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

October 1, 2024

Shawn Hafen
Site Vice President
Northern States Power Company
- Minnesota
Monticello Nuclear Generating Plant
2807 West County Road 75
Monticello, MN 55362

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT - ISSUANCE OF AMENDMENT NO. 212 RE: REVISE TECHNICAL SPECIFICATION 3.8.6, "BATTERY PARAMETERS," SURVEILLANCE REQUIREMENT 3.8.6.6 (EPID L-2023-LLA-0160)

Dear Shawn Hafen:

The U.S. Nuclear Regulatory Commission (the NRC or Commission) has issued the enclosed Amendment No. 212 to Renewed Facility Operating License No. DPR-22, for the Monticello Nuclear Generating Plant (Monticello). The amendment consists of changes to the technical specifications (TSs) in response to your application dated November 10, 2023, as supplemented by letter dated June 4, 2024.

The amendment revises TS 3.8.6, "Battery Parameters," Surveillance Requirement 3.8.6.6, to verify battery capacity acceptance criteria for the 125-volt direct current batteries to greater than, or equal to, 80 percent of the manufacturer's rating. The change aligns Monticello's TSs with NUREG-1433, "Standard Technical Specifications – General Electric Plants (BWR/4)," and the Institute of Electrical and Electronics Engineers Standard 450 recommendations.

A copy of the Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's monthly *Federal Register* notice.

Sincerely,

/RA/

Brent T. Ballard, Project Manager
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-263

Enclosure:
1. Amendment No. 212 to DPR-22
2. Safety Evaluation

cc: Listserv

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

NORTHERN STATES POWER COMPANY - MINNESOTA

DOCKET NO. 50-263

MONTICELLO NUCLEAR GENERATING PLANT

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 212
Renewed License No. DPR-22

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

   A. The application for amendment by Northern States Power Company – Minnesota (NSPM) dated November 10, 2023, as supplemented by letter dated June 4, 2024, 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. DPR-22 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 212, are hereby incorporated in the license. NSPM shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Jeffrey A. Whited

Digitally signed by Jeffrey A. Whited
Date: 2024.10.01 16:41:29 -04'00'

Jeffrey A. Whited, Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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

Date of Issuance: October 1, 2024

ATTACHMENT TO LICENSE AMENDMENT NO. 212

MONTICELLO NUCLEAR GENERATING PLANT

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

DOCKET NO. 50-263

Renewed Facility Operating License No. DPR-22

Replace the following page of the Renewed Facility Operating License No. DPR-22 with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the area of change.

REMOVE	INSERT
Page 3	Page 3

Technical Specifications

Replace the following pages of Appendix A, Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE	INSERT
3.8.6-5	3.8.6-5

2. Pursuant to the Act and 10 CFR Part 70, NSPM to receive, possess, and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operations, as described in the Final Safety Analysis Report, as supplemented and amended, and the licensee's filings dated August 16, 1974 (those portions dealing with handling of reactor fuel);

3. Pursuant to the Act and 10 CFR Parts 30, 40 and 70, NSPM to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

4. Pursuant to the Act and 10 CFR Parts 30, 40 and 70, NSPM to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and

5. Pursuant to the Act and 10 CFR Parts 30 and 70, NSPM to possess, but not separate, such byproduct and special nuclear material as may be produced by operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission, now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

1. Maximum Power Level

NSPM is authorized to operate the facility at steady state reactor core power levels not in excess of 2004 megawatts (thermal).

2. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 212, are hereby incorporated in the license. NSPM shall operate the facility in accordance with the Technical Specifications.

3. Physical Protection

NSPM shall implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.6.6	----------NOTE---------- This Surveillance shall not normally be performed in MODE 1, 2, or 3. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---------- Verify battery capacity is: • ≥ 90% of the manufacturer's rating for 250 VDC batteries • ≥ 80% of the manufacturer's rating for 125 VDC batteries when subjected to a performance discharge test or a modified performance discharge test.	In accordance with the Surveillance Frequency Control Program AND 12 months when battery shows degradation, or has reached 85% of the expected life with capacity < 100% of manufacturer's rating AND 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 212 TO RENEWED

FACILITY OPERATING LICENSE NO. DPR-22

NORTHERN STATES POWER COMPANY - MINNESOTA

MONTICELLO NUCLEAR GENERATING PLANT

DOCKET NO. 50-263

1.0 INTRODUCTION

By application dated November 10, 2023 (Agencywide Documents Access and Management System (ADAMS Accession No. ML23317A122), as supplemented by letter dated June 4, 2024 (ML24157A110), Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (NSPM, the licensee) requested changes to the technical specifications (TSs) for Monticello Nuclear Generating Plant (Monticello).

