UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 16, 2022

Mr. Daniel G. Stoddard
Senior Vice President and
Chief Nuclear Officer
Dominion Energy Nuclear Connecticut, Inc.
Millstone Power Station
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION, UNIT NO. 3 – ISSUANCE OF AMENDMENT NO. 282 RE: SHUTDOWN BANK TECHNICAL SPECIFICATION REQUIREMENTS AND ALTERNATE CONTROL ROD POSITION MONITORING REQUIREMENTS (EPID L-2021-LLA-0023)

Dear Mr. Stoddard:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 282 to Renewed Facility Operating License No. NPF-49 for the Millstone Power Station, Unit No. 3 (Millstone 3), in response to your application dated February 22, 2021.

The amendment revises Technical Specification (TS) 3.1.3.2 to provide an alternative monitoring option for the condition where a maximum of one digital rod position indicator per bank is inoperable. Specifically, as an alternative to determining the position of the non-indicating rod(s) indirectly by the movable incore detectors at a frequency of once per 8 hours, the change would allow rod position verification to be performed based on the occurrence of rod movement or power level change. This proposed revision is consistent with Technical Specification Task Force Traveler 547, Revision 1, and provides alternate TS Actions to allow the position of the rod to be monitored by a means other than movable incore detectors. The amendment also revises TS 3.1.3.5 to replace shutdown "rods" with shutdown "banks," and makes conforming changes to TS 3.1.3.5 Actions and Surveillance Requirements, consistent with wording in the Standard TSs for Westinghouse Plants as provided in NUREG-1431, Revision 4. Finally, the amendment includes administrative changes to revise the title of TS 3.1.3.6, to reflect that the requirements apply to control "banks," and modifies TS 6.9.1.6.a and TS 6.9.1.6.b to cite the revised titles of TS 3.1.3.5 and TS 3.1.3.6.

A copy of the related safety evaluation is also enclosed. The Commission's monthly *Federal Register* notice will include the Notice of Issuance.

Sincerely,

/RA/

Richard V. Guzman, Senior Project Manager
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-423

Enclosures:
1. Amendment No. 282 to NPF-49
2. Safety Evaluation

cc: Listserv

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

DOMINION ENERGY NUCLEAR CONNECTICUT, INC., ET AL

DOCKET NO. 50-423

MILLSTONE POWER STATION, UNIT NO. 3

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 282
Renewed License No. NPF-49

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Dominion Energy Nuclear Connecticut, Inc. (DENC, the licensee), dated February 22, 2021, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations, and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-49 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, revised through Amendment No. 282 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto are hereby incorporated into the license. DENC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of issuance and shall be implemented within 90 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

James G. Danna

Digitally signed by James G. Danna
Date: 2022.02.16 17:19:32 -05'00'

James G. Danna, Chief
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed Facility Operating License and Technical Specifications

Date of Issuance: February 16, 2022

ATTACHMENT TO LICENSE AMENDMENT NO. 282

MILLSTONE POWER STATION, UNIT NO. 3

RENEWED FACILITY OPERATING LICENSE NO. NPF-49

DOCKET NO. 50-423

Replace the following page of the Renewed Facility Operating License with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Remove	Insert
4	4

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. Each revised page is identified by amendment number and contains a marginal line indicating the area of change.

Remove	Insert
3/4 1-23	3/4 1-23
3/4 1-24	3/4 1-24
3/4 1-26	3/4 1-26
3/4 1-27	3/4 1-27
6-19a	6-19a
6-20	6-20
6-20b	6-20b

(2) Technical Specifications

The Technical Specifications contained in Appendix A, revised through Amendment No. 282 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto are hereby incorporated into the license. DENC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) DENC shall not take any action that would cause Dominion Energy, Inc. or its parent companies to void, cancel, or diminish DENC's Commitment to have sufficient funds available to fund an extended plant shutdown as represented in the application for approval of the transfer of the licenses for MPS Unit No. 3.

(4) Immediately after the transfer of interests in MPS Unit No. 3 to DNC*, the amount in the decommissioning trust fund for MPS Unit No. 3 must, with respect to the interest in MPS Unit No. 3, that DNC* would then hold, be at a level no less than the formula amount under 10 CFR 50.75.

(5) The decommissioning trust agreement for MPS Unit No. 3 at the time the transfer of the unit to DNC* is effected and thereafter is subject to the following:

(a) The decommissioning trust agreement must be in a form acceptable to the NRC.

