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10 CFR 50.55a

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

Prairie Island Nuclear Generating Plant Units 1 and 2
Dockets 50-282 and 50-306
Renewed License Nos. DPR-42 and DPR-60

10 CFR 50.55a Requests 1-RR-4-9, 2-RR-4-9 and 2-RR-4-10 Associated with the Fourth Ten-Year Interval for the Inservice Inspection Program

Pursuant to 10 CFR 50.55a, Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (hereafter "NSPM"), hereby requests NRC approval of 10 CFR 50.55a Requests numbered 1-RR-4-9, 2-RR-4-9 and 2-RR-4-10 for the fourth ten-year interval for the Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2, Inservice Inspection (ISI) Program. The details of these 10 CFR 50.55a requests are provided in the enclosure to this letter.

NSPM requests approval of these 10 CFR 50.55a requests by September 15, 2015, to support examinations in the Unit 2 refueling outage 2R29.

If there are any questions or if additional information is needed, please contact Mr. Dale Vincent, P.E., at 651-267-1736.

Summary of Commitments

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

Scott Sharp FOR Kevin Davison

Kevin Davison
Site Vice President, Prairie Island Nuclear Generating Plant
Northern States Power Company - Minnesota

Enclosures (1)

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

Enclosure

10 CFR 50.55a Request 1-RR-4-9, Rev. 0 (PINGP Unit 1)
10 CFR 50.55a Request 2-RR-4-9, Rev. 0 (PINGP Unit 2)
Alternative Requirements for Pressure Testing
Safety Injection (SI) Accumulator Nitrogen Piping in Containment

Proposed Alternative
in Accordance with 10 CFR 50.55a (a)(3)(i)

Alternate Provides Acceptable Level of Quality and Safety

1. ASME Code Component(s) Affected

Code Class:	2
Reference:	IWC-5200
Examination Category:	C-H
Item Number:	C7.10
Description:	SI Accumulator Nitrogen Piping inside the Containment Vessel
Component Number:	Unit 1: Line No. 1-SI-19C Unit 2: Line No. 1-2SI-19A

2. Applicable Code Edition and Addenda

The Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2, is in the third period of the Fourth 10-Year Inservice Inspection (ISI) Program interval, and is required to follow the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," (ASME Section XI), 1998 Edition through the 2000 Addenda. The fourth 10-Year inspection interval is effective December 21, 2004 through December 20, 2014 with extension through the end of the Unit 2 refueling outage 2R29 as allowed by IWA-2430(d).

3. Applicable Code Requirements

The 1998 Edition through the 2000 Addenda of ASME Section XI contains Table IWC-2500-1, Examination Category C-H, and Item Number C7.10 which requires a system leakage test meeting the requirements of IWC-5200. The pressure test frequency is once per inspection period.

1-RR-4-9 and 2-RR-4-9 (continued)

IWC-5210 states:

(a) Pressure retaining components shall be tested at the frequency stated in, and visually examined by the methods specified in Table IWC-2500-1, Examination Category C-H.

(b)(1) The system pressure tests and visual examinations shall be conducted in accordance with IWA-5000 and this Article. The contained fluid in the system shall serve as the pressurizing medium. (2) Alternatively, steam systems may use either water or gas as the pressurizing medium. When gas is the pressurizing medium, the test procedure shall include methods for detection and location of through-wall leakage from components of the system tested.

4. Reason for Request

The SI accumulator nitrogen piping in containment is used to charge the SI system accumulators. The nitrogen supply valve, nitrogen containment isolation valve, and nitrogen valves to each accumulator are briefly opened to pressurize the SI accumulators to approximately 750 psig at the beginning of each fuel cycle. The containment nitrogen isolation valve and nitrogen valves to the accumulators are normally closed and only opened under administrative control. The nitrogen piping in containment is 1 inch nominal pipe size (NPS) schedule 80, stainless steel in Unit 1 and carbon steel in Unit 2. See Figures 1 and 2 below.

