WEB-BASED PROPOSED ALTERNATIVE SUBMISSION 10 CFR 50.55a(z)(1)

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Project Title:
10 CFR 50.55a Request Associated with the Monticello Sixth Inservice Testing Ten-Year Interval Alternative Related to Excess Flow Check Valve Testing Frequency (L-MT-22-008)

Proposed Alternative Number or Identifier:
VR-10

Request Type:
10 CFR 50.55a(z)(1)

Inservice Inspection (ISI) or Inservice Testing (IST)
Inservice Testing (IST)

Requested Completion Date:
February 28, 2023

Brief Description of Proposed Alternative
Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (hereafter NSPM or the licensee), hereby requests the U.S. Nuclear Regulatory Commission (NRC) authorization of this 10 CFR 50.55a request to support the implementation of the sixth IST ten-year interval for the Monticello Nuclear Generating Plant (MNGP). NSPM requests authorization for an alternative to the currently specified two-year test frequency for Excess Flow Check Valve (EFCV) testing each refueling outage (RFO). NSPM proposes instead to test at a frequency determined under the MNGP Technical Specification (TS) Surveillance Frequency Control Program (SFCP). The SFCP is an NRC approved methodology for determination of surveillance frequencies and application of this methodology as the proposed alternative will provide an acceptable level of quality and safety. This submittal makes no new commitments and no revisions to existing commitments.

Proposed Duration of Alternative (in terms of ISI/IST Program Interval with Start and End Dates):
This request, upon approval, will be applied to the MNGP sixth IST ten-year interval starting October 1, 2022, and is scheduled to end May 31, 2032.

Applicable ASME Code Requirements
2017 Edition of the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) of Nuclear Power Plants Code, Subsection ISTC, paragraph ISTC-3522, Category C Check Valves, states, in part, 'Category C check valves shall be exercised as follows:(c) If exercising is not practicable during operation at power and cold shutdown outages, it shall be performed during refueling outages [RFOs].'ASME OM Code, Subsection ISTC, paragraph ISTC-3630, Leakage Rate for Other Than Containment Isolation Valves, states, in part, 'Category A valves with a leakage requirement not based on an Owner's 10 CFR 50, Appendix J, program, shall be tested to verify their seat leakages within acceptable limits.' ASME OM Code, Subsection ISTC, paragraph ISTC 3630(a), Frequency, states, 'Tests shall be conducted at least once every 2 yr.'

Applicable American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPV Code), or ASME Operation and Maintenanceâ€¯of Nuclear Power Plants (OM Code), Edition and

Addenda

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

Current ISI or IST Program Interval Number and Start/End Dates

MNGP is currently on its fifth IST ten-year interval that is scheduled to end on September 30, 2022. The MNGP sixth IST ten-year interval begins on October 1, 2022.

Applicable ASME Code Components and/or System Description

Valve Identifier	Description	System	ASME Code Class	OM Cat.
XFV-2	Main Steam Line (MSL) EFCV	Main Steam	1	AC
XFV-3			1	AC
XFV-4			1	AC
XFV-5			1	AC
XFV-6			1	AC
XFV-7			1	AC
XFV-8			1	AC
XFV-9			1	AC
XFV-22	Reactor Vessel Above Core Plate Pressure Instrumentation EFCV		1	AC
XFV-23	Reactor Vessel Below Core Plate Pressure Instrumentation EFCV		1	AC
XFV-24	Reactor Vessel Reference Leg Instrumentation EFCV		1	AC
XFV-25			1	AC

XFV-26			1	AC
XFV-27	Reactor Vessel Jet Pump Instrumentation EFCV	Reactor and Vessel Assembly	1	AC
XFV-28			1	AC
XFV-29			1	AC
XFV-30			1	AC
XFV-31			1	AC
XFV-32			1	AC
XFV-33			1	AC
XFV-34			1	AC
XFV-35			1	AC
XFV-36			1	AC
XFV-37			1	AC
XFV-38			1	AC
XFV-39			1	AC
XFV-40			1	AC
XFV-41			1	AC

XFV-42			1	AC
XFV-43			1	AC
XFV-44			1	AC
XFV-45			1	AC
XFV-46			1	AC
XFV-47			1	AC
XFV-48			1	AC
XFV-49			1	AC
XFV-50			1	AC
XFV-51	Reactor Vessel Below Core Plate Flow Instrumentation EFCV		1	AC
XFV-52	Reactor Vessel Reference Leg Instrumentation EFCV		1	AC
XFV-53			1	AC
XFV-54			1	AC
XFV-55			1	AC
XFV-56			1	AC
XFV-57			1	AC
XFV-58			1	AC
XFV-59			1	AC