(b) With respect to the decommissioning trust fund, investments in the securities or other obligations of Dominion Energy, Inc. or its affiliates or subsidiaries, successors, or assigns are prohibited. Except for investments tied to market indexes or other non-nuclear-sector mutual funds, investments in any entity owning one or more nuclear power plants are prohibited.

(c) The decommissioning trust agreement for MPS Unit No. 3 must provide that no disbursements or payments from the trust, other than for ordinary administrative expenses, shall be made by the trustee until the trustee has first given the Director of the Office of Nuclear Reactor Regulation 30 days prior written notice of payment. The decommissioning trust agreement shall further contain a provision that no disbursements or payments from the trust shall be made if the trustee receives prior written notice of objection from the NRC.

(d) The decommissioning trust agreement must provide that the agreement cannot be amended in any material respect without 30 days prior written notification to the Director of the Office of Nuclear Reactor Regulation.

* On May 12, 2017, the name "Dominion Nuclear Connecticut, Inc." changed to "Dominion Energy Nuclear Connecticut, Inc."

LIMITING CONDITION FOR OPERATION

3.1.3.2 The Digital Rod Position Indication System and the Demand Position Indication System shall be OPERABLE and capable of determining the control rod positions within ±12 steps.

APPLICABILITY: MODES 1 and 2.

ACTION:

a. With a maximum of one digital rod position indicator per bank inoperable:

   1. Determine the position of the nonindicating rod(s) indirectly by the movable incore detectors at least once per 8 hours and immediately after any motion of the nonindicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, or

   2. Verify the position of the nonindicating rod(s) indirectly using the movable incore detectors within 8 hours and once per 31 days thereafter, and within 8 hours after discovery of each unintended rod movement, and within 8 hours after each movement of the nonindicating rod(s) greater than 12 steps, and prior to THERMAL POWER exceeding 50% RATED THERMAL POWER, and within 8 hours after reaching RATED THERMAL POWER or

   3. Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 8 hours.

b. With a maximum of one demand position indicator per bank inoperable:

   1. Verify that all digital rod position indicators for the affected bank are OPERABLE and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other at least once per 8 hours, or

   2. Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 8 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.2.1 Each digital rod position indicator shall be determined to be OPERABLE by verifying that the Demand Position Indication System and the Digital Rod Position Indication System agree within 12 steps at the frequency specified in the Surveillance Frequency Control Program except during time intervals when the rod position deviation monitor is inoperable, then compare the Demand Position Indication System and the Digital Rod Position Indication System at least once per 4 hours.

4.1.3.2.2 Each of the above required digital rod position indicator(s) shall be determined to be OPERABLE by verifying that the digital rod position indicators agree with the demand position indicators within 12 steps when exercised over the full-range of rod travel at the frequency specified in the Surveillance Frequency Control Program.

SHUTDOWN BANK INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.5 Each shutdown bank shall be limited in physical insertion as specified in the CORE OPERATING LIMITS REPORT (COLR).

APPLICABILITY: MODES 1* and 2* **.

ACTION:

With a maximum of one shutdown bank inserted beyond the insertion limits specified in the COLR except for surveillance testing pursuant to Specification 4.1.3.1.2, either:

a. Restore the bank to within the limit specified in the COLR within 1 hour, or

b. Be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.5 Each shutdown bank shall be determined to be within the insertion limits specified in the COLR:

a. Within 15 minutes prior to withdrawal of any rods in Control Bank A, B, C, or D during an approach to reactor criticality, and

b. At the frequency specified in the Surveillance Frequency Control Program.

* See Special Test Exceptions Specifications 3.10.2 and 3.10.3.

** With K_{eff} greater than or equal to 1.

CONTROL BANK INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.6 The control banks shall be limited in physical insertion as specified in the CORE OPERATING LIMITS REPORT (COLR).

APPLICABILITY: MODES 1* and 2* **.

ACTION:

With the control banks inserted beyond the insertion limits specified in the COLR, except for surveillance testing pursuant to Specification 4.1.3.1.2:

a. Restore the control banks to within the limits within 2 hours, or

b. Reduce THERMAL POWER within 2 hours to less than or equal to that fraction of RATED THERMAL POWER which is allowed by the bank position using the insertion limits specified in the COLR, or

c. Be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.6 The position of each control bank shall be determined to be within the insertion limits at the frequency specified in the Surveillance Frequency Control Program except during time intervals when the rod insertion limit monitor is inoperable, then verify the individual rod positions at least once per 4 hours.

* See Special Test Exceptions Specifications 3.10.2 and 3.10.3.