The proposed license amendment request (LAR) would revise the battery capacity acceptance criteria for the 125-volt direct current (VDC) batteries to align with NUREG-1433, "Standard Technical Specifications – General Electric Plants (BWR/4)," and Institute of Electrical and Electronics Engineers (IEEE) Standard 450 recommendations. Specifically, the proposed changes would revise TS 3.8.6, "Battery Parameters," Surveillance Requirement (SR) 3.8.6.6, such that the 125 VDC battery capacity is verified to be greater than, or equal to, 80 percent of the manufacturer's rating.

The supplemental letter dated June 4, 2024, provided additional information that clarified the application. Said supplemental letter did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on January 23, 2024 (89 FR 4345).

2.0 REGULATORY EVALUATION

2.1 Description of 125 VDC System Design and Operation

In Section 2.1 of the enclosure to the LAR, the licensee provided the following description of the 125 VDC System:

> The 125 VDC System provides a highly reliable and independent source of control power to control boards and switchgear. The system also supplies power to the emergency lights and the Hard Pipe Vent (HPV) loads.

During normal operation, these systems are powered from battery chargers with the batteries floating on the system. In the case of loss of all AC power, the batteries automatically power safety related components until AC power is restored to the battery chargers.

The 125 VDC Battery System is sized to meet the 4-hour station blackout scenario [SBO] while maintaining system voltage above the minimum required to operate loads supplied by the battery. The system consists of two 125 VDC batteries, three battery chargers, and four Distribution Panels. The 125 VDC “control” batteries provide control power for the in-plant 13.8k Vac [volt alternating current] Breakers, 4160 Vac breakers, 480 Vac Load Center breakers, Auxiliary control power for the 1R & 2R transformers, and various control relays, annunciators, etc. The 125 VDC System is capable of continuously providing DC electrical power to the required connected safety related normal and emergency loads, and other operating loads, during all modes of plant operation and for all design basis events. One of the two divisions is required for safe shutdown of the unit. For the two divisions provided, each feeds separate DC buses and each battery system is sized to:

- supply miscellaneous loads for periods suitable to its needs and still possess adequate capacity to operate switchgear for a 4-hour period.
- provide adequate voltage at the terminals of connected loads for the duration of a 4-hour SBO event and is capable of meeting power requirements during a Design Basis Event.

2.2 Proposed TS Changes

In the LAR enclosure, Section 2.3, the licensee stated that the cells for both divisions of the 1E 125 VDC batteries (No.11 and No.12 batteries) have been replaced, improving the capacity and available margin. Thus, the battery replacement recommendation of IEEE-450 (i.e., if the battery capacity falls below 80 percent of the manufacturer's rating) may be applied for those batteries.

In the LAR enclosure, Section 2.4, the licensee stated the proposed change would revise the current TS SR 3.8.6.6 acceptance criteria for the 125 VDC batteries which currently states: "Verify battery capacity is ≥ 90% of the manufacturer’s rating when subjected to a performance discharge test or a modified performance discharge test." The new acceptance criteria for 125 VDC batteries will be separated from the 250 VDC batteries. Therefore, the acceptance criteria for 250 VDC batteries would remain same. The acceptance criteria for the 125 VDC batteries will become ≥ 80 percent of the manufacturer's rating. This change would align the 125 VDC batteries to the NUREG-1433, Standard Technical Specifications, and IEEE-450 recommendations.