XFV-60			1	AC
XFV-61			1	AC
XFV-62			1	AC
XFV-63			1	AC
XFV-64			1	AC
XFV-65			1	AC
XFV-66			1	AC
XFV-67			1	AC
XFV-68			1	AC
XFV-69			1	AC
XFV-70			1	AC
XFV-71		Reactor Recirculation	1	AC
XFV-72	Reactor Recirculation System EFCV		1	AC
XFV-73			1	AC
XFV-74			1	AC
XFV-75			1	AC
XFV-76			1	AC
XFV-77			1	AC
XFV-78			1	AC
XFV-79			1	AC

XFV-80			1	AC
XFV-81			1	AC
XFV-82	11 Core Spray System EFCV	Core Spray	1	AC
XFV-83	12 Core Spray System EFCV		1	AC
XFV-84	High Pressure Coolant Injection (HPCI) Turbine Steam Supply Line EFCV	HPCI	1	AC
XFV-85			1	AC
XFV-86	Reactor Core Isolation Cooling (RCIC) Turbine Steam Supply Line EFCV	RCIC	1	AC
XFV-87			1	AC
XFV-88	Reactor Vessel Reference Leg Instrumentation EFCV	Reactor and Vessel Assembly	1	AC
XFV-89			1	AC

Reason for Request

Pursuant to 10 CFR 50.55a(z)(1) an alternative is proposed to the testing frequency requirements of the specified ASME OM Code subsections for the subject EFCVs. Testing of the specified EFCVs is currently performed at a 24-month frequency in accordance with MNGP TS Surveillance Requirement (SR) 3.6.1.3.8. This 24-month frequency is the same as that specified for testing of EFCVs within the 2017 ASME OM Code.

Recent industry improvements in refueling outage (RFO) scheduling and performance minimize the time that is planned for refueling and testing activities during the outages. EFCV testing during Class 1 pressure test becomes a refueling outage critical path activity and extends the RFO if all EFCVs are tested each outage during this timeframe. Industry operating experience has shown that the testing of each EFCV every RFO is unnecessary to demonstrate the achievement of acceptable performance and reliability of EFCVs. Operating experience has demonstrated that the EFCVs used at the MNGP are highly reliable.

To provide for more efficient conduct of refueling outages, NSPM proposes an alternative to test at a frequency determined under the SFCP. The applicable regulation does not allow the test frequency for the EFCVs to be adjusted based on past test performance results, the likelihood of failure, or the consequences of a failure. The SFCP is an NRC approved methodology that applies plant-specific probabilistic risk application (PRA) analysis, industry operating experience, and other considerations, to determine acceptable surveillance frequencies for performance of TS surveillances. Applying this methodology for determining the test frequency as an alternative to the ASME OM Code requirements will provide for more efficient conduct of refueling outages, while still providing an acceptable level of quality and safety.

Full Description of Proposed Alternative

NSPM proposes pursuant to 10 CFR 50.55a, "Codes and standards," paragraph (z)(1), "Alternatives to codes and standards requirements," an alternative to the 2017 ASME OM Code frequency requirement for EFCV exercising.

The 2017 ASME OM Code, Subsection ISTC-3522, "Category C Check Valves," requires these check valves to be exercised during operation at power (paragraph ISTC-3522(c)) and if 'not practicable during operation at power and cold shutdown outages, it shall be performed during refueling outages [RFOs]." The 2017 ASME OM Code, Subsection ISTC, paragraph ISTC-3630(a), Frequency, states:

> Tests shall be conducted at least once every 2 yr.

Testing of the specified EFCVs is currently performed at a 24-month frequency in accordance with SR 3.6.1.3.8, which is the same frequency as that specified in the 2017 ASME OM Code. The frequency of SR 3.6.1.3.8 was relocated to the SFCP with the NRC approval of Amendment No. 200 for the MNGP (Reference 1). This surveillance requires:

> Verify each reactor instrumentation line EFCV actuates on a simulated instrument line break to restrict flow to ≤ 2 gpm.

MNGP Technical Specification, 5.5.15, "Surveillance Frequency Control Program," provides the licensing basis for the control of surveillance frequencies. This specification states under Item b. that:

> Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1.

