



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

December 21, 2010

Mr. Timothy J. O'Connor  
Site Vice President  
Monticello Nuclear Generating Plant  
Northern States Power Company - Minnesota (NSPM)  
2807 West County Road 75  
Monticello, MN 55362-9637

**SUBJECT: MONTICELLO NUCLEAR GENERATION PLANT (MNGP) – REQUEST FOR RELIEF NO. 19, CONCERNING EXAMINATION COVERAGE OF CERTAIN REACTOR VESSEL NOZZLE-TO-VESSEL WELDS (TAC NO. ME3937)**

Dear Mr. O'Connor:

By letter dated May 6, 2010, as supplemented by letter dated September 29, 2010, NSPM submitted Request for Relief No. 19 for the fourth 10-Year Inservice Inspection interval for MNGP pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(g)(5)(iii). This relief request is concerning examination coverage for certain reactor vessel nozzle-to-vessel welds.

The NRC staff has completed review of NSPM's submittals and agrees that relief can be granted pursuant to 10 CFR 50.55a(g)(6)(i) for MNGP's fourth 10-year Inservice Inspection interval; details can be found in the enclosed safety evaluation. The NRC staff has determined that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life, or property, or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed.

Should you have any questions, please contact Mr. Peter Tam, the MNGP Project Manager, at 301-415-1451.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Pascarelli".

Robert J. Pascarelli, Chief  
Plant Licensing Branch III-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-263

Enclosure: Safety Evaluation

cc w/encl: Distribution via ListServ



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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

NORTHERN STATES POWER COMPANY OF MINNESOTA (NSPM)

MONTICELLO NUCLEAR GENERATING PLANT

FOURTH 10-YEAR INSERVICE INSPECTION PROGRAM

RELIEF REQUEST NO. 19

DOCKET NO. 50-263

**1.0 INTRODUCTION**

By letter dated May 6, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML101300050), as supplemented by letter dated September 29, 2010 (ADAMS Accession No. ML102720729), Northern States Power Company – Minnesota (NSPM), submitted Request for Relief RR-19 for the Fourth 10-Year Inservice Inspection (ISI) interval for the Monticello Nuclear Generating Plant (Monticello) pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g)(5)(iii). Approval of this request would allow the licensee to achieve less than the *American Society of Mechanical Engineers Boiler and Pressure Vessel Code* (ASME Code) required examination coverage for reactor vessel longitudinal welds for the Fourth 10-year ISI interval. The licensee stated that during the fourth 10-year ISI interval examinations of nozzle-to-vessel welds N-2A NV, N-3C NV, N-4B NV, N-6B NV, N-7 NV, N-8B NV, and N-10 NV did not meet ASME Code requirements for coverage. All of these welds fall under the requirements of the 1995 Edition of the ASME Code with 1996 Addenda, Section XI, IWB-2500-1, Category B-D, Item B3.90 for the fourth ISI interval.

**2.0 REGULATORY EVALUATION**

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2 and 3 components (including supports) must meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that ISI of components and system pressure tests conducted during the 10-year intervals be in compliance with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b), 12 months prior to the start of the 120-month interval. The ASME Code of record for the Monticello fourth ISI interval is the 1995 Edition of the ASME Code, Section XI with 1996 addenda. This edition of the ASME Code requires examination of "essentially 100 percent" of ASME Code Category B-D, Item B3.90.

Enclosure

The requirement at 10 CFR 50.55a(g)(6)(i) states that the Commission will evaluate determinations [submitted by the licensee] under paragraphs (g)(5) of this section [10 CFR 50.55a] that code requirements are impractical. The Commission may grant such relief and may impose such alternative requirements as it determines are authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

### 3.0 TECHNICAL EVALUATION

The 1995 Edition of the ASME Code with 1996 addenda, Section XI, Category B-D, Table IWB-2500-1, Item No. B3.90 component examinations require a volumetric examination of the reactor pressure vessel (RPV) nozzle-to-vessel welds. The extent of the examination is shown in Figure IWB-2500-7 of the ASME Code.