For the first inspection period and most of the second inspection period of the fourth 10-year ISI interval, the nitrogen piping upstream of the nitrogen valves to each accumulator was considered ASME Section XI non-code class. Therefore, the nitrogen piping upstream of the accumulator control valves was not pressure tested in the first two periods of the current fourth 10-year ISI interval.

In the 2010 to 2011 time frame, the nitrogen lines to the accumulators in containment were reclassified as ASME Section XI Code Class 2 by the site Q-List Validation Project. The lines were assigned safety functions of: maintain system pressure boundary (nitrogen); accumulator safety injection; and maintain containment operability.

Pressure testing the lines in accordance with the code is complicated by the fact that the "contained fluid in the system" per the requirements of IWC-5210(b)(1) is a colorless gas and would not show visual indication of leakage. Pressure testing with water is complicated by the fact much of the piping is not readily accessible. In addition, a pressure test with water on a system designed for gas raises concerns with potential water hammer and drainage.

1-RR-4-9 and 2-RR-4-9 (continued)

5. Proposed Alternative and Basis for Use

Proposed Alternative:

As an alternative to the requirements of IWC-5210, Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (hereafter "NSPM"), proposes to perform local leak rate testing (LLRT) of the containment nitrogen lines to the accumulators once each period per approved site procedures. The LLRT administrative leakage limit is 4000 cc/min at 46 psig, the containment internal design pressure which exceeds the calculated containment internal pressure for the design basis loss of coolant accident. Leakage above the 4000 cc/min limit would require additional actions to determine the source of the leakage. Although the primary purpose of LLRT is to test containment isolation valves (CV-31440, CV-31441, CV-31444 and CV-31242 for Unit 1, and CV-31554, CV-31511, CV-31512 and CV-31244 for Unit 2), it also tests the nitrogen piping from the containment isolation valve to the nitrogen valves to each accumulator. The remaining code class nitrogen piping from the accumulator valves (CV-31441, CV-31444, CV-31511, and CV-31512) to the accumulators will be tested in accordance with code requirements.

Performance of LLRT once each inspection period provides an acceptable level of quality and safety. The nitrogen lines to the accumulators are only placed in service when charging the SI accumulators at the beginning of each fuel cycle prior to power operation. At power operation the nitrogen to accumulator lines are isolated at both SI accumulators and just outside the containment shield building by administratively controlled control valves. As such, the nitrogen charging lines have no active role in the prevention or mitigation of an accident. The nitrogen piping pressure boundary safety functions, maintain system pressure boundary (nitrogen) and maintain containment operability, are adequately tested by periodic LLRT. No degradation of the lines is expected since they provide inert gas service. As such, there is no significant risk of corrosion, cracking or other degradation.

Basis for Relief:

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested from the requirements of ASME Section XI, IWA-5210 on the basis that the proposed alternative provides an acceptable level of quality and safety.

As an alternative to the requirements of IWC-5200 for pressure testing containment nitrogen lines, NSPM requests approval to perform the LLRT once each period at a pressure of 46 psig with an acceptance criteria of no more than 4000 cc/min leakage.

1-RR-4-9 and 2-RR-4-9 (continued)

