire brigade was dispatched to investigate. Upon arrival to the 2A EDG room the fire brigade members located the leak and immediately requested that control room operators secure all service water to the 2A EDG. While communicating with the control room, the water spray from the leak caused an electrical fire in an emergency lighting electrical outlet, which was immediately extinguished by the fire brigade. The isolation of service water to the 2A EDG rendered the diesel inoperable and the licensee entered the 72-hour Technical Specification 3.8.1.1 action statement.</p> <p>The inspectors reviewed the licensee's causal evaluation and questioned the licensee's assessment of the contributing cause. Based on the inspector's questions, the licensee re-performed the level of effort evaluation (causal evaluation) and determined that the maintenance procedure for work control practices for threaded fasteners (C MP-715E1) failed to provide adequate acceptance criteria for the tightening of the joint. Specifically, the licensee determined that the failure of the gasket material on the flange was attributed to uneven compression when it was installed on October 11, 2018.</p> <p>Corrective Actions: Dominion replaced the failed gasket using a procedure with appropriate acceptance criteria to ensure that the tightening was satisfactorily performed. Dominion also created corrective actions to: 1) replace the gaskets on a 12-month interval with appropriate torque values specified by engineering, 2) conduct a review to determine whether a different gasket would be more suitable for this application and, 3) performed an extent of condition investigation on the other EDGs for similar joints and systems for both Units 2 and 3 EDGs as part of the level of effort analysis.</p> <p>Corrective Action References: CR1137066 and CR1140451</p>			

Performance Assessment:

Performance Deficiency: The inspectors determined that the failure to tighten 2-SW-241 in accordance with a procedure that included appropriate acceptance criteria to determine that the activity was satisfactorily completed was contrary to 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, and was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The failure of 2-SW-241 led to a service water leak in the Unit 2 EDG room on December 1, 2019. Spray from the leak caused an electrical fire in the room and fire brigade responders immediately requested control room operators to secure the service water flow to the diesel generator rendering it inoperable.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." 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 technical specification allowed outage time, and 4) represent an actual loss of function of one or more non technical specification trains of equipment designated as high safety significant in accordance with the licensee's maintenance rule program for greater than 24 hours.

Cross-Cutting Aspect: H.7 - Documentation: The organization creates and maintains complete, accurate and up-to-date documentation. Dominion failed to ensure that the maintenance procedure (C MP-715E1) work control practices for threaded fasteners had sufficient guidance to ensure that the flanges were properly torqued for the given type of smooth flat face flanges and orifice face.

Enforcement:

