



March 24, 2021

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Serial No. 21-082
NRA/SS R0
Docket No. 50-423
License No. NPF-49

DOMINION ENERGY NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
PROPOSED REQUEST FOR ALTERNATIVE FREQUENCY TO SUPPLEMENTAL
VALVE POSITION VERIFICATION TESTING REQUIREMENTS

In accordance with 10 CFR 50.55a(z)(1), Dominion Energy Nuclear Connecticut, Inc. (DENC) hereby requests Nuclear Regulatory Commission (NRC) approval of a proposed alternative for Millstone Power Station Unit 3 (MPS3). Specifically, DENC proposes an alternative to the American Society of Mechanical Engineers (ASME), Operation and Maintenance of Nuclear Power Plants Code (OM Code), ISTC-3700 frequency requirement to allow performance of supplemental valve position verification at a frequency consistent with 10 CFR 50, Appendix J Type C testing for the valves within the scope of this request.

This request, which is being submitted on the basis that the proposed alternative provides an acceptable level of quality and safety, is provided in the attachment to this letter. The duration of the proposed alternative is requested for the remainder of MPS3's fourth 10-year inservice testing interval which ends on December 1, 2028.

NRC review and approval of the proposed alternative request is requested by April 1, 2022, to support the upcoming refueling outage scheduled to occur during spring 2022.

If you have any questions or require additional information, please contact Shayan Sinha at (804) 273-4687.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark D. Sartain", followed by a horizontal line.

Mark D. Sartain
Vice President – Nuclear Engineering & Fleet Support

Attachment:

Proposed Request for Alternative Frequency to Supplemental Valve Position Verification Testing Requirements

Commitments made in this letter: None

cc:

U.S. Nuclear Regulatory Commission
Region I
2100 Renaissance Blvd, Suite 100
King of Prussia, PA 19406-2713

Mr. Richard V. Guzman
NRC Senior Project Manager - Millstone
U.S. Nuclear Regulatory Commission
One White Flint North, Mail Stop 08-C 2
11555 Rockville Pike
Rockville, MD 20852-2738

NRC Senior Resident Inspector
Millstone Power Station

ATTACHMENT

**PROPOSED REQUEST FOR ALTERNATIVE FREQUENCY TO SUPPLEMENTAL
VALVE POSITION VERIFICATION TESTING REQUIREMENTS**

**MILLSTONE POWER STATION UNIT 3
DOMINION ENERGY NUCLEAR CONNECTICUT, INC.**

Valve Alternative Request Number V-01
Millstone Power Station Unit 3

**Proposed Request for Alternative Frequency to Supplemental Valve
Position Verification Testing Requirements**

In accordance with 10 CFR 50.55a(z)(1)

Alternative Provides an Acceptable Level of Quality and Safety

Dominion Energy Nuclear Connecticut, Inc. (DENC) proposes an alternative to the requirements of American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) of Nuclear Power Plants, 2012 Edition, ISTC-3700 for Millstone Power Station Unit 3 (MPS3) valves in Table 1. Specifically, the proposed alternative would allow utilization of the containment local leakage testing (LLRT) frequency requirement, such that the scheduled LLRT will satisfy the requirements for both obturator testing and individual valve Appendix J Type C LLRT.

1) ASME Code Component(s) Affected

Table 1 – Scope of Valves			
Valve ID / Operator	Valve Description	ASME Code Class	OM Valve Category
3CMS*CTV20 Pneumatic	CTMT ATMOSPHERE MONITOR SUCTION CTMT PENETRATION (32-OUTSIDE)	2	A
3CMS*CTV21 Pneumatic	CTMT ATMOSPHERE MONITOR SUCTION CTMT PENETRATION (32-OUTSIDE)	2	A
3CMS*CTV23 Pneumatic	CTMT ATMOSPHERE MONITOR DISCHARGE CTMT PENETRATION (63-OUTSIDE)	2	A
3CVS*AOV23 Pneumatic	CTMT VACUUM EJECTOR SUCTION ISOL VLV CTMT PENETRATION (37-INSIDE)	2	A
3CVS*CTV20A Pneumatic	CTMT VACUUM PUMP SUCTION CTMT ISOLATION PENETRATION (35-OUTSIDE)	2	A
3CVS*CTV20B Pneumatic	CTMT VACUUM PUMP SUCTION CTMT ISOLATION PENETRATION (36-OUTSIDE)	2	A
3CVS*CTV21A Pneumatic	CTMT VACUUM PUMP SUCTION CTMT ISOLATION PENETRATION (35-OUTSIDE)	2	A
3CVS*CTV21B	CTMT VACUUM PUMP SUCTION	2	A

