

March 29, 2001

Mr. John H. Mueller
Chief Nuclear Officer
Niagara Mohawk Power Corporation
Nine Mile Point Nuclear Station
Operations Building, Second Floor
P. O. Box 63
Lycoming, NY 13093

SUBJECT: NINE MILE POINT NUCLEAR STATION, UNIT NOS. 1 AND 2 - ALTERNATIVES
REGARDING CERTAIN INSERVICE INSPECTION CRITERIA (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 criteria required by the American Society of Mechanical Engineers Boiler and Pressure Vessel Code at Nine Mile Point, Units 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 the December 1, 2000, supplement, NMPC withdrew Relief Requests ISI-15, ISI-19, and ISI-20.

The NRC staff evaluated and found Relief Requests ISI-16, ISI-17, and ISI-18 acceptable. Thus, NMPC's proposed alternatives are authorized pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that they would provide an acceptable level of quality and safety. Details of the staff's evaluation and the applicable durations of these alternatives are delineated in the enclosed safety evaluation.

Relief Request ISI-14 will be addressed by separate correspondence. Please contact the project manager, Mr. Peter Tam, by telephone at (301) 415-1451 or by electronic mail (pst@nrc.gov) if you have any questions.

Sincerely,

/RA/ E. Adensam for

Marsha Gamberoni, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-220 and 50-410

Enclosure: Safety Evaluation

cc w/encl: See next page

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Nine Mile Point Nuclear Station
Unit Nos. 1 and 2

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Resident Inspector
U.S. Nuclear Regulatory Commission
P.O. Box 126
Lycoming, NY 13093

Mr. Jim Rettberg
New York State Electric & Gas
Corporation
Corporate Drive
Kirkwood Industrial Park
P.O. Box 5224
Binghamton, NY 13902-5224

Supervisor
Town of Scriba
Route 8, Box 382
Oswego, NY 13126

Mr. John V. Vinqvist, MATS Inc.
P.O. Box 63
Lycoming, NY 13093

Charles Donaldson, Esquire
Assistant Attorney General
New York Department of Law
120 Broadway
New York, NY 10271

Mr. Paul D. Eddy
Electric Division
NYS Department of Public Service
Agency Building 3
Empire State Plaza
Albany, NY 12223

Mr. Timothy S. Carey
Chair and Executive Director
State Consumer Protection Board
5 Empire State Plaza, Suite 2101
Albany, NY 12223

Mark J. Wetterhahn, Esquire
Winston & Strawn
1400 L Street, NW
Washington, DC 20005-3502

Gary D. Wilson, Esquire
Niagara Mohawk Power Corporation
300 Erie Boulevard West
Syracuse, NY 13202

Mr. William F. Flynn, President
New York State Energy, Research,
and Development Authority
Corporate Plaza West
286 Washington Avenue Extension
Albany, NY 12203-6399

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.

By letter dated August 31, 2000, as supplemented by letters dated October 26, 2000, and December 1, 2000, and February 16, 2001, and March 2, 2001, Niagara Mohawk Power Corporation (NMPC, 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. Specifically, Relief Request ISI-16 proposed delaying implementation of ASNT CP-189 until after the scheduled outages, ISI-17 proposed using a reduced examination volume for nozzle-to-RPV welds, and ISI-18 proposed conducting annual training for UT according to 10 CFR 50.55a(b)(2)(xiv). In the supplement dated December 1, 2000, the licensee withdrew relief requests ISI-15, ISI-19, and ISI-20.

NRC staff actions on relief request ISI-14 are ongoing, and will be addressed by separate correspondence in the future.

2.0 EVALUATION

2.1 Relief Request ISI-16, Delayed Implementation of ASNT CP-189

2.1.1 Code Requirements for which Relief is Requested

The licensee is requesting relief from Subarticle IWA-2300 of Section XI of the 1995 Edition with 1996 Addenda of the ASME Code regarding the qualification of nondestructive (NDE) examiners in accordance with the 1991 Edition of ASNT CP-189.