The licensee has proposed the following changes to the TS SR 3.8.6.6 (only relevant portion of SR is provided below). The changes are indicated with additions in italics, and deletions as strike-through:

SR 3.8.6.6: ~~Verify battery capacity is > 90% of the manufacturer’s rating when subjected to a performance discharge test or a modified performance discharge test.~~

Verify battery capacity is:

- *≥ 90% of the manufacturer's rating for 250 VDC batteries*
- *≥ 80% of the manufacturer's rating for 125 VDC batteries*

when subjected to a performance discharge test or a modified performance discharge test.

2.3 Regulatory Requirements

The U.S. Nuclear Regulatory Commission (the NRC or Commission) staff applied the following NRC regulations for review of the LAR:

Per Title 10 of the *Code of Federal Regulations* (10 CFR) 50.90, whenever a holder of a license wishes to amend the license, including technical specifications in the license, an application for amendment must be filed, fully describing the changes desired. Under 10 CFR 50.92(a), determinations on whether to grant an applied-for license amendment are to be guided by the considerations that govern the issuance of initial licenses or construction permits to the extent applicable and appropriate. Both the common standards for licenses and construction permits in 10 CFR 50.40(a), and those specifically for issuance of operating licenses in 10 CFR 50.57(a)(3), provide that there must be 'reasonable assurance' that the activities at issue will not endanger the health and safety of the public.

The regulations in 10 CFR 50.36, "Technical specifications," require, in part, that TSs shall be included by applicants for a license authorizing operation of a production or utilization facility. The regulations under 10 CFR 50.36(c) require that TSs include items in five specific categories related to station operation. These categories are (1) safety limits (SLs), limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) SRs; (4) design features; and (5) administrative controls. The proposed changes in this LAR relate to the SR category. The regulation under 10 CFR 50.36(c)(3) states that "Surveillance requirements 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 limiting conditions for operation will be met."

The NRC staff also reviewed the LAR based on the following guidance documents:

- NUREG-1433, Standard Technical Specifications, General Electric Plants (BWR/4), Revision 5, Volume 1, Section 3.8.6, "Battery Parameters."

- Institute of Electrical and Electronics Engineers (IEEE) Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications." According to the LAR, the batteries are tested in accordance with IEEE Standard 450-1995. The NRC has endorsed IEEE Standard 450-2002 by Regulatory Guide (RG) 1.129 Revision 2 (ML063490110). The NRC staff finds that the 2002 version of the standard is sufficiently similar to the 1995 version referenced by the licensee in the LAR and USAR, with regard to the testing requirements of batteries to permit its use in this evaluation.

3.0 TECHNICAL EVALUATION

The licensee's proposed change is to TS SR 3.8.6.6, which verifies the capacity of each battery is adequate when subjected to a performance discharge test or a modified performance discharge test. The SR must be met within the specified frequency in order to meet associated LCO, TS 3.8.6, "Battery Parameters," which requires the battery parameters for the Division 1 and Division 2 125 VDC and 250 VDC batteries to be within limits.

In the LAR, the licensee stated that the cells for both divisions of the Class 1E (safety-related) 125 VDC batteries (No. 11 and No. 12 Batteries) have been replaced to improve the capacity and available margin. Thus the recommendation of IEEE-450 (i.e., if its capacity is below 80 percent of the manufacturer's rating) may be applied for these replacement batteries.

According to the LAR, two 125 VDC battery systems are provided at Monticello, each of which feeds separate DC buses. Both 125 VDC batteries (No. 11 and No. 12) now have 59 cells (previously 58 cells). Each cell is larger (now 7 positive plates in KCR-15 cells, rather than the 6 positive plates in the previous KCR-13 cells). The C&D Technologies, Type KCR-15 cells, are shock absorbent clear plastic cells of the lead calcium acid type. The 125 VDC battery calculations have been revised to assume a 1.25 battery aging factor.

The LAR further states that the 90 percent capacity acceptance criteria had been put in place due to the reduced margin of the previously installed 125 VDC batteries and the use of a lesser aging factor. Both 125 VDC batteries have been replaced with the new battery cells of increased sizes and providing one additional cell in each battery, thus increasing battery capacity. Therefore, a lesser aging factor per IEEE-450 is no longer used with the 125 VDC batteries and the IEEE-450 battery replacement threshold of 80 percent capacity can be applied for the 125 VDC batteries.

