



Nuclear Management Company, LLC
Prairie Island Nuclear Generating Plant
1717 Wakonade Dr. East • Welch MN 55089

February 14, 2003

L-PI-03-015
10CFR50.55a

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

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
DOCKET NOS. 50-282 AND 50-306
LICENSE NOS. DPR-42 AND DPR-60

SUBJECT: Relief Requests for the 3rd 10-year Inservice Inspection Intervals for Unit 1 and Unit 2

Pursuant to 10 CFR 50.55a(a)(3)(i), we request NRC approval of the attached request for the Third Ten-Year Inservice Inspection Intervals for Unit 1 and Unit 2: the relief is requested to use the root mean square (RMS) value of 10 CFR 50.55a(b)(2)(xv)(C)(1) which modifies the depth sizing criterion of American Society of Mechanical Engineers Boiler and Pressure Vessel Section XI, Appendix VIII, Supplement 4, Subparagraph 3.2(a), in lieu of Subparagraph 3.2(c).

The details of the 10 CFR 50.55a(a)(3)(i) request are enclosed in the attached relief requests for Prairie Island Unit 1 and Unit 2 (contained in one document). Prairie Island requests approval by September 1, 2003 to support the refueling outage of Unit 2. The proposed alternative was approved for the Duane Arnold Energy Center by NRC letter dated January 22, 2001.

This letter contains no new commitments and no revisions to existing commitments. Please contact Jack Leveille (651-388-1121, Ext. 4142) if you have any questions related to this letter.

Joseph M. Solymossy
Site Vice President, Prairie Island Nuclear Generating Plant

c: (see next page)

A047

c: Regional Administrator - Region III, NRC
Senior Resident Inspector, NRC
NRR Project Manager, NRC
Chief Boiler Inspector, State of MN
P. Fisher, Hartford Insurance

Attachment: (one document, 2 pages)

Prairie Island Unit 1 – RELIEF REQUEST NUMBER: 10 (Rev. 0)
Prairie Island Unit 2 – RELIEF REQUEST NUMBER: 11 (Rev. 0)

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Appendix VIII Supplement 4

SYSTEM/COMPONENT(S) FOR WHICH RELIEF REQUEST WILL BE USED

Code Class: Class 1
Reference: ASME, Section XI, Appendix VIII, Supplement 4.
(1995 Edition with the 1996 Addenda)
Examination Category: B-A
Item Number: B1.10 , B1.20
Description: Reactor Vessel Head Longitudinal and Circumferential Shell welds
subject to Appendix VIII, Supplement 4, Subparagraph 3.2 (a), and
3.2(c).
Component Numbers: All

CODE AND 10 CFR50.55a REQUIREMENTS:

Appendix VIII, Supplement 4, Subparagraph 3.2(c), of the 1995 Edition with 1996 Addenda of Section XI requires that the UT performance demonstration results be plotted on a two-dimensional plot with the measured depth plotted along the ordinate axis and the true depth plotted along the abscissa axis. For qualification, the plot must satisfy the following statistical parameters: (1) slope of the linear regression line is not less than 0.7; (2) the mean deviation of flaw depth is less than 0.25 inches; and (3) correlation coefficient is not less than 0.70.

PROPOSED ALTERNATIVE:

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested to use the root mean square (RMS) value of 10 CFR 50.55a(b)(2)(xv)(C)(1) which modifies the depth sizing criterion of Appendix VIII, Supplement 4, Subparagraph 3.2(a), in lieu of Subparagraph 3.2(c). As discussed below and demonstrated by the Performance Demonstration Initiative (PDI), this will provide an acceptable level of quality and safety.

BASIS FOR RELIEF REQUEST:

Prairie Island proposes eliminating the use of Supplement 4, Subparagraph 3.2(c), which imposes three statistical parameters for depth sizing. The first parameter, 3.2(c)(1), pertains to the slope of a linear regression line. The linear regression line is the difference between actual versus true value plotted along a through-wall thickness. For Supplement 4 performance demonstrations, a linear regression line of the data is not applicable because the performance demonstrations are performed on test specimens with flaws located in the inner 15 percent through-wall. The differences between actual versus true value produce a tight grouping of results that resemble a shot gun pattern. The slope of a regression line from such data is extremely sensitive to small variations, thus, making the parameter of Subparagraph 3.2(c)(1) a poor and inappropriate acceptance criterion. The second parameter, 3.2(c)(2), pertains to the

mean deviation of flaw depth. The value used in the code is too lax with respect to evaluating flaw depths within the inner 15 percent of wall thickness. Therefore, Prairie Island proposes to use the more appropriate criterion of 0.15 inch RMS of 10 CFR 50.55a(b)(2)(xv)(C)(1), which modifies Subparagraph 3.2(a), as the acceptance criterion. The third parameter, 3.2(c)(3), pertains to a correlation coefficient. The value of the correlation coefficient in Subparagraph 3.2(c)(3) is inappropriate for this application since it is based on the linear regression from Subparagraph 3.2(c)(1).

PDI was aware of the inappropriateness of Subparagraph 3.2(c) early in the development of their program. They brought the issue before the appropriate ASME committee, which formalized eliminating the use of Supplement 4, Subparagraph 3.2(c) in Code Case N-622. NRC staff representatives participated in the discussions and consensus process of the code case. Based on the above, the NRC staff believes that the use of the Subparagraph 3.2(c) requirements in this context is inappropriate and that the proposed alternative to use the RMS value of 10 CFR 50.55a(b)(2)(xv)(C)(1), which modifies the criterion of Appendix VIII, Supplement 4, Subparagraph 3.2(a), in lieu of Subparagraph 3.2(c) will provide an acceptable level of quality and safety'.

IMPLEMENTATION SCHEDULE:

The proposed alternative is requested for the remainder of the 3rd 10 Year Interval of the Inservice Inspection Program for Prairie Island Unit 1 and Unit 2.

REFERENCE:

1. NRC letter, dated January 22, 2001, to Gary Van Middlesworth, Site General Manager, Duane Arnold Energy Center, Subject: Safety Evaluation for Proposed Alternatives to ASME Section XI Inservice Inspection Program Related to Length Sizing Qualification Criterion and Training for Ultrasonic Testing Personnel for the Duane Arnold Energy Center (TAC No. MA8914)