Violation: 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, states 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. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Contrary to the above, from October 18, 2018 to December 1, 2019, Dominion failed to perform an activity affecting quality in accordance with a procedure that included appropriate acceptance criteria to determine that the activity was satisfactorily completed. Specifically, on October 18, 2018, Dominion installed service water bypass line inlet flange (2-SW-241) in accordance with maintenance procedure number C MP-715E1, which did not include appropriate acceptance criteria for tightening this joint. The failure to provide appropriate tightening acceptance criteria resulted in degradation of the gasket material which caused a service water leak and inoperability of the Unit 2 'A' EDG on December 1, 2019.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Unit 3 Service Water Pump Strainer Worm Gear Failure			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000423/2020001-02 Open/Closed	None (NPP)	71111.19
<p>A finding of very low safety significance (Green) and an associated non-cited violation (NCV) of Millstone Power Station Unit 3 Technical Specification 6.8.1.a, Procedures and Programs, was self-revealed on January 27, 2019, when the 'C' service water strainer motor worm gear failed, rendering the 'C' service water pump and associated service water loop inoperable. The licensee failed to establish procedures covering the activities referenced in Regulatory Guide 1.33, Revision 2, Appendix A, Section 9 for the preventive maintenance inspection of the safety-related service water strainer components that are designed to wear.</p> <p><u>Description:</u> The service water system consists of two redundant flow paths, each consisting of two service water pumps, two service water self-cleaning strainers, two booster pumps, piping, and valves. Each pump discharges through a separate self-cleaning strainer.</p> <p>Technical Specification 3.7.4 requires that at least two independent service water loops be operable in Mode 1.</p> <p>The 'A' and 'C' service water pumps supply the 'A' loop and the 'B' and 'D' pumps supply the 'B' loop. An OPERABLE service water loop requires one OPERABLE service water pump and associated strainer. Two OPERABLE service water loops, with one OPERABLE service water pump and associated strainer per loop, will provide sufficient core (and containment) decay heat removal during a design basis accident coincident with a loss of offsite power and a single failure.</p> <p>On January 27, 2020, while in Mode 1 and the 'A' service water pump out of service due to planned maintenance, Dominion discovered that the 'C' service water strainer motor was running, but the strainer shaft was not rotating, rendering the strainer and associated service water pump inoperable. With both the 'A' and 'C' service water pumps inoperable, control room operators declared the 'A' service water loop inoperable at 11:56 am and entered Technical Specification 3.7.4 (1) Loss of one train of service water. The 'A' service water pump was restored to operable status and the technical specification action statement was exited at 4:13 pm, which was within the technical specification allowed outage time.</p> <p>Dominion proceeded with repairs to the 'C' service water pump strainer motor. Upon removal of the motor drive sleeve for the 'C' service water pump strainer motor, it was discovered that the worm gear teeth had worn beyond use. The worm gear was replaced and the 'C' service water pump strainer motor was restored to operable status on January 29, 2020.</p> <p>The licensee's causal evaluation determined that a preventive maintenance check for the inspection and/or repair of the worm gear and worm, a wear component as defined by the vendor, did not exist. The inspectors noted that Vendor Tech Manual, VTM-000-25205-676-001, stated in part, "the worm gear is a wear component and will eventually wear under normal use and should therefore be planned as spares. The expected lifetime of these parts will vary for application to application."</p>			

Dominion had last replaced these components in the 'C' service water pump strainer motor during an overhaul of the strainer motor on February 2, 2004 due to excessive wear of the worm and worm gear.

Corrective Actions: Upon discovery of the failed worm gear, the licensee entered the issue into the corrective action program. The other three strainer motors and worm gears were either inspected or scheduled to be inspected as part of the extent of condition. The licensee also created a corrective action to develop a preventive maintenance schedule to inspect all wear components on the service water pump strainer motors.

Corrective Action References: CR 1140169

Performance Assessment:

Performance Deficiency: The inspectors determined that the failure to develop a preventive maintenance schedule for the 'C' service water strainer worm gear, which was specified by the vendor as a wear component that will wear under normal use, was contrary to Technical Specification 6.8.1.a and Section 9.b of Regulatory Guide 1.33, revision 2, February 1978, and a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined the performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors determined that not having a preventive maintenance schedule for the worm gear and worm adversely affected the capability and reliability of systems that respond to initiating events to prevent undesirable consequences.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined the violation to be of very low safety significance (Green) 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 technical specification allowed outage time, and 4) represent an actual loss of function of one or more non technical specification trains of equipment designated as high safety significant in accordance with the licensee's maintenance rule program for greater than 24 hours.

Cross-Cutting Aspect: Not Present Performance. No cross cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance.

Enforcement:

Violation: Millstone Unit 3 Technical Specification 6.8.1, "Procedures and Programs," states that written procedures shall be established, implemented, and maintained covering the activities referenced in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978.

Section 9.b of Regulatory Guide 1.33, Appendix A, Revision 2, February 1978, states in part that "Preventive maintenance schedules should be developed to specify lubrication

schedules, inspections of equipment, replacement of such items as filters and strainers, and inspection or replacement of parts that have a specific lifetime such as wear rings.”