Table 1 – Scope of Valves			
Valve ID / Operator	Valve Description	ASME Code Class	OM Valve Category
Pneumatic	CTMT ISOLATION PENETRATION (36-OUTSIDE)		
3CVS*MOV25 Motor	CTMT VACUUM PUMP DISCHARGE CTMT PENETRATION (121-INSIDE)	2	A
3DAS*CTV24 Pneumatic	RX PLANT AERATED DRAINS CTMT PENETRATION (28-INSIDE)	2	A
3DAS*CTV25 Pneumatic	RX PLANT AERATED DRAINS CTMT PENETRATION (28-OUTSIDE)	2	A
3DGS*CTV24 Pneumatic	PRT & CTMT DRAINS TRANSFER PP DSCHRG CTMT PENETRATION (27-INSIDE)	2	A
3DGS*CTV25 Pneumatic	PRT & CTMT DRAINS TRNSFR PP DSCHRG CTMT PENETRATION (27-OUTSIDE)	2	A
3HCS*V002 Manual	DBA HYDROGEN RECOMBINER SUPPLY CTMT PENETRATION (111-OUTSIDE)	2	A
3HCS*V003 Manual	DBA HYDROGEN RECOMBINER SUPPLY CTMT PENETRATION (111-OUTSIDE)	2	A
3HCS*V006 Manual	DBA HYDROGEN RECOMBINER DISCHARGE CTMT PENETRATION (113-OUTSIDE)	2	A
3HCS*V009 Manual	DBA HYDROGEN RECOMBINER SUPPLY CTMT PENETRATION (112-OUTSIDE)	2	A
3HCS*V010 Manual	DBA HYDROGEN RECOMBINER SUPPLY CTMT PENETRATION (112-OUTSIDE)	2	A
3HCS*V013 Manual	DBA HYDROGEN RECOMBINER DISCHARGE CTMT PENETRATION (114-OUTSIDE)	2	A

2) Applicable Code Edition

American Society of Mechanical Engineers Operation and Maintenance of Nuclear Power Plants, 2012 Edition, No Addenda (Reference 1).

3) Applicable Code Requirement(s)

ISTC-3530, Valve Obturator Movement: The necessary valve obturator movement shall be determined by exercising the valve while observing an appropriate indicator,

such as indicating lights that signal the required changes of obturator position, or by observing other evidence, such as changes in system pressure, flow rate, level, or temperature, that reflects change of obturator position.

ISTC-3700, Position Verification Testing: Valves with remote position indicators shall be observed locally at least once every 2 years to verify that valve operation is accurately indicated. Where practicable, this local observation should be supplemented by other indications such as use of flow meters or other suitable instrumentation to verify obturator position. These observations need not be concurrent. Where local observation is not possible, other indications shall be used for verification of valve operation.

Position verification for active MOVs [motor-operated valves] shall be tested in accordance with Mandatory Appendix III of this Division.

10 CFR 50.55a(b)(3)(xi) states:

OM condition: Valve Position Indication. When implementing paragraph ISTC-3700, "Position Verification Testing," in the ASME OM Code, 2012 Edition through the latest edition and addenda of the ASME OM Code incorporated by reference in paragraph (a)(1)(iv) of this section, licensees shall verify that valve operation is accurately indicated by supplementing valve position indicating lights with other indications, such as flow meters or other suitable instrumentation to provide assurance of proper obturator position for valves with remote position indication within the scope of Subsection ISTC including its mandatory appendices and their verification methods and frequencies.

4) **Reason for Request**

Currently, DENC utilizes procedures developed for the LLRT program per 10 CFR 50, Appendix J (Reference 2) to satisfy the supplemental position verification testing of valve closure for the MPS3 valves listed in Table 1. DENC is performing these activities to meet the Subsection ISTC-3700 of ASME OM Code test frequency requirement. Subsection ISTC-3700 of the ASME OM Code requires obturator testing more frequently than the individual LLRT Type C tests required by 10 CFR 50, Appendix J. DENC proposes an alternative to the provisions of ISTC-3700 to allow utilization of the LLRT test frequency requirement, such that the scheduled LLRT will satisfy the requirements for both obturator testing and individual valve Appendix J Type C LLRT.