** With K_{eff} greater than or equal to 1.

MONTHLY OPERATING REPORTS

6.9.1.5 Deleted

CORE OPERATING LIMITS REPORT

6.9.1.6.a Core operating limits shall be established and documented in the CORE OPERATING LIMITS REPORT before each reload cycle or any remaining part of a reload cycle for the following:

1. Reactor Core Safety Limit for Specification 2.1.1.
2. Overtemperature ΔT and Overpower ΔT setpoint parameters for Specification 2.2.1.
3. SHUTDOWN MARGIN for Specifications 3/4.1.1.1.1, 3/4.1.1.1.2, and 3/4.1.1.2.
4. Moderator Temperature Coefficient BOL and EOL limits and 300 ppm surveillance limit for Specification 3/4.1.1.3.
5. Shutdown Bank Insertion Limits for Specification 3/4.1.3.5.
6. Control Bank Insertion Limits for Specification 3/4.1.3.6.
7. AXIAL FLUX DIFFERENCE Limits for Specification 3/4.2.1.1.
8. Heat Flux Hot Channel Factor Limits for Specification 3/4.2.2.1.
9. RCS Total Flow Rate, Nuclear Enthalpy Rise Hot Channel Factor, and Power Factor Multiplier for Specification 3/4.2.3.1.
10. DNB Parameters for Specification 3/4.2.5.
11. Shutdown Margin Monitor minimum count rate for Specification 3/4.3.5.
12. Boron Concentration for Specification 3/4.9.1.1.

CORE OPERATING LIMITS REPORT (Cont.)

6.9.1.6.b The analytical methods used to determine the core operating limits in Specification 6.9.1.6.a shall be those previously reviewed and approved by the NRC and identified below. The CORE OPERATING LIMITS REPORT will contain the complete identification for each of the TS referenced topical reports used to prepare the CORE OPERATING LIMITS REPORT (i.e., report number, title, revision, date, and any supplements).

1. WCAP-9272-P-A, "WESTINGHOUSE RELOAD SAFETY EVALUATION METHODOLOGY," (W Proprietary). Methodology for Specifications:

    - 2.1.1 Reactor Core Safety Limits
    - 3.1.1.1.1 SHUTDOWN MARGIN – MODE 1 and 2
    - 3.1.1.1.2 SHUTDOWN MARGIN – MODES 3, 4 and 5 Loops Filled
    - 3.1.1.2 SHUTDOWN MARGIN – Cold Shutdown – Loops Not Filled
    - 3.1.1.3 Moderator Temperature Coefficient
    - 3.1.3.5 Shutdown Bank Insertion Limits
    - 3.1.3.6 Control Bank Insertion Limits
    - 3.2.1.1 AXIAL FLUX DIFFERENCE
    - 3.2.2.1 Heat Flux Hot Channel Factor
    - 3.2.3.1 RCS Total Flow Rate, Nuclear Enthalpy Rise Hot Channel Factor
    - 3.9.1.1 REFUELING Boron Concentration
    - 3.2.5 DNB Parameters
    - 3.3.5 Shutdown Margin Monitor

2. Deleted

3. Deleted

4. WCAP-10216-P-A-R1A, "RELAXATION OF CONSTANT AXIAL OFFSET CONTROL FQ SURVEILLANCE TECHNICAL SPECIFICATION," (W Proprietary). (Methodology for Specifications 3.2.1.1--AXIAL FLUX DIFFERENCE and 3.2.2.1--Heat Flux Hot Channel Factor)

5. WCAP-16996-P-A, "REALISTIC LOCA EVALUATION METHODOLOGY APPLIED TO THE FULL SPECTRUM OF BREAK SIZES (FULL SPECTRUM LOCA METHODOLOGY)," (W Proprietary) (Methodology for Specification 3.2.2.1--Heat Flux Hot Channel Factor.)

CORE OPERATING LIMITS REPORT (Cont.)

18. WCAP-8745-P-A, "Design Bases for the Thermal Overpower ΔT and Thermal Overtemperature DT Trip Functions," (Westinghouse Proprietary Class 2). (Methodology for Specifications 2.2.1 -- Overtemperature ΔT and Overpower ΔT Setpoints.)

19. WCAP-12610-P-A & CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO™," (W Proprietary). (Methodology for Specification 3.2.2.1 - Heat Flux Hot Channel Factor.)