2.1.2 Licensee's Proposed Alternative to Code

Pursuant to 10 CFR 50.55a(a)(3)(i), the licensee's proposed alternative is to continue initial certification and re-certification of UT personnel in accordance with the requirements contained in the 1989 Edition of ASME Section XI, through August 1, 2001. Personnel performing UT examinations would also meet the requirements specified in 10 CFR 50.55a(b)(xv) for the qualification of personnel by demonstration. The combination of a written practice based on SNT-TC-1A and a performance-based demonstration for personnel performing UT examination of welds or components will ensure the structural integrity of the system/components.

2.1.3 Evaluation

10 CFR 50.55a(g)(6)(ii)(C) imposes implementation of Appendix VIII to the 1995 Edition with 1996 Addenda of Section XI of the Code. The implementation schedules for the supplements to Appendix VIII are: May 22, 2000, for Supplements 1, 2, 3, and 8; November 22, 2000, for Supplements 4 and 6; November 22, 2001, for Supplement 11; and November 22, 2002, for Supplement 5, 7, 10, 12, and 13. Appendix VIII references Appendix VII which in turn, references Subarticle IWA-2300 of Section XI of the 1995 Edition with 1996 Addenda of the Code. Subarticle IWA-2310 requires qualification of NDE examiners according to the 1991 Edition of CP-189 as amended by the requirements of Division 1 of the Code.

The staff performed a detailed comparison of SNT-TC-1A and CP-189. CP-189 contains essentially everything that is in SNT-TC-1A and some additional requirements. CP-189 has a larger definition of terms which are applicable to performance demonstrations than SNT-TC-1A. CP-189 requires written procedures detailing the program for qualifying and certifying UT personnel. CP-189 requires Level III personnel to answer more questions in the method specific

examination (questions on specifications, equipment, techniques, and procedures) and to pass a performance demonstration.

Except for Level III examiners, the changes from SNT-TC-1A to CP-189 are mostly programmatic and do not affect UT personnel skills. The CP-189 requirement that Level III examiners demonstrate proficiency in UT is addressed by the licensee. The licensee committed UT Level III personnel performing Appendix VIII examinations to demonstrate their proficiency with a UT performance demonstration, thereby, satisfying the demonstration criterion in CP-189.

The ASME Code has provided for an orderly transition from SNT-TC-1A to CP-189 with the continued recognition of certifications until re-certification is required. For Level I and II examinations, re-certification is every 3 years, and for Level III examiners, re-certification is every 5 years. However, the orderly transition by Code does not consider licensee-specific difficulties. The licensee is requesting a delay in implementing CP-189 to accommodate a planned refueling outage (RFO-16) scheduled for March 2001. The delay would provide the licensee with an opportunity to perform an orderly transition to CP-189 after the outage. The licensee states it will implement CP-189 by August 1, 2001. The programmatic differences between SNT-TC-1A and CP-189 should not affect the proficiency of UT personnel over the short time that this relief is being requested. Therefore, the staff concludes that the proposed alternative would provide an acceptable level of quality and safety.

2.1.4 Conclusion

Based on the discussion above, the staff concludes that the proposed alternative to delay the implementation of CP-189 until August 1, 2001, for the third 10-year ISI interval at Nine Mile Point, Unit 1, and the second 10-year ISI interval at Nine Mile Point, Unit 2, will provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the staff authorizes the proposed alternative ISI-16 until August 1, 2001.

2.2 Relief Request ISI-17, Examination Category B-D, Item B3.90, Pressure-Retaining Nozzle-to-Vessel Weld.

2.2.1 Code Requirements for which Relief is Requested

The licensee is requesting relief from the nozzle-to-vessel examination volume shown in Figure IWB-2500-7(a) and (b) of the 1989 Edition of Section XI of the Code.

2.2.2 Licensee's Proposed Alternative to Code

Pursuant to 10 CFR 50.55a(a)(3)(i), the licensee proposed reducing the examination volume to one-half ($\frac{1}{2}$) inch from each side of the weld crown in lieu of the one-half ($\frac{1}{2}$) through-wall thickness from each side of the weld required by Figures IWB-2500-7(a) and (b).