Contrary to the above, until January 27, 2020, Dominion failed to establish and implement written procedures covering the preventive maintenance schedules described in Section 9.b of Regulatory Guide 1.33, Appendix A. Specifically, Dominion failed to provide a preventive maintenance schedule for the service water strainer motor worm gear and worm, wear components with a limited lifetime, which failed and led to the inoperability of one of the two safety-related service water loops.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Observation: Condition Report 1106628, Crane Nuclear 10 CFR Part 21 Concerning Crane Chapman Valves- r 2-FW-38A/B and 2-FW-42A/B	71152
<p>The inspectors reviewed the licensee’s corrective actions that were performed following the receipt of a deficiency report from the vendor (Crane Nuclear) that was reported to the NRC. The “Part 21” report identified that the seismic weak link evaluation performed for valves with Limitorque (Size 4, 4T and 5) actuators did not evaluate stress loads on bearings located in the actuator. The report noted that the bearings were in the load path between the actuator and the valve and a weak link analysis should be performed to evaluate if the actuator loading exceeded the bearing stress limits.</p> <p>Licensee staff documented the issue in CR 1106628. Dominion staff reviewed the pump and actuator as-built drawings and Weak Link Seismic Assessment calculation (94102-C-002) to determine if the information in the report affected their analysis. Licensee staff determined that the actuator bearing had not been included in the assessment for four valves (2-FW-38A/B and 2-FW-42A/B). Additionally, they determined that the design loading used in the analysis exceeded load ratings the vendor had provided for the bearings. As a result, licensee staff issued CR 1106948.</p> <p>Licensee staff worked with the vendor to evaluate the bearing capability. Licensee staff determined when the bearings were installed, what was the maximum loading, how many load cycles had occurred on the bearings, and how many future load cycles were expected. Licensee staff then revised the maximum design load assumed in the calculation and the vendor provided licensee staff with a bearing life evaluation based on this information. Licensee staff amended their calculation 94103-C-002 to incorporate the assumptions used in the bearing life evaluation and determined that the bearings would not be susceptible to low cyclic stress fatigue for the anticipated valve bearing life.</p> <p>The inspectors reviewed the assumptions in the calculations; validated the cycling assumptions and loading limits for the bearing; and determined the licensee’s approach to evaluating the deficiencies identified in the vendor report adequately addressed the deficiencies identified. The inspectors concluded the evaluation of the valve/actuator bearing life was technically supported to support valve operation.</p>	

Observation: Condition Report 1129753, 10 CFR Part 21 Notice for Fisher Controls Butterfly Valve Taper Pins	71152
<p>The inspectors reviewed the licensee’s corrective actions performed following the receipt of Fisher Controls Information Notice 2019-001 (developed, in part, to meet the reporting requirements of 10 CFR Part 21). Fisher Controls personnel identified that taper pins connecting the valve disc to the stem for certain butterfly valves manufactured by Fisher Controls may not have been installed correctly in that taper pins for some valve disc – stem assemblies had not been properly peened. The notification stated that the taper pins are required to be installed such that the pin head is below the surface of the valve disc and that the disc be peened over onto the pin in three locations. Fisher Controls staff recommended that licensee’s inspect assemblies that had not been installed, inspect installed assemblies during maintenance opportunities, and correct maintenance procedures to incorporate the guidance for peening taper pins.</p> <p>The inspectors determined licensee staff documented the issue in CR 1129753. Licensee staff quarantined Fisher Controls supplied butterfly valve assemblies that were in stock but not installed (Notification 200201193). During this process licensee staff identified one pin on a valve disc that was not properly peened and reported the discrepancy to Fisher Controls. The inspectors noted the licensee’s quarantine process required that all assemblies be inspected by engineering prior to being released for installation. The inspectors determined that licensee staff also reviewed maintenance procedures to verify the guidance in their maintenance procedures was in accordance with the guidance provided by Fisher Controls for installation and peening of the taper pins. Additionally, the inspectors noted licensee staff reviewed several completed work orders used to perform maintenance on butterfly valves and documented the inspection of new butterfly valve assemblies prior to installation. The licensee staff determined that the procedures validated valves have been properly reassembled including quality assurance hold points used to validate the pin installation and inspections of new assemblies in the past 10 years included inspection of the taper pin installation. Finally, the inspectors determined that licensee staff reviewed corrective action documents to determine if lose or missing taper pins had been previously identified and found no issues.</p> <p>The inspectors independently reviewed applicable maintenance procedures and several completed work orders and verified that the procedures in use ensured the taper pins were correctly installed. Additionally, the inspectors reviewed the licensee’s documentation intended to ensure that quarantined valve assemblies would not be installed without an acceptance inspection of the taper pin prior to issuance to maintenance personnel. The inspectors determined the licensee’s performance to evaluate and take corrective actions for the deficiencies identified in the Part 21 report were adequate to address the problem.</p>	