5) **Proposed Alternative and Basis for Use**

Proposed Alternative

Regulation 10 CFR 50.55a(b)(3)(xi) states that licensees shall verify that valve operation is accurately indicated by supplementing valve position indicating lights with other indications, such as flow meters or other suitable instrumentation, to provide assurance of proper obturator position. Subsection ISTC-3700 of ASME OM Code states that supplemental position verification shall be observed at least once every 2 years. For certain valves at MPS3, 10 CFR 50, Appendix J, Type C testing (LLRT) is credited to meet the supplemental position verification closure testing portion of the above requirement. Under License Amendment 276 (Reference 5), DENC adopted the Appendix J, Performance-Based, Option B Program consistent with NEI 94-01, Revision 3-A, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J (Reference 3)" for MPS3. This program allows LLRT intervals to be extended up to 75 months for valves with a history of satisfactory testing. DENC proposes an alternative to the ASME OM Code, ISTC-3700 requirements, to perform the valve supplemental position verification at a frequency consistent with 10 CFR 50, Appendix J, Type C testing (LLRT) for MPS3.

Basis for Use

A review of MPS3's maintenance and code-required performance history concluded that MPS3 valves listed in Table 1 have been reliable. DENC adopted ASME OM Code, 2012 Edition for MPS3 in December 2018. The Code requirements for the valves listed in Table 1 have been met, including (depending on the valve type) supplemental position verification, manual exercise testing, and stroke time testing, etc. The review of recorded performance history for the valves in Table 1, which dated back to 1985, identified no stem-to-disc separation events. This finding was also supported by a search of condition reports dating back to 2008 and by INPO Industry Reporting and Information System (IRIS) searches, which did not identify any stem-to-disc failures of MPS3 valves. Therefore, obtaining supplemental position verification at a test interval longer (less frequent) than the frequencies specified in ASME OM Code, 2012 Edition, and controlled by 10 CFR 50, Appendix J performance-based frequency requirements, provides an acceptable level of quality and safety.

10 CFR 50, Appendix J, states:

The purposes of the tests are to assure that (a) leakage through the primary reactor containment and systems and components penetrating primary containment shall not exceed allowable leakage rate values as specified in the technical specifications or associated bases; and (b) periodic surveillance of reactor containment penetrations and isolation valves is performed so that proper maintenance and repairs are made during the service life of the containment, and systems and components penetrating primary containment.

The paragraph above describes the 10 CFR 50, Appendix J, role in validating a component's ability to perform, as designed. Valves are subject to strict leakage requirements to assure performance of the overall containment structure. Valves that do not perform acceptably receive maintenance to restore performance. Performance is validated with subsequent consecutive leakage testing to provide assurance that maintenance is effective and valve performance is satisfactory. These requirements ensure licensees are effectively protecting the public health and safety by maintaining plant equipment to the specifications established by the plant's design basis and Technical Specifications (TSs). Under License Amendment 276, DENC adopted the Appendix J, Performance-Based, Option B Program consistent with NEI 94-01 Revision 3-A for MPS3. This program allows Type C LLRT intervals to be extended up to 75 months for valves. NRC has endorsed NEI 94-01 Revision 3-A as providing an acceptable level of quality and safety under Regulatory Guide 1.163, Performance-Based Containment Leak-Test Program (Reference 4).

Regulation 10 CFR 50, Appendix J, requires more rigorous acceptance criteria than ISTC-3700 and 10 CFR 50.55a(b)(3)(xi). ISTC-3700 and Regulation 10 CFR 50.55a(b)(3)(xi) requires supplemental position verification that "provide[s] assurance of proper obturator position." ISTC-3700 and 10 CFR 50.55a(b)(3)(xi) direct licensees to obtain evidence of gross flow or closure. MPS3 conforms with Option B, Performance-Based Requirements, of 10 CFR 50, Appendix J and NEI 94-01 Revision 3-A. In contrast to the ASME OM Code, Appendix J, Option B requires acceptance criteria to support the overall containment leakage requirements, which are needed to satisfy TS 3.6.1.2, "Containment Leakage," and TS 6.8.4.f, "Containment Leakage Rate Testing Program." Thus, the ISTC-3700 and 10 CFR 50.55a(b)(3)(xi) requirement to show evidence of gross flow or closure is bounded by 10 CFR 50, Appendix J, test requirements, which specifically quantify valve leakage acceptance criteria. The requirements of 10 CFR 50, Appendix J and NEI 94-01 Revision 3-A are rigorous, and therefore satisfy the closed supplemental position verification requirements from ISTC-3700 and 10 CFR 50.55a(b)(3)(xi).