Accordingly, NSPM proposes to apply the SFCP to determine the specified frequency for testing of the EFCVs that are included under SR 3.6.1.3.8. The SFCP provides a method to change surveillance frequencies in accordance with Nuclear Energy Institute (NEI) document NEI 04-10, Revision 1, "Risk-Informed Technical Specification Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies, Industry Guidance Document," (Reference 2). The NRC approved NEI 04-10 guidance (Reference 3), provides a risk-informed performance based methodology to change surveillance frequencies by using PRA methods in combination with plant performance data and other factors, including plant and industry operating experience, plant and industry equipment reliability, and plant-specific risk determinations. NEI 04-10 addresses surveillances performed on a Staggered Test Basis in the risk assessment.

NEI 04-10, Revision 1, requires performance monitoring of systems/structures and components (SSCs) whose test frequency has been revised as part of a feedback process to assure that a change in surveillance test frequency has not resulted in degradation of equipment performance and operational safety. The monitoring and feedback process includes consideration of Maintenance Rule monitoring of equipment performance. In the event of degradation of SSC performance, the surveillance frequency is reassessed in accordance with the methodology, in addition to any corrective actions which may apply as part of the Maintenance Rule requirements. The performance monitoring and feedback specified in NEI 04-10, Revision 1, is sufficient to reasonably assure acceptable SSC performance and is consistent with Regulatory Position 3.2 of Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," August 1998.

The surveillance frequency can only be reduced (or increased) to whatever frequency is determined acceptable as a result of an approved frequency determination under the SFCP. An Independent Review Panel (IDP)

reviews each proposed frequency change. It includes Maintenance Rule Expert Panel members, the surveillance test coordinator and various subject matter experts (e.g., the cognizant system manager or component engineers.) The IDP makes recommendations on the way the revised surveillance intervals are implemented (for instance, a phased implementation), reviewing the cumulative impact of all changes carried out over a period of time, and monitoring the impact of changes on failure rates, among other activities. The program contains provisions where component performance data is fed back periodically into the component test strategy determination (i.e., test interval and methods) process. Surveillance failures are evaluated under the Corrective Action Program. Frequency adjustments under the SFCP may be an appropriate corrective action for a surveillance failure. For a previously reduced frequency of a test, if unsatisfactory performances of the test occur, an assessment is performed to determine if the time interval between performances is a factor in the cause of the unsatisfactory performance. This includes results of component or train level monitoring and results of Maintenance Rule monitoring. Results of these periodic re-assessments are fed back to the IDP.

The proposed alternative to allow the frequency for testing of the subject EFCVs under SR 3.6.1.3.8 to be determined by applying the SFCP in accordance with NRC approved NEI 04-10, Revision 1, guidance provides a robust basis for determining the test frequency. Additionally, as improvements are made to the PRA, these are automatically reflected in future determinations, maintaining the state-of-the-art in these determinations.

Description of Basis for Use

Using the provisions of this request would provide adequate detection of component degradation and would continue to provide reasonable assurance of the operational readiness of the affected EFCVs. Therefore, compliance with the requirements of authorized alternative would result in an acceptable level of quality and safety pursuant to 10 CFR 50.55a(z)(1).

Describe Hardship or Unusual Difficulty

NOT APPLICABLE

Any Additional Information (submission attachments listed here)

NOT USED (No Attachments)

Precedents

LaSalle County Station, Units 1 and 2 - Relief from the Requirements of the ASME Code for Operations and Maintenance of Nuclear Power Plants (EPID L-2018-LLR-0004), dated July 3, 2018 (ADAMS Accession No. ML18163A054).Peach Bottom Atomic Power Station, Units 2 and 3 - Safety Evaluation of Relief Request Number 01A-VRR-4 Regarding the Fourth 10-Year Interval of the Inservice Testing Program (CAC Nos. MF9598 and MF9599), dated April 28, 2017 (ADAMS Accession No. ML17108A762).

References

Monticello Nuclear Generating Plant – Issuance of Amendment Re: Adoption of TSTF-425, Relocate Surveillance Frequencies to Licensee Control – RITSF Initiative 5b (EPID: L-2017-LLA-0434), dated January 28, 2019 (ADAMS Accession No. ML19007A090).

NEI 04-10, Revision 1, “Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies, Industry Guidance Document,” dated April 2007 (ADAMS Accession No. ML071360456).

Final Safety Evaluation for Nuclear Energy Institute (NEI) Topical Report (TR) 04-10, Revision 1, 'Risk-Informed Technical Specifications Initiative 5b, ‘Risk-Informed Method for Control of Surveillance Frequencies,’ (TAC No. MD6111),' dated September 19, 2007 (ADAMS Accession No. ML072570267).