

WEB-BASED PROPOSED ALTERNATIVE SUBMISSION

**Submission Date:** December 15, 2022

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**Licensee:** Xcel Energy

**Plant Unit(s) and Docket No(s):** Monticello (05000263)

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**1. Project Title:**

L-MT-22-052 Monticello Nuclear Generating Plant 10 CFR 50.55a Request No. PR 08, Request for HPCI Pump Quarterly Alternative

**11. Proposed Alternative Number or Identifier:**

PR 08

**6. Request Type:**

10 CFR 50.55a(z)(2)

**7. Inservice Inspection (ISI) or Inservice Testing (IST)**

Inservice Testing (IST)

**10. Requested Completion Date:**

January 14, 2023

## **12. Brief Description of Proposed Alternative**

Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (hereafter 'NSPM'), hereby requests NRC authorization of this 10 CFR 50.55a alternative for the Monticello Nuclear Generating Plant (MNGP). The proposed alternative is to defer the quarterly testing of components in the High Pressure Coolant Injection (HPCI) system until after the 2023 spring refueling outage when repairs to the 'G' SRV (Safety Relief Valve) will be completed.

## **13. Proposed Duration of Alternative (in terms of ISI/IST Program Interval with Start and End Dates):**

The duration of this request will continue in the IST 6th Interval until MNGP's spring 2023 refueling outage, which is scheduled to start on April 15, 2023.

## **14. Applicable ASME Code Requirements**

ISTB-3400, Frequency of Inservice Tests. An inservice test shall be run on each pump as specified in Table ISTB-3400-1. That table specifies a Quarterly Group A Test for Pump Group A. ISTA-3170, Inservice Examination and Test Frequency Grace. Components whose test frequencies are based on elapsed time per table ISTA-3170-1, which states quarterly (every 3 months) and specifies 92 days between tests. ISTC-3510, Exercising Test Frequency. States in part: 'Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months...' Mandatory Appendix III-3721, HSSC [High Safety Significance] MOVs [Motor Operated Valves]. States in part: 'HSSC MOVs that can be operated during plant operation shall be exercised quarterly'

## **15. Applicable American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPV Code), or ASME Operation and Maintenance of Nuclear Power Plants (OM Code), Edition and Addenda**

American Society of Mechanical Engineers (ASME) Operation and Maintenance of Nuclear Power Plants (OM) Code, 2017 edition (no addenda).

## **16. Current ISI or IST Program Interval Number and Start/End Dates**

IST 6<sup>th</sup> Interval started on October 1, 2022 and is scheduled to end on May 31, 2032.

## **17. Applicable ASME Code Components and/or System Description**

The following High Pressure Coolant Injection system components are affected:

Component	Description	Testing
HPCI-18	HPCI Gland Seal Condenser/Lube Oil Cooler Cooling Water Return Check Valve	Exercise Open (CTO)
HPCI-20	HPCI Gland Seal Condenser/Condensate Pump Discharge Check Valve	Exercise Close (CTC) Bi-Directional Open (BTO)
HPCI-32	HPCI Pump Suction from Condensate Storage Tank Check Valve	Exercise Open (CTO)
HPCI-9	HPCI Turbine Exhaust Check Valve	Exercise Open (CTO)
HPCI-10	HPCI Turbine Exhaust Check Valve	Exercise Open (CTO)
MO-2036	HPCI Turbine Steam Supply Isolation Valve	Non-Timed Stroke Test (ET)
P-209	HPCI pump	Flow and Vibration

## **18. Reason for Request**

Safety relief valve RV-2-71G ('G' SRV) has elevated tailpipe temperature, indicative of pilot or second stage leakage that may result in a plant transient by spurious lift of the SRV which would likely require a rapid power reduction and may require a reactor scram. In addition, excessive leakage from the second stage may prevent the SRV from reseating following actuation which could challenge cooldown rate limits for the reactor vessel.

After a forced outage in January of 2022, the SRV tailpipe temperature of 'G' SRV was approximately 10 degrees higher than prior to the outage. Over the last 9 months, temperature of the tailpipe has increased by approximately 8 degrees. Abnormal operating procedure entry criteria of 150 degrees F has been temporarily exceeded on three occasions: during adjustment of the reactor building closed cooling water (RBCCW) system temperature, coincident with

conducting flexible power operations, and coincident with the most recent performance of HPCI quarterly testing. Adjustments of RBCCW system temperature have been minimized and NSPM has curtailed conducting flexible power operations at MNGP until replacement of the 'G' SRV is completed in the spring 2023 refueling outage.

