

April 13, 2001

Mr. John H. Mueller
Chief Nuclear Officer
Niagara Mohawk Power Corporation
Nine Mile Point Nuclear Station
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P.O. Box 63
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SUBJECT: NINE MILE POINT NUCLEAR STATION, UNIT NOS. 1 AND 2 - ALTERNATIVE
REGARDING CERTAIN INSERVICE INSPECTION CRITERION (TAC NOS.
MA9803 AND MA9804)

Dear Mr. Mueller:

By letter dated August 31, 2000, Niagara Mohawk Power Corporation (NMPC) requested relief from certain inservice inspection (ISI) criteria required by the American Society of Mechanical Engineers Boiler and Pressure Vessel Code at Nine Mile Point, Unit Nos. 1 and 2. NMPC supplemented the original submittal by letters dated October 26, 2000, December 1, 2000, February 16, 2001, and March 2, 2001.

By letter dated March 29, 2001, the NRC staff authorized alternatives depicted as Relief Requests ISI-16, ISI-17, and ISI-18. That letter also indicated that the staff's work on Relief Request ISI-14 was ongoing. The staff has now completed its review, taking into account the recent revision of 10 CFR 50.55a(b)(2)(xv)(C)(1), which obviated portions of Relief Request ISI-14. The remaining portions of Relief Request ISI-14 are acceptable and are thus authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that an acceptable level of quality and safety has been provided. Details are set forth in the enclosed supplemental safety evaluation.

This completes all the staff's work on the above-listed submittals. Please contact the project manager, Mr. Peter Tam, by telephone at (301) 415-1451 if you have any questions.

Sincerely,

/RA/

Maitri Banerjee, Acting Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-220 and 50-410

Enclosure: Supplemental Safety Evaluation

cc w/encl: See next page

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SUPPLEMENTAL SAFETY EVALUATION
BY THE OFFICE OF NUCLEAR REACTOR REGULATION
ALTERNATIVE TO THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
BOILER AND PRESSURE VESSEL CODE
SECTION XI INSERVICE INSPECTION REQUIREMENTS
NINE MILE POINT NUCLEAR STATION, UNIT NOS. 1 AND 2
NIAGARA MOHAWK POWER CORPORATION
DOCKET NOS. 50-220 AND 50-410

1.0 INTRODUCTION

The inservice inspection (ISI) of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Class 1, Class 2, and Class 3 components is to be performed in accordance with Section XI of the ASME Code and applicable edition and addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). 10 CFR 50.55a(a)(3) states in part that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if the licensee demonstrates that: (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) will meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply 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) twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The ISI Code of Record for Nine Mile Point, Unit 1 - third 10-year ISI interval and Unit 2 - second 10-year ISI interval is the 1989 Edition of Section XI of the ASME Code for both units. The 10-year interval began December 26, 1999, for Unit 1 and April 5, 1998, for Unit 2.

Enclosure

By letter dated August 31, 2000, as supplemented by letters dated October 26, 2000, December 1, 2000, February 16, 2001, and March 2, 2001, Niagara Mohawk Power Corporation (NMPC, or the licensee) requested relief from certain ultrasonic testing (UT) requirements pertaining to UT performance qualification and examinations for the second 10-year ISI interval at Unit 2 and third 10-year ISI interval at Unit 1.

By letter dated March 29, 2001, the NRC staff authorized alternatives contained in Relief Requests ISI-16, ISI-17, and ISI-18. The letter stated that NRC staff actions on Relief Request ISI-14 were ongoing. The reason was that paragraph 10 CFR 50.55a(b)(2)(xv)(C)(1) was in the process of being corrected. The correction revised the wording of 10 CFR 50.55a(b)(2)(xv)(C)(1) which was published in 66 FR 16390, dated March 26, 2001. The revised wording is:

A depth sizing requirement of 0.15 inch RMS shall be used in lieu of the requirement in Subparagraph 3.2(a), and a length sizing requirement of 0.75 inch RMS [root mean square] shall be used in lieu of the requirement in Subparagraph 3.2(b).

With the corrected wording, parts of Relief Request ISI-14 are no longer needed by NMPC. The following section is the staff's evaluation of the balance of Relief Request ISI-14; the numbering of subsections reflect the fact that this document is a supplement to the safety evaluation enclosed with the March 29, 2001, letter.

2.0 EVALUATION

2.4 Relief Request ISI-14, Appendix VIII, Supp. 4, Depth Sizing Qualification Tolerance

2.4.1 Code Requirements for which Relief is Requested

The licensee is requesting relief from the 1995 Edition with 1996 Addenda, Appendix VIII to Section XI of the ASME Code, Supplement 4, Subparagraphs 3.2(b) and 3.2(c).

2.4.2 Licensee's Proposed Alternative to Code

Pursuant to 10 CFR 50.55a(a)(3)(i), the licensee proposed using a length sizing qualification criterion of 0.75 inch RMS error in lieu of Appendix VIII, Supplement 4, Subparagraph 3.2(b), and to use the RMS values 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). The request is for the second 10-year ISI interval for Unit No. 2 and third 10-year ISI interval for Unit No. 1. As stated above, 10 CFR 50.55a(b)(2)(xv)(C)(1) has been revised on March 26, 2001, subsequent to all NMPC's submittals listed in Section 1.0 above.

2.4.3 Evaluation

The revision of 10 CFR 50.55a(b)(2)(xv)(C)(1) obviated the need for authorization of an alternative regarding length sizing.

Supplement 4, Subparagraph 3.2(c), 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.

In the second part of the alternative, NMPC proposed 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 which 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, NMPC proposed 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).

The U.S. nuclear utilities created the Performance Demonstration Initiative (PDI) to implement performance demonstration requirements contained in Appendix VIII of Section XI of the Code. PDI was aware of the inappropriateness of Subparagraph 3.2(c) early in the development of its program. PDI personnel 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. The 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 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), specifically 0.15 inch RMS, 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.

2.4.4 Conclusion

Based on the discussion above, the staff has concluded that the portions of the proposed alternative to use the depth sizing criterion of Appendix VIII, Supplement 4, Subparagraph 3.2(a) as modified by 10 CFR 50.55a(b)(2)(xv)(C)(1), in lieu of Subparagraph 3.2(c) will provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the portion of proposed alternative ISI-14 as discussed above is authorized for the second 10-year ISI interval for Unit 2 and the third ISI interval for Unit 1.

3.0 CONCLUSION

The NRC staff reviewed the licensee's technical justification for the proposed alternative under Relief Requests ISI-14. Portions of the proposed alternative have been obviated by the recent revision of 10 CFR 50.55a(b)(2)(xv)(C)(1). The staff found the remainder of the proposed alternative acceptable (see above Section 2.4.4) and therefore authorizes them pursuant to 10 CFR 50.55a(a)(3)(i) for the specified durations.

Principal Contributors: D. Naujock and T. Chan

Date: April 13, 2001