20. VEP-FRD-42-A, "Reload Nuclear Design Methodology." Methodology for Specifications:

- 2.1.1 Reactor Core Safety Limits
- 3.1.1.1.1 SHUTDOWN MARGIN – MODE 1 and 2
- 3.1.1.1.2 SHUTDOWN MARGIN – MODES 3, 4 and 5 Loops Filled
- 3.1.1.2 SHUTDOWN MARGIN – Cold Shutdown – Loops Not Filled
- 3.1.1.3 Moderator Temperature Coefficient
- 3.1.3.5 Shutdown Bank Insertion Limits
- 3.1.3.6 Control Bank Insertion Limits
- 3.2.2.1 Heat Flux Hot Channel Factor
- 3.2.3.1 Nuclear Enthalpy Rise Hot Channel Factor
- 3.3.5 Shutdown Margin Monitor
- 3.9.1.1 REFUELING Boron Concentration

21. VEP-NE-1-A, "Relaxed Power Distribution Control Methodology and Associated FQ Surveillance Technical Specifications." Methodology for Specifications:

- 3.2.1.1 AXIAL FLUX DIFFERENCE
- 3.2.2.1 Heat Flux Hot Channel Factor

22. VEP-NE-2-A, "Statistical DNBR Evaluation Methodology." Methodology for Specifications:

- 3.2.3.1 RCS Flow Rate, Nuclear Enthalpy Rise Hot Channel Factor
- 3.2.5 DNB Parameters

UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION#

RELATED TO AMENDMENT NO. 282

TO RENEWED FACILITY OPERATING LICENSE NO. NPF-49

DOMINION ENERGY NUCLEAR CONNECTICUT, INC., ET AL

MILLSTONE POWER STATION, UNIT NO. 3

DOCKET NO. 50-423

1.0 INTRODUCTION

By application dated February 22, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21053A342), Dominion Energy Nuclear Connecticut, Inc. (DENC or the licensee) submitted a license amendment request (LAR) for Millstone Power Station Unit No. 3 (Millstone 3). The proposed amendment would revise the Millstone 3 Technical Specification (TS) 3.1.3.2, “Reactivity Control, Systems, Position Indication Systems – Operating,” to provide alternative Actions while in the condition where a maximum of one digital rod position indicator per bank is inoperable. The proposed change would allow rod position verification to be performed based on the occurrence of rod movement or power level change, consistent with Technical Specification Task Force Traveler (TSTF) 547, Revision 1 (ADAMS Accession No. ML15365A610). The licensee also proposed revisions to TS 3.1.3.5, “Reactivity Control Systems, Shutdown Rod Insertion Limits,” to replace the term "rods" with "banks," and makes conforming changes to TS 3.1.3.5 Actions and Surveillance Requirements (SRs), consistent with wording in the NUREG-1431, Revision 4, “Standard Technical Specifications (STS) for Westinghouse Plants”. The licensee also proposed changes to replace “rods” with “banks” in the title of TS 3.1.3.6, “Reactivity Control Systems, Control Rod Insertion Limits,” and in the citations of TS 3.1.3.5 and TS 3.1.3.6 in TS 6.9.1.6, “Core Operating Limits Report.”

2.0 REGULATORY EVALUATION

2.1 Description of Rod Cluster Control Assemblies

As stated by the licensee:

> The rod cluster control assemblies (RCCA), or rods, are moved by their control rod drive mechanisms (CRDMs). Each CRDM moves its RCCA one step (approximately 5/8 inch) at a time, but at varying rates depending on the signal output from the rod control system. The RCCAs are divided among control banks and shutdown banks. Each bank may be further subdivided into two groups to provide for precise reactivity control. If a bank of RCCAs consists of

two groups, the groups are moved in a staggered fashion but always within one step of each other. Millstone 3 has four control banks and five shutdown banks.

The shutdown banks are maintained either in the fully inserted or fully withdrawn position. The control banks are moved in an overlap pattern, using the following withdrawal sequence: when control bank A reaches a predetermined height in the core, control bank B begins to move out with control bank A. Control bank A stops at the position of maximum withdrawal, and control bank B continues to move out. When control bank B reaches a predetermined height, control bank C begins to move out with control bank B. This sequence continues until control banks A, B, and C are at the fully withdrawn position, and control bank D is approximately halfway withdrawn. The insertion sequence is the opposite of the withdrawal sequence.

The control banks are used for precise reactivity control of the reactor. The positions of the control banks are normally automatically controlled (only in the insertion direction) by the rod control system but can also be manually controlled. The control banks must be maintained above insertion limits and are typically near the fully withdrawn position during normal full power operations.