When the HPCI pump (P-209) is started, there is a sudden reduction in main steam pressure, particularly in the B main steam line which contains the 'G' SRV. Deferring the quarterly HPCI pump testing (and the accompanying exercising of HPCI components) will preclude introduction of this pressure transient and avoid further potential degradation of the SRV and the chances of a spurious lift.

## **19. Full Description of Proposed Alternative**

The proposed alternative, based on review of trending data, past test performance, and maintenance history, is to defer the quarterly ISTB-3400 Pump Group A tests of the HPCI pump, P-209. Performance of the quarterly pump test would be deferred in the fourth quarter of 2022 and the first quarter of 2023.

Deferral of the HPCI pump (P-209) testing also results in deferring quarterly check valve exercising in accordance with ISTC-3510 for HPCI-18, HPCI-20, HPCI-32, HPCI-9, and HPCI-10; and deferring quarterly MOV exercising in accordance with Mandatory Appendix III-3721 for MO-2036.

Normal testing of the HPCI system would resume following the 'G' SRV ('B' Main Steam Safety Relief Valve) replacement during the spring 2023 refueling outage that is scheduled to start on April 15, 2023.

## **20. Description of Basis for Use**

A review of the completed maintenance and the IST results was performed for the HPCI pump P-209 and for the associated valves that would not be exercised if the pump is not run (HPCI-18, HPCI-20, HPCI-32, HPCI-9, HPCI-10, and MO-2036 valves) and concluded that these HPCI components would retain their operational readiness with no indication that mechanical or hydraulic degradation would challenge performance. The review included the history of the testing over the past 10 years.

Component	Description	History
HPCI-18	Safety position is open. Opens to allow cooling water from the HPCI gland seal condenser and the lube oil cooler back to the suction of the booster pump. Its non-safety function is to prevent backflow from the gland seal condenser condensate pump during standby operations.	During the 2021 refueling outage a pressure test performed identified small chip on seating surface that was corrected. There is no history of open failures.
HPCI-20	Safety position is close: Closes to prevent backflow of water from the HPCI pump lube oil cooler to the gland seal condenser hotwell during standby mode and maintains the flow path of the gland seal and turbine lube oil cooler return flow during HPCI pump operation.	During the 2015 refueling outage the valve was disassembled and inspected. No issues were noted. There is no history of open/close failures.
HPCI-32	Safety position is open/close. Allows flow to the HPCI pump from the condensate storage tank and isolation from back flow to the condensate storage tank.	During the 2013 refueling outage the valve was disassembled and inspected. No issues were noted. There is no history of open failures.
HPCI-9	Safety position is open/close. Open to pass HPCI turbine steam exhaust to the suppression pool during operation and close to provide a containment isolation when system is in standby.	During the 2019 and the 2021 refueling outages the valve was disassembled and inspected. Identified slight pitting of seat at two locations and scale that was cleaned with scotch bright with confirmed 360 deg of contact. There is no history of open failures.
HPCI-10	Safety position is open/close. Open to pass HPCI turbine steam exhaust to the suppression pool during operation and close to provide a containment isolation when system is in standby.	During the 2011 refueling outage following disassembly the seat ring was found to be in excellent condition and confirmed 360 deg of contact. It is scheduled for maintenance in the 2023 outage. There is no history of open failures.

MO-2036	Safety position is open and is a normally closed valve. Allows steam flow to the HPCI turbine.	The valve and actuator for this valve were replaced in 2019. The diagnostic testing indicates 21% margin for unseating thrust. The valve has adequate margin and no issues have been identified with the new valve/actuator.
P-209	Pumps water to reactor vessel under loss of coolant conditions that do not result in rapid depressurization of the vessel.	Pump trending of flow/differential pressure, oil and vibration are stable and within acceptable range.

Operation of the HPCI system for the most recent quarterly test had an adverse effect on the 'G' SRV tailpipe temperature, indicating operation of the HPCI system adversely affects SRV degradation. Degradation will increase the probability of a spurious lift of the SRV, which may result in a plant transient which would likely require a rapid power reduction and may require a reactor scram. Performance of quarterly HPCI pump testing presents a hardship as it increases the possibility of further degradation of the 'G' SRV, and chances of a spurious lift, with no compensating increase in the level of quality or safety.

## **21. Include Any Additional Information**

Summary of Commitments: This submittal makes no new commitments and no revisions to existing commitments.

## **22. Precedents**

None.

## **24. Attachments**