2.2.3 Evaluation

The licensee proposed reducing the examination volume to one-half ($\frac{1}{2}$) inch from each side of the weld crown in lieu of the one-half ($\frac{1}{2}$) through-wall thickness from each side of the weld required by Figures IWB-2500-7(a) and (b). The acceptability of this reduced volume examination is based on prior examinations of the base metal and internal stress distribution near the weld. The base metal was extensively examined during construction, preservice inspection, and prior inservice inspections. These examinations show the ASME Code volume to be free of unacceptable flaws. The creation of flaws during plant service in the volume excluded from the proposed reduced examination is unlikely because of the low stress in the base metal away from the weld. The stresses caused by welding are concentrated at and near the weld. Cracks, should they initiate, occur in the high-stressed area of the weld. The high stressed areas are within the volume included in the reduced examination volume proposed by the licensee. The prior thorough examination of the base metal and the examination of the high stressed areas of the weld provides an acceptable level of quality and safety.

2.2.4 Conclusion

Based on the above discussion, the staff concludes that the proposed alternative to reduce the examination volume to $\frac{1}{2}$ inch from each side of the weld crown in lieu of $\frac{1}{2}$ through-wall thickness from each side of the weld will provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the proposed alternative ISI-17 is authorized for the second 10-year ISI interval for Unit 2 and the third ISI interval for Unit 1.

2.3 Relief Request ISI-18, Subarticle VII-4240, Annual Training for UT Personnel

2.3.1 Code Requirements for which Relief is Requested

The licensee is requesting relief from the 1995 Edition with 1996 Addenda, Appendix VII to Section XI of the Code, Subarticle VII-4240 for Appendix VIII qualified UT personnel. Subarticle VII-4240 requires a minimum of 10 hours of annual UT training.

2.3.2 Licensee's Proposed Alternative to Code

Pursuant to 10 CFR 50.55a(a)(3)(i), the licensee proposed conducting annual UT training for Appendix VIII qualified UT personnel, in accordance with 10 CFR 50.55a(b)(2)(xiv) requirements in lieu of Subarticle VII-4240 to Appendix VII of Section XI of the Code.

2.3.3 Evaluation

Subarticle VII-4240, Appendix VII of Section XI of the Code requires 10 hours of annual training to impart knowledge of new developments, material failure modes, and any pertinent technical topics as determined by the licensee. No hands-on training or practice is required to be included in the 10 hours of training. This training is required of all UT personnel qualified to perform examinations of ASME Code Class 1, 2, and 3 systems. Independent of the ASME Code, 10 CFR 50.55a(b)(2)(xiv) imposes the requirement that 8 hours of hands-on training with flawed specimens containing cracks be performed no earlier than 6 months prior to performing

examinations at a licensee's facility. The licensee contends that maintaining two separate UT annual training programs creates confusion, redundancies, and extra paper work.

As part of the staff's rulemaking effort to revise 10 CFR 50.55a(b)(2), the issue of UT annual training requirements was reviewed. This review was included in the summary of comments to the rule (64 *FR* 51370). In the review, the staff determined that the 10 hours of annual training requirement specified in the ASME Code was inadequate for two reasons. The first reason was that the training does not require practice with flawed specimens. Practice with flaws is necessary because signals can be difficult to interpret. The second reason is related to the length of training and its frequency. Studies have shown that an examiner's capability begins to diminish within 6 months if skills are not maintained. Therefore, examiners must practice on a frequent basis to maintain their capability for proper interpretation of flaws.

Based on resolution of public comments for the above rulemaking, the staff accepted an industry initiative advanced by the Electric Power Research Institute (EPRI), which proposed 8 hours of hands-on practice with flawed specimens containing cracks. The practice would occur no earlier than 6 months prior to performing examinations at a licensee's facility. The initiative was adopted in 10 CFR 50.55a(b)(2)(xiv) for personnel maintaining their Appendix VIII qualifications. The staff believes that the proposed alternative to use 10 CFR 50.55a(b)(2)(xiv) in lieu of Subarticle VII-4240 will maintain the skill and proficiency of UT personnel at or above the level provided in the Code for annual UT training, thereby, providing an acceptable level of quality and safety.

2.3.4 Conclusion

Based on the discussion above, the staff has concluded that the proposed alternative to use the criteria in 10 CFR 50.55a(b)(2)(xiv) in lieu of Subarticle VII-4240 will provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the proposed alternative ISI-18 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 alternatives under Relief Requests ISI-16, -17 and -18. The staff found the proposed alternatives acceptable (see above Sections 2.1.4, 2.2.4, and 2.3.4) 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: March 29, 2001