



Monticello Nuclear Generating Plant  
2807 W County Road 75  
Monticello, MN 55362

October 26, 2012

L-MT-12-086  
10 CFR 50.55a(g)

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Monticello Nuclear Generating Plant  
Docket 50-263  
Renewed Facility Operating License No. DPR-22

Response to Request for Additional Information Regarding 10 CFR 50.55a Request RR-004 (TAC ME8068)

- References:
- 1) Letter from Northern States Power Company, a Minnesota corporation (NSPM), d/b/a Xcel Energy to Document Control Desk, "10 CFR 50.55a Requests Associated with the Fifth Ten-Year Inservice Inspection Interval", dated February 28, 2012.
  - 2) NRC Request for Additional Information on ISI Relief Request RR-004 (TAC ME8068)(ADAMS Accession No. ML12198A317), dated July 16, 2012.

Pursuant to 10 CFR 50.55a(g), Northern States Power Company, a Minnesota corporation, d/b/a Xcel Energy (hereafter "NSPM"), the licensee for the Monticello Nuclear Generating Plant (MNGP), requested NRC authorization or approval of 10 CFR 50.55a requests associated with the Fifth Ten-Year Inservice Inspection Interval (ISI) for MNGP (Reference 1). Subsequently, the U. S. Nuclear Regulatory Commission (NRC) issued a Request for Additional Information (RAI) regarding ISI Relief Request RR-004 (Reference 2). The NSPM response to the NRC RAI is provided in the Enclosure.

Summary of Commitments

This letter makes no new commitments and no revisions to existing commitments.

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Should you have questions regarding this letter, please contact Mr. Randy Rippy at (612) 330-6911.

*Anne E. Ward acting for Mark Schimmel*

Mark A. Schimmel  
Site Vice President, Monticello Nuclear Generating Plant  
Northern States Power Company – Minnesota

Enclosure

cc: Administrator, Region III, USNRC  
Project Manager, Monticello, USNRC  
Resident Inspector, Monticello, USNRC

ENCLOSURE

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION  
ISI RELIEF REQUEST RR-004  
DATED JULY 16, 2012

Question 1

***Please specify the expected start and end dates of the Monticello Nuclear Generating Plant Fifth Inservice Inspection Interval.***

Response to Question 1

Interval start date is September 1, 2012.

Interval end date is May 31, 2022.

Question 2

***The staff is concerned about the exemption from volumetric examination for Class 3 weld overlays in Code Case N-661-2, paragraph (6)(c)(1), when the Construction Code does not require that full-penetration butt welds in the same location be volumetrically examined. This exemption is not found in Code Case N-661-1. Please specify whether this exemption from volumetric examination is to be employed.***

Response to Question 2

Yes, Monticello intends to use Code Case N-661-2 as-written, including the provision of 6(c)(1) that states:

Class 3 weld overlays are exempt from volumetric examination when the Construction Code does not require that full-penetration butt welds in the same location be volumetrically examined.<sup>1</sup>

This exemption for certain Class 3 overlays was added to the Code Case in revision 2 (N-661-2) to be consistent with the existing requirement of ASME Section XI Repair/Replacement paragraph IWA-4520(a)(1) that states:

Base metal repairs on Class 3 items are not required to be volumetrically examined when the Construction Code does not require that full-penetration butt welds in the same location be volumetrically examined.<sup>2</sup>

The provision of IWA-4520(a)(1) was incorporated into the ASME Section XI Code in the 2001 Edition with no limiting conditions or prohibitions to its use in 10CFR50.55a.

**Question 2.a.**

***If the exemption of paragraph (6)(c)(1) is to be employed:  
Please state which Construction Code was used for the service water piping and whether the Construction Code would require volumetric examination of a butt weld at the weld overlay site.***

**Response to Question 2.a.**

The Construction Code for the service water piping was United States of America Standard (USAS) / ANSI B31.1

In addition to the B31.1 Code, the piping specification for Monticello construction, Bechtel 5828-M-40, required supplemental NDE requirements over and above the basic B31.1 Code. This was in anticipation of higher quality standards being proposed at the time for nuclear construction. These requirements are assigned for each piping segment in the MNGP Line Designation Tables. The supplemental NDE requirements are detailed in Bechtel specification 5828-M-200. The supplemental NDE Requirements progress from "T1" through "T4" where "T1" has the most stringent NDE requirements and "T4" least.

Neither the B31.1 Code nor the 5828-M-200 specification "T4" designation require volumetric examinations for piping butt welds on the service water piping.