The licensee requested relief from the examination of certain RPV nozzle-to-vessel welds; these welds are identified as N-2A NV, N-3C NV, N-4B NV, N-6B NV, N-7 NV, N-8B NV, and N-10 NV, all of which are Item No. B3.90 components. Specifically, the licensee requested relief from meeting the required inspection coverage (i.e., "essentially 100 percent") of the ASME Code requirements for these welds.

The licensee stated that:

Pursuant to 10 CFR 50.55a(g)(5)(iii), NSPM requests authorization of an alternative to the requirements of ASME [Code.] Section XI, Table IWB-2500-1, Category B-D, Item B3.90, and proposes to utilize [the already completed examinations] as acceptable alternatives that provide reasonable assurance of continued structural integrity.

The licensee further stated that:

Due to the design of [the] welds it was not feasible to effectively perform a volumetric examination of "essentially 100 percent" of the required volume. The nozzle-to-vessel welds are accessible from the vessel plate side of the weld and are examined to the extent practical with qualified techniques, but the curvature of the nozzle forging and proximity to the weld precludes obtaining further coverage of the excluded areas within the outer 85 percent of the weld volume.

The licensee stated that no unacceptable flaws were detected with the inspection techniques and that no pattern of degradation was found in this or previous inspections of these and similar components. The licensee also stated that no further coverage was achievable or practical using the latest qualified ultrasonic testing (UT) technology, nor by other methods such as radiography. Finally, the licensee noted that VT-2 (visual) examinations performed as part of system pressure testing in 2009 revealed no leakage from the welds of interest.

The NRC staff notes that the 1995 Edition with 1996 Addenda of the ASME Code, Section XI requires a volumetric examination of the nozzle-to-vessel welds that include the volume shown in Figure IWB-2500-7 of the ASME Code. The volumetric examination of the nozzle-to-vessel

welds was conducted via UT. The licensee included diagrams detailing the design challenges to weld examination as Enclosure 3 to the May 6, 2010, submittal. It is clear from these diagrams that the design of the nozzle-to-vessel components precludes achieving the ASME Code-required coverage.

The NRC staff requested that the licensee discuss the results of similar inspections on components with relevance to those for which relief was requested. In the September 29, 2010, letter the licensee identified that nearly all the components for which relief was requested have similar or identical components that have been tested, with no indications found, with the exception of the N-7 NV and N-10 NV welds which are unique in Monticello. For all similar welds, no indications were found.

In aggregate, the number of welds inspected and the overall volume of material scanned provides adequate assurance that the likelihood of undetected degradation mechanisms is extremely small. Additionally the inspections for which relief was requested all achieved coverages of greater than 80 percent, an improvement on historical performance as well as a reassuring coverage in and of itself.

Based on this, the NRC staff concluded that increasing examination weld volume coverage would be highly impractical. This is due to the nature of the obstruction as well as a clean history of inspections on similar welds. Due to the considerable amount of weld volume inspected in this, and previous inspections, the NRC staff concludes that there is reasonable assurance of the integrity of these welds.

#### 4.0 CONCLUSION

The NRC staff agrees that due to the configuration of the Monticello RPV, the ASME Code requirements with respect to weld coverage of the nozzle-to-vessel welds N-2A NV, N-3C NV, N-4B NV, N-6B NV, N-7 NV, N-8B NV, and N-10 NV are impractical. Imposition of the ASME Code requirements would result in significant burden as the nozzles and welds would have to be redesigned. The weld inspection coverage that was achieved by the licensee provides reasonable assurance of the structural integrity of the RPV nozzle-to-vessel welds. Therefore, the licensee's request for relief is granted pursuant to 10 CFR 50.55a(g)(6)(i) for the unit's fourth 10-year ISI interval. The NRC staff has determined that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life, or property, or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed.

All other ASME Code, Section XI requirements for which relief was not specifically requested and approved in the subject request for relief remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: Dan Widrevitz, NRR

Date: December 21, 2010

Mr. Timothy J. O'Connor  
Site Vice President  
Monticello Nuclear Generating Plant  
Northern States Power Company - Minnesota (NSPM)  
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Sincerely,

/RA/

Robert J. Pascarelli, Chief  
Plant Licensing Branch III-1  
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\*Safety evaluation transmitted by e-mail of 12/1/10 (ADAMS Accession No ML103360233).

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