



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

August 27, 2014

Karen D. Fili
Site Vice-President
Northern States Power Company – Minnesota
Monticello Nuclear Generating Plant
2807 West County Road 75
Monticello, MN 55362-9637

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT – ALTERNATIVE TO THE TESTING REQUIREMENTS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS CODE FOR OPERATIONS AND MAINTENANCE OF NUCLEAR POWER PLANTS FOR THE FIFTH 10-YEAR INSERVICE INSPECTION PROGRAM INTERVAL (TAC NO. MF4544)

Dear Mrs. Fili:

By letter dated July 30, 2014, Northern States Power Company, a Minnesota corporation (NSPM, the licensee), doing business as Xcel Energy, submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for authorization of an alternative to the testing requirements of the American Society of Mechanical Engineers (ASME) Code for Operations and Maintenance of Nuclear Power Plants (OM Code), 2004 Edition with Addenda through OMB Code-2006, for the Monticello Nuclear Generating Plant (MNGP).

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(g)(3)(ii), the licensee requested to defer its quarterly valve exercise testing on the inboard and outboard main steam line drain valves (MO-2373 and MO-2374) to the next MNGP refueling outage in spring 2015 on the basis that complying with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The NRC staff has reviewed MNGP Request No. VR 05 and concludes, as set forth in the enclosed safety evaluation, that NSPM has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55(a)(3)(ii) and remains in compliance with ASME OM Code requirements.

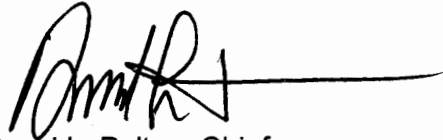
Therefore, the NRC staff authorizes the proposed alternative request VR 05 for the fifth 10-year inservice testing interval at MNGP which began on September 1, 2012, and is currently scheduled to end on August 31, 2022. The proposed alternative shall only be utilized until completion of the MNGP spring 2015 refueling outage.

K. Fili

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If you have any questions, please contact Terry Beltz at (301) 415-3049 or via e-mail at Terry.Beltz@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Pelton', followed by a long horizontal line extending to the right.

David L. Pelton, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-263

Enclosure:
Staff Evaluation of the Fifth 10-Year Inservice
Inspection Interval Alternative Request No. VR 05

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UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO THE FIFTH 10-YEAR INSERVICE INSPECTION PROGRAM INTERVAL

REQUEST NO. VR 05

MONTICELLO NUCLEAR GENERATING PLANT

NORTHERN STATES POWER COMPANY – MINNESOTA

DOCKET NO. 50-263

1.0 INTRODUCTION

By letter to the U.S. Nuclear Regulatory Commission (NRC, the Commission) dated July 30, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML14212A071), Northern States Power Company (NSPM, the licensee), doing business as Xcel Energy, submitted alternative request VR 05 for the Monticello Nuclear Generating Plant (MNGP). The licensee requested an alternative test plan in lieu of certain inservice testing (IST) requirements of the 2004 Edition with 2006 Addenda of the American Society of Mechanical Engineers (ASME) *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) for the IST program at MNGP during the fifth 10-year IST program interval, which began on September 1, 2012, and is currently scheduled to conclude on August 31, 2022.

Specifically, NSPM requested to defer its quarterly valve exercise testing on the inboard and outboard main steam line drain valves (MO-2373 and MO-2374, respectively) to the next refueling outage in spring 2015 at MNGP. Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(a)(3)(ii), the licensee requested the use of proposed alternative VR 05 since complying with the current ASME OM Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The NRC staff's evaluation of the licensee's proposed alternative request is provided below.

2.0 REGULATORY EVALUATION

The regulations under 10 CFR 50.55a(f), "Inservice Testing Requirements," require, in part, that IST of certain ASME Code Class 1, 2, and 3 components must meet the requirements of the ASME OM Code and applicable addenda, except where alternatives have been authorized pursuant to paragraphs (a)(3)(i) or (a)(3)(ii).

Pursuant to 10 CFR 50.55a(f)(6)(i), a licensee may submit a request for relief from the given requirements, along with information to support the determination. The Commission is authorized to

Enclosure

evaluate a licensee's relief request, and may grant the requested relief or impose alternative requirements, considering the burden that the licensee might incur if the Code requirements were enforced for the given facility.

Pursuant to 10 CFR 50.55a(a)(3)(i) and 10 CFR 50.55a(a)(3)(ii), the Commission may also authorize the licensee to implement an alternative to the Code requirements, provided that the alternative either provides an acceptable level of quality and safety, or compliance with the Code requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Based on the above, and pursuant to the NRC staff's findings with respect to authorizing the alternative VR 05 as given below, the NRC staff finds that regulatory authority exists for the licensee to request and the Commission to authorize the relief requested by the licensee.

MNGP is currently in its fifth 10-year IST program interval. The fifth 10-year IST program interval began on September 1, 2012, and is currently scheduled to conclude on August 31, 2022.