Staff Evaluation

The NRC staff performed an audit of the licensee's battery sizing calculations for the replaced 125 VDC batteries in accordance with audit plan dated February 26, 2024 (ML24036A004). Based on the audit, the staff found that the replaced batteries have been adequately sized in accordance with IEEE Standard 485-1997, "IEEE Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications." An audit summary report was prepared and issued on June 3, 2024 (ML24137A279).

After the audit, the NRC staff requested the licensee to provide additional information relating to the load profiles for the 125 VDC batteries, which would be considered for the performance of TS SR 3.8.4.3 (battery service test) and SR 3.8.6.6 (performance discharge test, or a modified performance discharge test) considering the composite load profiles provided in the battery sizing calculations. The TS SR 3.8.4.3 requires the battery capacity be adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test. This SR must be met within the specified frequency in order to meet the associated TS LCO 3.8.4, "DC Sources – Operating," which requires the Division 1 and Division 2 125 VDC and 250 VDC electrical power subsystems to be OPERABLE.

In the supplemental letter dated June 6, 2024 (ML24157A110), the licensee provided the following information relating to load profiles(s) for performance of TS SR 3.8.4.3 (battery service test) and SR 3.8.6.6 (performance discharge test, or a modified performance discharge test):

- The licensee stated that it typically conducts a modified battery performance discharge test in lieu of performing a service test and performance discharge test, as allowed by TS SR 3.8.6.6.

- The licensee stated Monticello TS Bases for SR 3.8.6.6 references IEEE Standard 450-1995 for initial conditions, acceptance criteria, definition of battery capacity degradation and surveillance frequency. IEEE Standard 450-1995 includes general discussion of a typical modified performance test but does not explicitly define, or restrict, the user to a specific methodology. In the absence of more prescriptive guidance, the methodology presented in IEEE Standard 450-2002, Annex I, is used to construct the modified performance test profile for the No.11 and No. 12 Batteries.

Based on review of the supplement dated June 6, 2024, the NRC staff finds that the proposed 125 VDC load profiles for the performance of TS SR 3.8.4.3 (battery service test) and SR 3.8.6.6 (performance discharge test, or a modified performance discharge test) are based on the 125 VDC battery sizing calculations and are developed in accordance with industry standards and practice. The modified performance test profile derived would bound the service test load profile for the 4-hour service period. Typically, a modified performance discharge test (in lieu of service test and performance discharge test) is performed as allowed by IEEE Standard 450-1995 or 2002 version (endorsed by RG 1.129). The load profiles support the licensee's proposed change to TS SR 3.8.6.6 because the profiles demonstrate the batteries are sized to meet the assumed duty cycle loads when the battery design capacity reaches the proposed 80 percent limit, which is acceptable per IEEE-450 because the batteries are sized using a 1.25 aging factor. Therefore, the NRC staff finds the proposed change will continue to assure the necessary quality of the batteries is maintained, and that the SR, when performed at the specified frequency, will ensure TS LCO 3.8.4, related to DC sources and TS LCO 3.8.6, related to batteries of the facility, will continue to be met. Thus, the changes to SR 3.8.6.6 are acceptable and are in conformance with 10 CFR 50.36(c)(3).

Conclusion

Based on the technical evaluation provided above, the NRC staff finds that the licensee has adequately sized the newly installed safety-related 125 VDC batteries, and that the proposed changes to the TS SR 3.8.6.6 are acceptable. The licensee will continue to meet regulatory requirements as discussed in section 2.3. Therefore, the staff finds the proposed TS changes are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Minnesota State official was notified of the proposed issuance of the amendment on date August 2, 2024. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes the requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20, or change to the SRs. 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 Commission has previously issued a proposed finding that the amendment

involves no significant hazards consideration and there has been no public comment on such finding (89 FR 4345). 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 the health and safety of the public 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 the health and safety of the public.

Principal Contributor: V. Goel, NRR

Date of Issuance: October 1, 2024

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT - ISSUANCE OF AMENDMENT NO. 212 RE: REVISE TECHNICAL SPECIFICATION 3.8.6, "BATTERY PARAMETERS," SURVEILLANCE REQUIREMENT 3.8.6.6 (EPID L-2023-LLA-0160) DATED OCTOBER 1, 2024

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