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

May 12, 2022

MONTICELLO NUCLEAR GENERATING PLANT – AUTHORIZATION AND SAFETY EVALUATION FOR ALTERNATIVE REQUEST NO. PR-05 (EPID L-2021-LLR-0061)

LICENSEE INFORMATION

Recipient's Name and Address: Mr. Christopher P. Domingos
Site Vice President
Northern States Power Company - Minnesota
Monticello Nuclear Generating Plant
2807 West County Road 75
Monticello, MN 55362

Licensee: Northern States Power Company

Plant Name(s) and Unit(s): Monticello Nuclear Generating Plant

Docket No(s).: 50-263

APPLICATION INFORMATION

Submittal Date: August 25, 2021

Submittal Agencywide Documents Access and Management System (ADAMS) Accession No.: ML21237A118

Alternative Provision: The applicant requested an alternative under Title 10 of the Code of Federal Regulations (10 CFR), paragraph 50.55a(z)(1).

Applicable Code Edition and Addenda: American Society of Mechanical Engineers (ASME), Operation and Maintenance of Nuclear Power Plants (OM) Code, 2017 Edition with no Addenda.

Applicable Inservice Inspection (ISI) or Inservice Testing (IST) Program Interval and Interval Start/End Dates: Sixth 10-year IST interval currently scheduled to begin on October 1, 2022, and end on May 31, 2032.

IST Requirement: ASME OM Code, subsection ISTC, paragraph ISTB-3510, "General," subparagraph (e), "Frequency Response Range;" states, "The frequency response range of the vibration-measuring transducers and their readout system shall be from one-third minimum pump shaft rotational speed to at least 1,000 Hz [Hertz]."

Brief Description of the Proposed Alternative: Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (hereafter, the licensee), requested the U.S. Nuclear Regulatory Commission (NRC) authorization of this 10 CFR 50.55a request to

support the implementation of the sixth IST 10-year program interval for Monticello Nuclear Generating Plant. Proposed Alternative No. PR-05 requests authorization for an alternative vibration testing range for the standby liquid control (SBLC) pumps P-203A and P-203B.

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

For additional details on the licensee's request, please refer to the documents located at the ADAMS Accession No(s) identified above.

STAFF EVALUATION

Paragraph ISTB-3510(e) of the ASME OM Code states that the frequency response range of the vibration-measuring transducers and their readout system shall be from one-third minimum pump shaft rotational speed to at least 1,000 Hz. The nominal shaft rotational speed for the SBLC pumps is 280 revolutions per minute (rpm), which is approximately 4.7 Hz. One third of this shaft rotational speed is 1.56 Hz. Therefore, the instrumentation would have to have a frequency response range from 1.56 Hz to 1,000 Hz.

The request stated that the only failure mechanism that would be revealed by vibration at frequencies below those related to shaft speed are associated with oil whip in machines with sleeved bearings. The SBLC pumps have rolling element bearings, not sleeved bearings, so this failure mechanism is not applicable to these pumps.

The request identified the frequencies where high vibration would provide an indication of pump degradation as "one times pump running speed," "two times pump running speed," and "multiples of pump running speed." The types of problems that could be encountered at these frequencies were also identified. The frequency spectrum of the signals generated is characteristic of each pump and constitutes a unique pattern. Analysis of the pattern allows identification of vibration sources and monitoring of change over time permits evaluation of the mechanical condition of the pump.

Based on the above, the NRC staff finds that measuring vibration levels below the SBLC shaft speed of 4.7 Hz will not provide useful information for determining pump degradation.

CONCLUSION

The NRC staff has determined that the proposed alternative in the request referenced above would provide an acceptable level of quality and safety.

The NRC staff concludes that the licensee has adequately addressed the regulatory requirements set forth in 10 CFR 50.55a(z)(1).

The NRC staff authorizes the use of proposed alternative PR-05 for SBLC pumps P-203A and P-203B at Monticello Nuclear Generating Plant, for the sixth 10-year IST program interval, starting October 1, 2022, and scheduled to end May 31, 2032.

All other ASME OM Code requirements for which an alternative was not specifically requested and approved remain applicable.

Principal Contributor: Ian Tseng

Date: May 12, 2022

Scott P. Wall Digitally signed by Scott P. Wall Date: 2022.05.12 13:24:37 -04'00'

Nancy L. Salgado, Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

cc: Listserv

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