Finally, NSPM states in the submittal its commitment to the ASME OM Code, 2004 Edition, with Addenda through OMB Code-2006.

3.0 TECHNICAL EVALUATION

3.1 Licensee's Alternative Request VR 05

ASME OM Code Requirement

ISTC-3510, "Exercising Test Frequency", states, in part, that "Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months, except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221, and ISTC-5222."

Alternative testing is requested for the following valves:

Table 1			
Valve ID	System	Category	Class
MO-2373	Main Steam Line Drain Valve – Inboard	A	1
MO-2374	Main Steam Line Drain Valve – Outboard	A	1

Reason for Request

In its July 30, 2014, submittal, the licensee provided the following reasons to support its request:

In May 2014, an upward trend in unidentified drywell leakage was identified in conjunction with an increased radiation count rate on the drywell continuous air monitor. These changes occurred during exercise (stroke time) testing of MO-2373. The licensee suspected that the increase in unidentified drywell leakage to be the result of a possible packing leak on MO-2373,

and that backseating the valve could likely reduce leakage into the drywell.

The licensee developed a backseat testing methodology to maintain the functional performance parameters of both the inboard and outboard valves within acceptable limits. On July 10, 2014, MO-2373 was backseated and testing performed to demonstrate operability of the valves. After completion of the testing on MO-2373, it was fully-opened and backseated to isolate the packing leak. The unidentified leakage in the drywell was reduced to the level that existed prior to exercising MO-2373. With MO-2373 on its backseat, MO-2374 was closed and de-energized to prevent opening due to 10 CFR 50, Appendix R concerns.

The next quarterly valve exercise testing of MO-2373 and MO-2374 is on October 10, 2014. The licensee is requesting to defer this quarterly testing until the next MNGP refueling outage, scheduled for the spring of 2015. Performance of the quarterly exercise testing would require multiple opening and closing evolution of the both valves, including the need to re-energize and de-energize the circuit breaker for MO-2374. Multiple opening and closing of MO-2373 has the potential to increase drywell leakage, which the backseating operation has previously restored to normal levels.

As previously discussed, quarterly exercise testing of both valves with MO-2373 on its backseat requires multiple circuit breaker manipulations. The quarterly test starts with MO-2373 being stroke timed closed. Next, the circuit breaker for MO-2374 would have to be closed to restore power to MO-2374. MO-2374 would be stroke timed open and closed, and then the circuit breaker for MO-2374 would be reopened. MO-2373 would then be stroke-timed open and placed on its backseat to reduce unidentified drywell leakage resulting from the packing leak. This evolution would be required to be performed each quarter (two more quarterly tests) until the refueling outage in the spring of 2015 when the valve will be repaired.

The repeated backseating of MO-2373 increases the risk of causing damage to the backseat or valve stem as described in NRC Information Notice 87-40, "Backseating Valves Routinely to Prevent Packing Leakage." Each time that a valve is placed on its backseat requires opening the circuit breaker and connecting a reduced voltage source to the motor-operated valve bypassing the open circuit until the motor is stalled. The reduced voltage source is then removed and the circuit breaker is closed. Repeatedly performing this evolution increases the potential for human errors to occur. Motor damage could also occur if the locked-rotor current is in excess of 15 seconds. If reduced voltage is not properly controlled during the evolution, then the valve backseat or stem may be damaged. Finally, an increase in unidentified drywell leakage, such as might occur from repeated cycling of MO-2373, could ultimately result in a Technical Specification required shutdown.

In NUREG 1482, "Guidelines for Inservice Testing at Nuclear Power Plants: Inservice Testing of Pumps and Valves and Inservice Examination and Testing of Dynamic Restraints (Snubbers) at Nuclear Power Plants - Final Report," Revision 2, Section 3.1.1, it states that a licensee may request relief from quarterly testing where such testing would impose a hardship, such as entering a limiting condition for operations of 3 to 4 hours in duration or repositioning a circuit breaker from "off" to "on." Other acceptable reasons for relief include the need to keep personnel radiation exposure as low as reasonably achievable (ALARA), and personnel safety.

Repair of MO-2373 valve packing would require entry into the drywell (i.e., primary containment). Entry into the drywell requires the plant to either enter Mode 3 (Hot Shutdown) or

reduce reactor power below 10 percent to minimize radiation levels. Personnel entry into the drywell with the plant at operation increases risk due to radiation exposure and does not support the practice of maintaining ALARA. Drywell entry presents a personnel safety concern due to high ambient temperatures, and it is typically inaccessible during normal power operation due to being inerted with nitrogen gas.

Additionally, maneuvering the reactor to below 10 percent power or into Mode 3 involves an inherent risk and increases the nuclear safety risks due to cycling plant equipment. The licensee states that maintaining the packing leak isolated with the MO-2373 backseated in the open position and MO-2374 closed is the lower risk option.