The rod insertion limits of the shutdown and control rods are initial assumptions in all safety analyses that assume rod insertion upon reactor trip. The insertion limits ensure sufficient shutdown margin (SDM) is available when required for a reactor shutdown. The sequence and overlap limits on the control rods govern the withdrawal sequence and overlap of the control rod banks to ensure consistent reactivity changes due to rod movement. The alignment limits govern the position of individual rods with respect to each other to maintain a consistent power distribution across the reactor core. The shutdown and control bank insertion and alignment limits, axial flux difference (AFD), and quadrant power tilt ratio (QPTR) are process variables that are used to monitor and control the three-dimensional power distribution of the reactor core. Additionally, the control bank insertion limits control the reactivity that could be added in the event of a rod ejection accident. The TS requirements on rod alignment ensure that the assumptions in the safety analyses will remain valid. Mechanical or electrical failures may cause a rod to become inoperable (i.e., not trippable), unable to be moved, or to become misaligned from its group. The requirements on rod operability ensure that on a reactor trip, the assumed reactivity will be inserted. Rod operability requirements (i.e., trippability) are not dependent upon the alignment requirements, which ensure that the rods and banks maintain the correct power distribution and rod alignment. The rod operability requirement is satisfied if the rod will fully insert in the required rod drop time assumed in the safety analyses. Rod control malfunctions that result in the inability to move a rod (e.g., rod lift coil failures), but that do not impact trippability, do not result in rod inoperability. The associated Limiting Condition for Operation (LCO) require both rod operability (i.e., trippability) and rod alignment. The TS ACTIONS provide appropriate remedial measures to take when the LCO is not met.

The axial position of shutdown rods and control rods is indicated by two separate and independent systems, which are the bank demand position indication system (commonly called group step counters) and the DRPI [digital rod position indication] system. The bank demand position indication system counts the

pulses from the rod control system that moves the respective group of rods. There is one step counter for each group of rods. Individual rods in a group all receive the same signal to move, and therefore should all be at the same position indicated by the group step counter for that group. The bank demand position indication system is considered relatively precise (± 1 step or ± 5/8 inch). If a rod does not move one step for each demand pulse, the step counter will still count the pulse but incorrectly reflect the position of the rod.

The DRPI system provides a more accurate indication of actual rod position, but at a lower precision than the step counters. DRPI measures the actual position of each full-length rod using a detector that consists of discrete coils mounted concentrically with the rod drive pressure housing. The coils are located axially along the pressure housing and magnetically sense the entry and presence of the rod drive shaft through its centerline. For each detector, the coils are interlaced into two data channels, and are connected to the containment electronics (Data A and B) by separate multi-conductor cables. By employing two separate channels of information, the DRPI system can continue to function (at reduced accuracy) if one channel fails.

2.2 Description of Changes

2.2.1 Changes to TS 3.1.3.2 ACTIONS

Millstone 3 TS LCO 3.1.3.2 requires the DRPI system and the demand position indication system to be OPERABLE and capable of determining the control rod positions within 12 steps when the reactor is in MODES 1 and 2. When a maximum of one DRPI per bank is inoperable, ACTION a.1 requires verification of the position of the associated rods using the movable incore detector system once per 8 hours. The proposed change revises TS 3.1.3.2 by adding a new ACTION a.2 to provide an alternative to using the moveable incore detectors every 8 hours by utilizing a different monitoring method based on occurrence of rod movement or power level change. Existing ACTION a.2 would be renumbered to a.3. Proposed changes to the TS 3.1.3.2 ACTIONS are illustrated below with proposed new text in **bold** and proposed deleted text in **~~bold strikeout~~**.

ACTION:

a. With a maximum of one digital rod position indicator per bank inoperable:

   1. Determine the position of the nonindicating rod(s) indirectly by the movable incore detectors at least once per 8 hours and immediately after any motion of the nonindicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, or

   2. Verify the position of the nonindicating rod(s) indirectly using the movable incore detectors within 8 hours and once per 31 days thereafter, and within 8 hours after discovery of each unintended rod movement, and within 8 hours after each movement of the nonindicating rod(s) greater than 12 steps, and prior to THERMAL

POWER exceeding 50% RATED THERMAL POWER, and within 8 hours after reaching RATED THERMAL POWER, or

~~2~~3. Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 8 hours.

b. With a maximum of one demand position indicator per bank inoperable:

1. Verify that all digital rod position indicators for the affected bank are OPERABLE and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 12 steps of each other at least once per 8 hours, or

2. Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 8 hours.