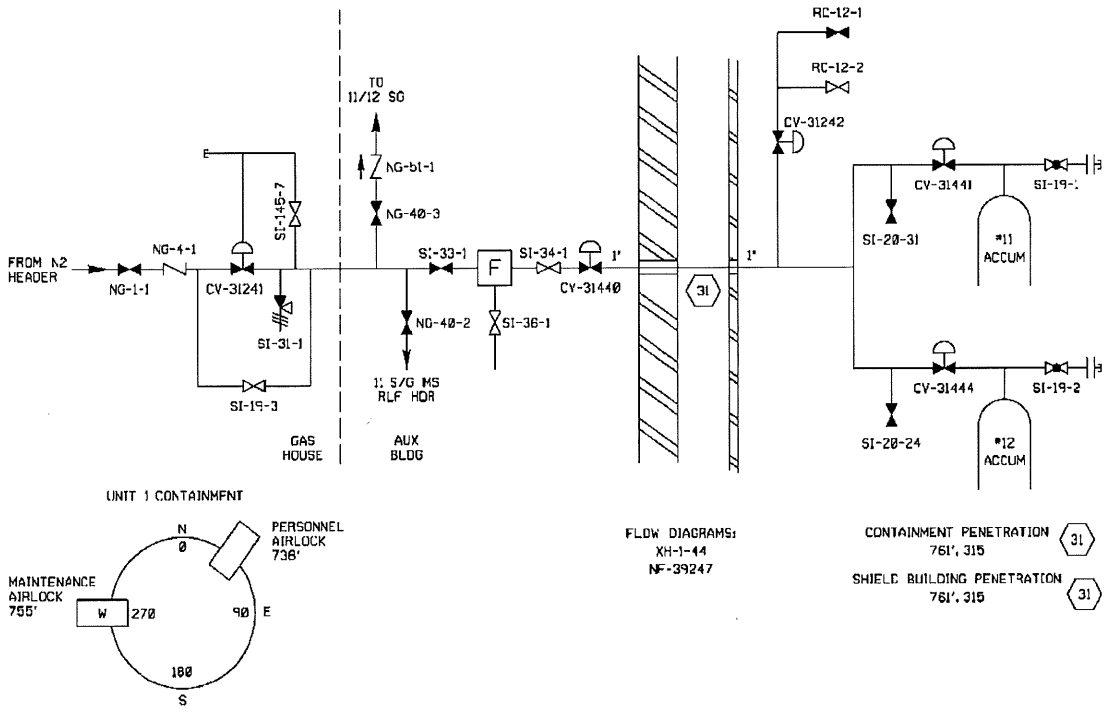
6. Duration of Proposed Alternative

Relief is requested for the remainder of the fourth 10-year inspection interval of the Inservice Inspection Program for PINGP Units 1 and 2. The fourth 10-year inspection interval is effective for Units 1 and 2 from December 21, 2004 through December 20, 2014, with extension through the end of the Unit 2 refueling outage 2R29 as allowed by IWA-2430(d).

1-RR-4-9 and 2-RR-4-9 (continued)