For all of these reasons, NSPM states that with the current plant configuration the quarterly exercise testing of MO-2373 and MO-2374 involves a hardship. There is not a sufficient corresponding increase in the level of safety versus the potential to increase drywell unidentified leakage or cause further damage to MO-2373.

Proposed Alternative

The main steam line drain valves are exercise tested quarterly. The present configuration of having MO-2373 backseated in the open position to decrease drywell leakage, and closing and de-energizing MO-2374 to isolate the containment penetration, is a temporary configuration. Quarterly exercise testing of the MO-2373 from the backseated position increases vulnerability of having unacceptable drywell leakage, for which the backseating operation was previously performed and which reduced drywell leakage to acceptable levels.

NSPM proposes to stroke MO-2373 and MO-2374 during the next MNGP refueling outage in lieu of the current quarterly exercise testing. Both valves have successfully passed each quarterly exercise test since plant startup from the 2013 refueling outage. Historical exercise trending results for both valves for performances prior to the 2013 refueling outage are consistent with current cycle results.

Both MO-2373 and MO-2374 are normally closed during power operation. The valves safety function is to close to prevent inventory loss following a main steam line pipe break outside containment and to provide containment isolation. The proposed operating configuration for the remainder of the cycle maintains the required safety function of containment isolation. Multiple backseating evolutions of MO-2373 could potentially result in either backseat or stem damage, and quarterly exercise testing unnecessarily challenges this safety function. Also, since both valves are normally closed during power operation, there are no operational reasons to require stroking of these valves during this period.

NSPM requests to extend the exercise testing due to the hardship without a compensating increase in the level of quality and safety presented by the temporary configuration of the main steam line drain valves. There is reasonable assurance that these valves will perform their safety function to close to prevent inventory loss following main steam line pipe breaks outside containment and to provide containment isolation. The proposed alternative identified in this relief request shall be utilized until the next MNGP refueling outage in spring of 2015.

3.2 NRC Staff Evaluation

ASME OM Code requirement ISTC-3510 requires that active Category A and B valves be exercised nominally every three months. In addition, the ASME OM Code specifies that if the exercise tests are not practicable to perform during power operation, the test may be deferred to either cold shutdowns or refueling outages.

The licensee has been exercise testing the valves noted in Table 1 nominally every three months. However, following the exercise testing completed in May 2014, there was a noted increase in drywell unidentified leakage due to possible valve packing leakage from MO-2373. Continued operation of MO-2373 in its normally closed position could mask or potentially challenge the technical specification acceptance criteria for reactor coolant system operational leakage associated with unidentified leakage. Repair of the valve packing would require the plant either reduce reactor power or enter Mode 3.

To preclude a potential plant power reduction or shutdown, the licensee electrically backseated MO-2373 to seal off the packing area, operationally tested it from this configuration, and then re-opened it on the backseat. Unidentified leakage in the drywell returned to expected levels, thus supporting the most likely source of the increased leakage to be from MO-2373 packing.

Continuation with quarterly exercise testing and maintaining a normally closed valve position could result in an unnecessary plant shutdown which is considered an impractical condition as noted in NUREG-1482 Revision 2, Section 2.4.5. Continuation with the quarterly valve exercise testing and returning the faulty valve to a backseated configuration requires several special valve stroke manipulations at the motor control center. This represents an additional hardship or unusual difficulty without a compensating increase in the level of quality or safety.

The licensee proposes to maintain the current configuration of maintaining MO-2374 in the closed (i.e., safety) position with the valve motor electrically de-energized, and with MO-2373 in the full-open and backseated position with electrical power provided to maintain isolation capability on receipt of an automatic close signal. This configuration will be maintained until maintenance can be performed at the next refueling outage, currently scheduled for the spring of 2015.

The NRC staff finds that the proposed alternative is within the ASME OM Code guidelines for deferring impractical exercise testing to the refueling outage and provides reasonable assurance that the components remain operationally ready.

4.0 CONCLUSION

As set forth above, the NRC staff determines that the proposed alternative described in alternative request VR 05 provides reasonable assurance that valves listed in Table 1 are operationally ready. Accordingly, the staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(ii), and is in compliance with the ASME OM Code requirements. Therefore, the NRC staff authorizes the proposed alternative in request VR 05 at MNGP for the fifth IST interval which began on September 1, 2012, and is currently scheduled to end on August 31, 2022. The proposed alternative is only authorized until completion of the MNGP spring 2015 refueling outage.

All other ASME OM Code requirements for which relief was not specifically requested and approved in the subject request for relief remain applicable.

Principle Contributor: Michael Farnan, NRR

Date of issuance: August 27, 2014

K. Fili

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If you have any questions, please contact Terry Beltz at (301) 415-3049 or via e-mail at Terry.Beltz@nrc.gov.

Sincerely,

/RA/

David L. Pelton, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-263

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Inspection Interval Alternative Request No. VR 05

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* via e-mail dated August 7, 2014

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