2.2.2 Changes to TS 3.1.3.5

The licensee proposed replacing the term “rod” with the term “bank” in several locations in TS 3.1.3.5. The licensee also proposed associated changes to the ACTION portion of TS 3.1.3.5.

The licensee proposed revising the current title of TS 3.1.3.5 from “Reactivity Control Systems Shutdown Rod Insertion Limits” to “Reactivity Control Systems Shutdown Bank Insertion Limits”. The licensee proposed revising the LCO statement from "All shutdown rods shall be limited in physical insertion as specified in the CORE OPERATING LIMITS REPORT (COLR)." to “Each shutdown bank shall be limited in physical insertion as specified in the CORE OPERATING LIMITS REPORT (COLR).” The licensee proposed revising SR 4.1.3.5 from “Each shutdown rod shall be determined to be within the insertion limits specified in the COLR:” to “Each shutdown bank shall be determined to be within the insertion limits specified in the COLR:”.

Proposed changes to the TS 3.1.3.5 ACTION are illustrated below with proposed new text in **bold** and proposed deleted text in **~~bold strikeout~~**.

ACTION:

With a maximum of one shutdown **~~rod~~ bank** inserted beyond the insertion limits specified in the COLR except for surveillance testing pursuant to Specification 4.1.3.1.2, **~~within 1 hour~~** either:

a. Restore the **~~rod~~ bank** to within the limit specified in the COLR **within 1 hour**, or

b. **Be in at least HOT STANDBY within 6 hours ~~Declare the rod to be inoperable and apply Specification 3.1.3.1~~**.

2.2.3 Changes to TS 3.1.3.6 and TS 6.9.1.6

The licensee proposed changing the title of TS 3.1.3.6 from “Reactivity Control Systems Control Rod Insertion Limits” to “Reactivity Control Systems Control Bank Insertion Limits”. The licensee also proposed changes to references in TS 6.9.1.6 associated with the previously described proposed changes to replace the term “rod” with “bank” in TS 3.1.3.5 and TS 3.1.3.6. TS 6.9.1.6.a.5 would be revised from “Shutdown Rod Insertion Limit for Specification 3/4.1.3.5.” to “Shutdown Bank Insertion Limits for Specification 3/4.1.3.5.” TS 6.9.1.6.a.6 would be revised

from “Control Rod Insertion Limits for Specification 3/4.1.3.6.” to “Control Bank Insertion Limits for Specification 3/4.1.3.6.” The reference to TS 3.1.3.5 and TS 3.1.3.6 in TS 6.9.1.6.b.1 and 6.9.1.6.b.20 would be changed from “Shutdown Rod Insertion Limit” and “Control Rod Insertion Limits” to “Shutdown Bank Insertion Limits” and “Control Bank Insertion Limits,” respectively.

2.3 Applicable Regulatory Requirements and Guidance

The NRC staff considered the following regulations during its review of the proposed changes:

The categories of items required to be in the TSs are provided in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36(c). As required by 10 CFR 50.36(c)(2)(i), the TSs will include LCOs, which are the lowest functional capability or performance levels of equipment required for safe operation of the facility. Per 10 CFR 50.36(c)(2)(i), when an LCO of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TSs until the condition can be met.

The regulation at 10 CFR 50.36(c)(3) requires TSs to include items in the category of SRs, which are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met.

The NRC staff’s guidance for review of TSs is in Chapter 16, “Technical Specifications,” of NUREG-0800, Revision 3, Standard Review Plan (March 2010) (ADAMS Accession No. ML100351425). As described therein, as part of the regulatory standardization effort, the NRC staff has prepared STS for each of the light–water reactor nuclear designs. NUREG-1431 contains the STS for Westinghouse-designed plants. The Millstone 3 TS format is based on a previous STS version for Westinghouse plants, NUREG-0452. After the operating license for Millstone 3 was granted, the staff’s guidance for STS for Westinghouse plants evolved into NUREG-1431. While there are formatting differences between the two documents, they are consistent with respect to how plant operations are limited (i.e. when the LCO isn’t met, certain remedial actions may be permitted; otherwise, operation must be restricted or ceased). Licensees are permitted to request TS changes to align with the intent of the most current version of an STS, even when the plant-specific TS are not identically formatted.

3.0 TECHNICAL EVALUATION

3.1 Changes to TS 3.1.3.2 ACTIONS

When one DRPI per bank is inoperable, current TS 3.1.3.2 ACTION a. requires verification of rod position once per 8 hours using the movable incore detector system and immediately after any motion of the nonindicating rod which exceeds 24 steps in one direction since the last determination of the rod's position or the licensee must reduce thermal power to less than or equal to 50 percent rated thermal power (RTP) within 8 hours. The proposed change provides an alternative set of required actions.