Figure 1

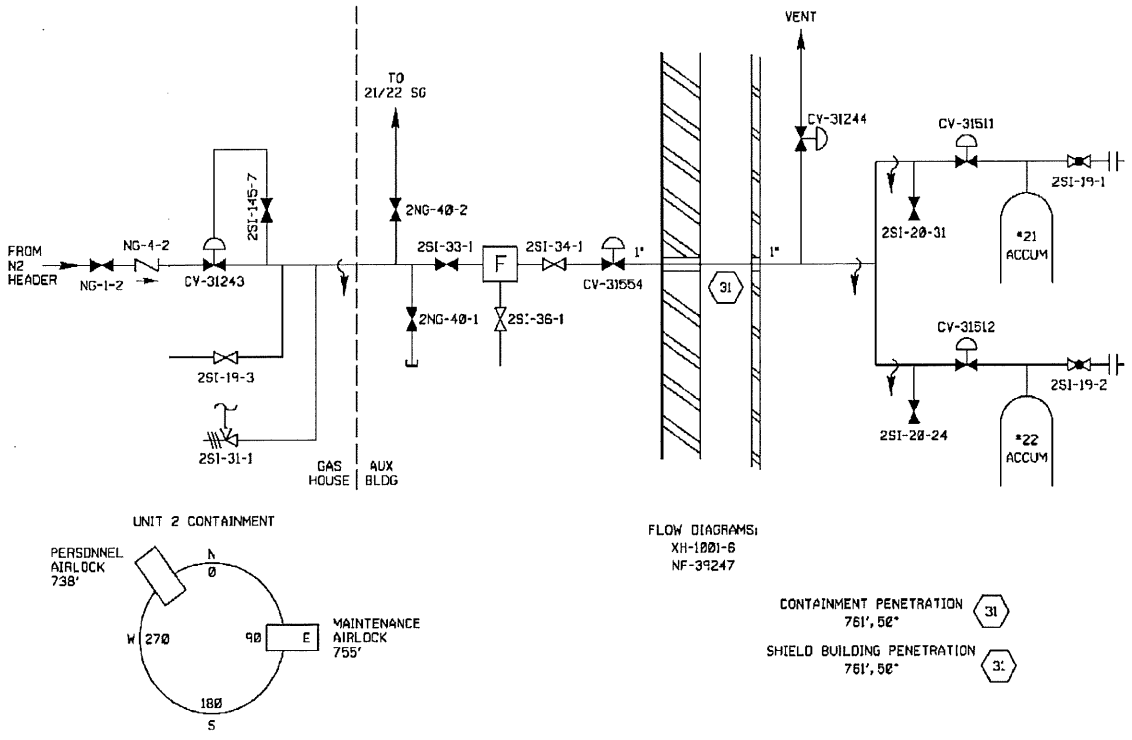
Unit 1 Nitrogen to Accumulators Sketch



1-RR-4-9 and 2-RR-4-9 (continued)

Figure 2

Unit 2 Nitrogen to Accumulators Sketch



10 CFR 50.55a Request 2-RR-4-10, Rev. 0 (PINGP Unit 2)
Alternative Acceptance Criteria for
22 Replacement Steam Generator Indication of Flaw

Proposed Alternative
in Accordance with 10 CFR 50.55a (a)(3)(i)

Alternate Provides Acceptable Level of Quality and Safety

1. ASME Code Component(s) Affected

Code Class:	2
Reference:	IWC-3110
Examination Category:	C-A
Item Number:	C1.30
Description:	Preservice Ultrasonic Test (UT) Indication of a Flaw in 22 Steam Generator Tubesheet-to-Shell Weld
Component Number:	234-012

2. Applicable Code Edition and Addenda

PINGP Unit 2 is in the third period of the Fourth 10-Year Inservice Inspection (ISI) Program interval, and is required to follow the ASME Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," (ASME Section XI), 1998 Edition through the 2000 Addenda. The fourth 10-Year inspection interval is effective December 21, 2004 through December 20, 2014 with extension through the end of the Unit 2 refueling outage 2R29 as allowed by IWA-2430(d).

3. Applicable Code Requirement

The 1998 Edition through the 2000 Addenda of ASME Section XI contains paragraph IWC-3112 which specifies acceptance of preservice volumetric and surface examinations as follows:

(a) A component whose examination either confirms the absence of or detects flaws that do not exceed the standards of Table IWC-3410-1 shall be acceptable for service, provided the verified flaws are recorded in accordance with the requirements of IWA-1400(h) and IWA-6230 in terms of location, size, shape, orientation, and distribution within the component.

(b) A component whose examination detects flaws that meet the nondestructive examination standards of NC-2500 and NC-5300 and are documented in Quality Assurance Records (NCA-4134.17) shall be acceptable.

(c) A component whose examination detects flaws other than the flaws of IWC-

2-RR-4-10 (continued)

3112(b) that exceed the standards of Table IWC-3410-1 is unacceptable for service unless the component is corrected by a repair/replacement activity to the extent necessary to meet the acceptance standards prior to placement of the component in service.

4. Reason for Request

During the 2R28 refueling outage in the fall of 2013, NSPM identified an indication of a flaw in the tubesheet-to-shell weld of the 22 Replacement Steam Generator (RSG) during a code required preservice UT. The flaw was characterized as 0.44" in length, subsurface with a minimum depth of 0.82" and maximum depth of 1.10" from the outside surface. The material thickness at the indication was noted as 2.90".