Test frequencies in accordance with 10 CFR 50, Appendix J are performance-based. Valves with consistent, acceptable performance qualify for frequency extension up to 75 months. Valves must pass two successful as-found leakage tests to qualify for a 75-month test frequency. A valve demonstrates acceptable performance when it exhibits leakage below the assigned administrative limits. Valves that do not meet the performance standard are tested every refueling interval, in accordance with 10 CFR 50, Appendix J, which is more frequent than the most limiting frequency requirement for supplemental position verification of up to two years. The valves in Table 1 have met the performance standard for extension to a 75-month period, with only two exceptions (3CMS*CTV21 and 3CVS*AOV23).

In December 2018, DENC adopted the ASME OM Code, 2012 Edition requirements for the fourth MPS3 10-year IST interval. The NRC has endorsed ASME OM Code, 2012 Edition (Reference 1), as providing an acceptable level of quality and safety. Regulation 10 CFR 50.55a(a)(1)(iv), "ASME Operation and Maintenance Code,"

identifies ASME OM Code, 2012 Edition, as an acceptable test methodology, subject to conditions in 10 CFR 50.55a(b), "Use and conditions on the use of standards." ASME OM Code, 2012 Edition, paragraph ISTA-1100, Scope, states:

Section IST establishes the requirements for preservice and inservice testing and examination of certain components to assess their operational readiness in light-water reactor nuclear power plants. It identifies the components subject to test or examination, responsibilities, methods, intervals, parameters to be measured and evaluated, criteria for evaluating the results, corrective action, personnel qualification, and record keeping.

ASME OM Code, 2012 Edition, ISTA-1100, provides instructions for the assurance of operational readiness of certain components, such as valves, through periodic performance testing. Operational readiness is a component's ability to perform its function as described by plant design and TSs. ASME OM Code, 2012 Edition, also contains instructions for resolving issues identified via testing, and the corrective action provisions detail the role of analysis and maintenance in restoring components to meeting design requirements. ASME OM Code serves a similar function to 10 CFR 50, Appendix J. ASME OM Code components are assessed on a periodic basis to assure performance capability. When performance criteria are not met, analysis is performed to verify operational readiness or maintenance is performed to restore performance and verified with follow-up testing. These requirements ensure licensees are effectively protecting the public health and safety by maintaining plant equipment to the specifications established by the plant design and TSs.

The ASME OM Code, 2012 Edition allows performing supplemental position verification at frequencies longer than two years for MOVs which are subject to testing in accordance with Mandatory Appendix III. 10 CFR 50.55a(b)(3)(xi), requires supplemental position verification for MOVs at the Inservice Test (IST) frequency. In accordance with Mandatory Appendix III, the maximum test frequency shall be set such that the MOV functional margin does not decrease below the acceptance criteria and does not exceed 10 years. The ASME OM Code, Mandatory Appendix III and 10 CFR 50, Appendix J both use performance-based approaches to establish test intervals. For MPS3, 10 CFR 50, Appendix J allows a test frequency of up to 75 months or a maximum of four 18-month operating cycles.

For the valves in Table 1, performing the supplemental position verification on an interval consistent with 10 CFR 50, Appendix J aligns with the frequency of an NRC-endorsed testing program. Therefore, the past performance of MPS3 valves in Table 1, coupled with the utilization of the robust, performance-based, program requirements from 10 CFR 50, Appendix J, Option B, justify that the proposed alternative provides an acceptable level of quality and safety.

6) Duration of Proposed Alternative

This proposed alternative is requested for the remainder of the MPS3 fourth 10-year IST interval, which began on December 2, 2018 and will end on December 1, 2028.

7) Precedents

Similar requests have been approved for Fermi, Unit 2 (ADAMS Accession No. ML17354B002), Beaver Valley Power Station, Unit 2 (Request VR3, ADAMS Accession No. ML17255A526), and Palo Verde Nuclear Generating Station, Units 1, 2, and 3 (ADAMS Accession No. ML19310F679).

8) References

1. ASME OM-2012, "Operation and Maintenance of Nuclear Power Plants," April 8, 2013
2. 10 CFR 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors"
3. NEI 94-01, Revision 3A, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated July 2012
4. Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," September 1995
5. USNRC, "Millstone Power Station Unit No. 3 – Issuance of Amendment No. 276 Regarding Revision to the Integrated Leak Rate Type A and Type C Test Intervals (EPID L-2019-LLA-0165)," dated July 16, 2020 (ADAMS Accession No. ML20161A000)