New ACTION a.2 requires use of the movable detector system to monitor the position of the nonindicating rod(s):

- within 8 hours of the inoperability of DRPI and once per 31 days thereafter,
- within 8 hours after discovery of each unintended rod movement,
- within 8 hours after each movement of the nonidicating rod(s) greater than12-steps,
- prior to exceeding 50 percent RTP, and
- within 8 hours after reaching RTP.

The NRC staff determined the implementation of new ACTION a.2 would allow use of an alternative monitoring scheme. The NRC staff found that the remedial measures in new ACTION a.2 are acceptable because they require verification of rod position following significant changes in power level or substantial rod motion. This is more appropriate than the current requirement, which requires verification of rod position using the moveable incore detection system once per 8 hours, regardless of whether the rods have moved or not.

If the rod position indication is failed for an individual rod, its position is determined indirectly by use of the moveable incore detectors. The NRC staff determined that this change, which verifies rod position using the movable incore detectors based on the occurrence of events requiring rod motion, rather than determining position on a specified 8-hour frequency, is acceptable because events requiring rod motion of the shutdown banks and control banks A, B, and C are relatively infrequent during steady state operation. Events involving significant movement of rods in control bank D are also relatively infrequent. The indirect determination of rod position is required after significant changes in power level or following substantial rod motion.

Therefore, the NRC staff concludes that the addition of an alternative monitoring scheme to indirectly determine the position of rods associated with an inoperable DRPI is acceptable and satisfies 10 CFR 50.36(c)(2) because TS 3.1.3.2, as modified, specifies appropriate remedial measures if the LCO is not met.

The NRC staff's review included an evaluation of the differences in format and content between NUREG-1431 and Millstone 3 TSs. The NRC staff reviewed and approved a similar change to the STS in its Final Safety Evaluation (SE) of TSTF-547, Rev. 1, "Clarification of Rod Position Requirements," March 4, 2016 (ADAMS Accession No. ML15328A350). TSTF-547 was based on NUREG-1431 format and content. On pages 8 and 9 of Attachment 1 of the LAR, the licensee stated it would not be adopting one change approved in TSTF-547. The change in question has since been removed from the most recent version of NUREG-1431, which was published in September 2021. The staff determined the licensee's request to not adopt a portion of TSTF-547, which was later removed from NUREG-1431 is appropriate. The NRC staff determined that the licensee's proposed format of the new ACTION a.2 appropriately captures the intent of the changes to the STS in the approval of TSTF-547.

3.2 Changes to TS 3.1.3.5

The purpose of TS 3.1.3.5 is to ensure that sufficient negative reactivity is available to shut down the reactor and to maintain SDM. The NRC staff reviewed the proposed changes to the TS LCO, ACTION, and SRs. The changes would describe the requirements in terms of each bank instead of all rods and modify the remedial measures in the ACTION b. The licensee provided a justification for the proposed changes to ACTION b which stated:

> A revision to TS 3.1.3.5, Action b. is proposed to "Be in at least HOT STANDBY within 6 hours." The TS 3.1.3.5 Actions require that within one hour, either the rod be restored to within the insertion limit specified in the COLR (Action a.) or declared inoperable and Specification 3.1.3.1 applied (Action b.). With the change from shutdown "rods" to shutdown "banks," Action b. is no longer appropriate because TS 3.1.3.1 provides operability requirements for individual shutdown rods. The proposed change is consistent with LCO 3.0.3, and TS 3.1.5, Action B.1 in the STS for Westinghouse Plants (Reference 3) [NUREG-1431, Volume 1, Revision 4 (ADAMS Accession No. ML12100A222].

The NRC staff reviewed the licensee's justification for changes to ACTION b. The staff also reviewed STS for Westinghouse plants as well as plant-specific TS for other Westinghouse plants. The staff noted that the current LCO, Actions and SRs for Millstone 3 TS 3.1.3.6 are stated in terms of "banks." The staff noted that if the proposed changes to TS 3.1.3.5 are approved, requirements for individual rods will continue to exist in Millstone 3 TS 3.1.3.1. The staff determined that changing the terms in TS 3.1.3.5 from "rods" to "banks" is appropriate because the language more accurately reflects operability requirements for the equipment governed by TS 3.1.3.5 and does not reduce requirements placed on equipment in other TSs. The staff determined that changes to ACTION b are appropriate because they provide acceptable remedial measures for the case where one shutdown bank is inserted beyond insertion limits. The staff further noted the proposed change to ACTION b is more restrictive than the guidance for remedial actions provided in NUREG-1431 because the proposed ACTION requires plant shutdown while the action in NUREG-1431 would allow continued operation for up to 2 additional hours. Finally, the staff noted similar changes have been made to the TS for other Westinghouse plants.