EXIT MEETINGS AND DEBRIEFS

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

- On April 9, 2020, the inspectors presented the integrated inspection results to John Daugherty, Site Vice President and other members of the licensee staff.
- On February 6, 2020, the inspectors presented the Radiation Protection Inspection Debrief for Inspection Procedures 71124.03 and 71124.04 inspection results to 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	Corrective Action Documents	1140812		
	Drawings	25203-26005, Sheet 3	Piping and Instrument Diagram Condensate Storage and Auxiliary Feed	Revision 60
		25203-26015, Sheet 1	Low Pressure Safety Injection System	Revision 50
71111.05	Fire Plans	MP-PROC-ENG-U2-24-FFS-BAP01-CB-Map	Map of the Fire Area T-5 I & C Storage	Revision 2
71111.06	Engineering Evaluations	NOTEBK-PRA-MPS2-IF.2	Flood Scenario Development	Revision 6
71111.12	Corrective Action Documents	7804990		
71111.13	Miscellaneous		Unit 2 Current Risk Summary Report	01/08/2020
			High Risk Plan for CEA 68 Power Supply Replacement	01/14/2020
	Procedures	WM-AA-301, Attachment 2	Risk Assessment for Low/Routine Work for the Atmospheric Dump Valve Troubleshooting	Revision 20
71111.15	Corrective Action Documents	1142973		
	Engineering Evaluations	ETE-MP-2020-1027	Structural Integrity Evaluation of Degraded Service Water Line 3-SWP-19-2-7-3, Service Water Header	Revision 0
	Miscellaneous	Millstone Unit 3 Alternative Request IR-4-03		03/14/2020
71111.18	Procedures	SPROC ENG19-2-003	Special Procedure: Implementation of New Steam Quality Values into the Millstone Unit 2 Core Calorimetric	Revision 1
71111.19	Procedures	IC 2421A	CPP Component Replacement	Revision 009
	Work Orders	53203251525		Revision 0
		53203260776		
71111.22	Procedures	SP 2601D-001	Power Range Safety Channel and Delta T Power Channel Calibration	Revision 016-01
		SP 2606A	Containment Spray Pump Operability and Inservice Testing,	Revision 017

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Facility 1	
		SP 2610BO	TDAFP Tests, Operating	Revision 007
		SP 2610BO-002	TDAFP and Recirculation Check Valve IST	Revision 003
71124.03	Calculations	RP-19-01	PM-12 Technical Analysis for Passive Monitoring at Protected Area Exit	2/13/2019
	Radiation Surveys	Independent Lab Sample Numbers L75974-2 and L82449-1	Site (2&3) DAW (2018-2019) Waste Stream Sample and Analysis	11/17/2019
71124.04	Calculations	RP-18-22	Internal Dose Calculation Worker EID 81602	11/16/2018
	Radiation Surveys	RP-19-06	Unit 3 Spent Fuel Pool Diving Tritium Analysis	5/15/2019
71151	Procedures	Unit 2 SP 2602A	Reactor Coolant Leakage	
		Unit 2 SP 2832	Reactor Coolant Analysis for Dose Equivalent Iodine	
		Unit 2 SP 2834	Reactor Coolant Analysis for Dose Equivalent Xe	
		Unit 3 SP 36801	Containment Leakage Trending	
		Unit 3 SP 3854.1	Reactor Coolant Analysis for Dose Equivalent Xe	
		Unit 3 SP 3855	Reactor Coolant Analysis for Dose Equivalent Iodine	
71152	Calculations	94102-C-002	Weak Link Seismic Assessment MOV: 2-FW-38A, 2-FW-388, 2-FW-42A, & 2-FW-428	Revision 2 Addendum 002-003
	Corrective Action Documents	1106628		
		1106948		
	Corrective Action Documents Resulting from Inspection	1143143		