The shell side of the 22 RSG is ASME Section XI, Class 2, and therefore falls under the rules of Subsection IWC for Class 2 Components. To be acceptable the flaw would need to meet one of the acceptance criteria of paragraph IWC-3112. IWC-3112 recognizes the following acceptance criteria:

(a) A component whose examination either confirms the absence of or detects flaws that do not exceed the standards of Table IWC-3410-1 shall be acceptable for service, provided the verified flaws are recorded in accordance with the requirements of IWA-1400(h) and IWA-6230 in terms of location, size, shape, orientation, and distribution within the component.

The flaw does not meet this criterion because Table IWC-3510-1 (which is referenced by Table IWC-3410-1) is limited to materials with specified minimum yield strength of 50 ksi or less at 100 degrees F. The 22 RSG is fabricated from SA-508 Grade 3 Class 2 material with a minimum yield strength of 65 ksi.

(b) A component whose examination detects flaws that meet the nondestructive examination standards of NC-2500 and NC-5300 and are documented in Quality Assurance Records (NCA-4134.17) shall be acceptable.

The flaw does not meet this criterion because the 22 RSG was fabricated under the rules of ASME Section III Subsection NB for Class 1 components. IWC-3112(b) specifically requires meeting the examination standards of ASME Section III Subsection NC for class 2 components.

(c) A component whose examination detects flaws other than the flaws of IWC-3112(b) that exceed the standards of Table IWC-3410-1 is unacceptable for service unless the component is corrected by a repair/replacement activity to the extent necessary to meet the acceptance standards prior to placement of the component in service.

The flaw does not meet this criterion because the flaw was left in place when the 22 RSG was put in service.

2-RR-4-10 (continued)

5. Proposed Alternative and Basis for Use

Proposed Alternative

As an alternative to meeting the requirements of IWC-3112, NSPM proposes to meet the requirements of IWB-3112 for the acceptance of preservice volumetric and surface examinations of Class 1 components.

Basis for Use

The application of IWB is appropriate as the RSG was designed, fabricated, examined and accepted to the requirements of ASME Section III, Subsection NB for Class 1 components.

IWB-3112(a) states:

> A component whose volumetric or surface examination either confirms the absence of or detects flaws that do not exceed the standards of Table IWB-3410-1 shall be acceptable for service, provided the verified flaws are recorded in accordance with the requirements of IWA-1400(h), IWA-2220(b), and IWA-6230 in terms of location, size, shape, orientation, and distribution within the component.

Table IWB-3410-1 employs the acceptance standard of IWB-3510 which employs Table IWB-3510-1. Table IWB-3510-1 provides for acceptance of planar flaws in, ". . . Ferritic steels that meet the requirements of NB-2331 and G-2110(b) of Section III", with no restriction on the yield strength of the material.

Disposition of the flaw was provided by the vessel fabricator in accordance with the requirements of IWB-3112. This disposition was based on a post fabrication informational UT which characterized the flaw as 0.45" in length at a depth of 0.82" from the outside surface and material thickness of 3.00", which is consistent with the subsequent preservice examination after hydrotest and post weld heat treatment.

This evaluation determined the flaw to be acceptable using Table IWB-3510-1 based on demonstration of adequate material toughness and a depth-to-thickness ratio (a/t) of 5.0% compared to an allowable value of 7.7%.

As an alternative to the requirements of IWC-3110, NSPM requests approval to use the requirements of IWB-3110 for the acceptance of a volumetric indication of a flaw in the 22 Replacement Steam Generator.

6. Duration of Proposed Alternative

Relief is requested for the remainder of the fourth 10-year inspection interval of the Inservice Inspection Program for PINGP Unit 2. The fourth 10-Year inspection

2-RR-4-10 (continued)

interval is effective December 21, 2004 through December 20, 2014 with extension through the end of the Unit 2 refueling outage 2R29 as allowed by IWA-2430(d).