The staff determined TS 3.1.3.5, as amended by the proposed change, will continue to ensure that sufficient negative reactivity is available to shut down the reactor and to maintain SDM because the language for the requirements (as stated in the LCO, the ACTIONS and the SR) will be in terms of "banks". The staff further determined TS 3.1.3.5, as modified, will continue to specify the minimum performance level of equipment needed for safe operation of the facility as an LCO and continues to specify the appropriate remedial measures if the LCO is not met. The NRC staff finds that the requirements of 10 CFR 50.36(c)(2) continue to be met because the minimum performance level of equipment needed for safe operation of the facility is contained in the LCO and the appropriate remedial measures are specified if the LCO is not met. The NRC staff finds that the requirements of 10 CFR 50.36(c)(3) continue to be met because SR 4.1.3.5 will assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met. Therefore, the NRC staff determined the changes are acceptable.

3.3 Changes to TS 3.1.3.6 and TS 6.9.1.6

The NRC staff reviewed the proposed changes the to the instances where the term "rod" would be replaced with the term "bank". The licensee provided a justification for the proposed changes which stated:

> The current title for Millstone 3 TS 3.1.3.6 is "Control Rod Insertion Limits." However, the LCO states that the "The control banks (emphasis added) shall be limited in physical insertion as specified in the CORE OPERATING LIMITS REPORT (COLR)." Similarly, the Actions and SRs in TS 3.1.3.6 also apply to

control "banks," rather than control "rods." Therefore, the proposed change revises the title for Millstone 3 TS 3.1.3.6 to "Control Bank Insertion Limits." This change is considered administrative in nature to provide consistency with the current LCO requirements, Actions and SRs in TS 3.1.3.6. Additional administrative changes are also made to TS 6.9.1.6.a and TS 6.9.1.6.b to reflect the revised title of TS 3.1.3.6 in the list of specifications that utilize the methodologies from Reference 1 (WCAP-9272-P-A) and Reference 20 (VEP-FRD-42-A) to establish core operating limits.

The NRC staff determined the proposed changes are acceptable because they are editorial, improve internal consistency of the TS document, and do not change the TS requirements.

3.4 NRC Staff Conclusion

The proposed change has been evaluated by the NRC staff to determine compliance with applicable regulatory requirements as specified in Section 2.3 of this SE.

The regulations at 10 CFR 50.36 require that TSs will include items in specified categories, including LCOs and SRs. The proposed changes modify the LCOs, ACTIONS, and SRs applicable to control rod and shutdown rod insertion and alignment limits and the instrumentation to monitor rod position and alignment. The TS continue to specify acceptable LCOs and remedial measures to be taken if one of these requirements is not satisfied. The TS continue to specify the appropriate SRs for tests and inspections to ensure the necessary quality of affected structures, systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met. Based on the evaluation discussed in Section 3 of this SE, the NRC staff has determined that the proposed LCOs, ACTIONS, and SRs meet the requirements of 10 CFR 50.36(c)(2) and 50.36(c)(3), respectively. Therefore, the NRC staff concludes that the proposed changes are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission’s regulations, the NRC staff notified the Connecticut State official on January 7, 2022, of the proposed issuance of the amendment. The State official provided comments via e-mail on January 10, 2022, which were considered in the NRC staff’s review. The State official’s comments and the NRC staff’s response, can be viewed in ADAMS at Accession No. ML22020A412.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20, “Standards for protection against radiation” and changes a surveillance requirement. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The NRC has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on this finding published in the *Federal Register* (86 FR 26953; May 18, 2021). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that public health and safety will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to public health and safety.

Principal Contributor: M. Hamm

Date of Issuance: February 16, 2022

SUBJECT: MILLSTONE POWER STATION, UNIT NO. 3 – ISSUANCE OF AMENDMENT NO. 282 RE: SHUTDOWN BANK TECHNICAL SPECIFICATION REQUIREMENTS AND ALTERNATE CONTROL ROD POSITION MONITORING REQUIREMENTS (EPID L-2021-LLA-0023) DATED FEBRUARY 16, 2022

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DATE	2/4/2022	2/16/2022	2/16/2022

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