**Question 2.b.**

***If the exemption of paragraph (6)(c)(1) is to be employed:  
Provide detailed technical justification for assurance of the structural integrity of the weld overlay if it is not volumetrically examined.***

**Response to Question 2.b.**

The structural integrity of the weld overlay without volumetric examination as a base metal repair is justified by several factors prescribed throughout Code Case N-661-2:

- 1) The repair is only applicable for cases of internal wall thinning of carbon steel on raw water systems, and excludes any form of corrosion assisted cracking or any other form of cracking.<sup>3</sup>
- 2) Prior to overlay, the defective area is fully evaluated to understand the existing and predicted conditions and to verify that no other conditions

are present in the adjacent areas that will effect the integrity of the overlaid piping.<sup>4</sup> Because the degradation mechanisms prompting the need for weld overlay are located on the inside of the piping and are not visible, except for a limited amount when through wall conditions have occurred, the methods employed to interrogate the area in support of the evaluation are primarily volumetric wall thickness measurement techniques such as ultrasonic examination, but radiography may also be used.

- 3) The overlay is a robust, engineered overlay with specific pre-qualified design parameters, including the option for design by Proof Test Qualification of a mockup, which are prescribed in Code Case Sections 3.3, 3.4, and 3.5.<sup>5</sup>
- 4) If the overlay is not pre-qualified by 3.3, 3.4, or 3.5, it must meet Construction Code or ASME Section III design parameters, including shrinkage effects of the overlay on the piping, stress concentrations from the overlay or the existing and predicted internal configurations, and flexibility analysis if required by the original Construction Code.<sup>6</sup>
- 5) The same area may only be overlaid once.<sup>7</sup>
- 6) The life of an overlay is defined:
  - a. If overlay is applied to a wet surface, the permitted life of the overlay specified by Code Case N-661-2 is one fuel cycle.<sup>8</sup> However, as stated in the submitted Request RR-004, on page 3 of 5, the overlay repair is only acceptable until the next refueling outage.
  - b. If the degradation mechanism is not determined, the permitted life of the overlay specified by Code Case N-661-2 is one fuel cycle.<sup>9</sup> However, as stated in the submitted Request RR-004, on page 3 of 5, the overlay repair is only acceptable until the next refueling outage.
  - c. The maximum life of the overlay is two fuel cycles, unless examinations during each of the two fuel cycles are performed to establish the permitted life of the overlay.<sup>10</sup>
- 7) Prior to application of the overlay, the entire surface of the overlay area is examined with magnetic particle or liquid penetrant methods, with ASME Section III acceptance criteria.<sup>11</sup>
- 8) Subsequent to overlay, or in specific cases, during the overlay process, the overlay surface is prepared as-needed, and examined with magnetic particle or liquid penetrant methods with ASME Section III acceptance criteria.<sup>12</sup>
- 9) The completed weld overlay is examined to verify acceptable wall thickness.<sup>13</sup> These examinations are typically performed by volumetric wall thickness measurement techniques such as ultrasonic examination, but radiography may also be used.
- 10) Overlay is performed by qualified welding procedures.<sup>14</sup>
- 11) Provisions are included for water-backed welding and open root welding for through-wall conditions.<sup>15</sup>

- 12) Additional examination requirements are imposed for cases of water-backed welding and when welding over through-wall conditions.<sup>16</sup>
- 13) Inservice examinations are required to verify that minimum wall thickness is not violated over the life of the overlay. Initial benchmarking or pre-service examination is required to use for comparison of subsequent inservice examinations.<sup>17</sup> These examinations are typically performed by volumetric wall thickness measurement techniques such as ultrasonic examination, but radiography may also be used.

In summary and as described above, although volumetric examination as a base metal repair may not be required under the exemption provisions of 6(c)(1), a robust engineered overlay design, as well as several examination techniques and evaluations utilized to verify pre-overlay, post-overlay, and inservice conditions provide reasonable assurance that structural integrity will be maintained over the life of the overlay.

## Notes

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- 1 ASME Section XI Code Case N-661-2, Section 6(c)(1)
- 2 ASME Section XI, 2007 Edition with Addenda through 2008
- 3 ASME Section XI Code Case N-661-2, Reply (to the Inquiry)
- 4 ASME Section XI Code Case N-661-2, Section 2
- 5 ASME Section XI Code Case N-661-2, Section 3
- 6 ASME Section XI Code Case N-661-2, Section 3.2
- 7 ASME Section XI Code Case N-661-2, Section 1(d)
- 8 ASME Section XI Code Case N-661-2, Section 4(b)
- 9 ASME Section XI Code Case N-661-2, Section 7(c)
- 10 ASME Section XI Code Case N-661-2, Section 7(c)
- 11 ASME Section XI Code Case N-661-2, Section 5(a)
- 12 ASME Section XI Code Case N-661-2, Sections 6(a), 5(b), and 4(a)
- 13 ASME Section XI Code Case N-661-2, Section 6(b)
- 14 ASME Section XI Code Case N-661-2, Section 5(c)
- 15 ASME Section XI Code Case N-661-2, Sections 4(a) and 5(b)
- 16 ASME Section XI Code Case N-661-2, Sections 4(a) and 5(b)
- 17 ASME Section XI Code Case N-661-2, Sections 7(a) and 7(b)