

November 13, 2000

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 NO. 1 (NMP1) -- RELIEF  
REQUEST GPTRR-1, "CORRECTIVE ACTION FOR LEAKAGE IDENTIFIED AT  
BOLTED CONNECTIONS, SECTION XI, DIVISION 1" (TAC NO. MA8596)

Dear Mr. Mueller:

By letter dated December 27, 1999, and revised by letter dated September 18, 2000, Niagara Mohawk Power Corporation (NMPC) submitted its Third Ten-Year Interval Inservice Pressure Testing Program Plan. Among other things, the submittals contain General Relief Request GPTRR-1, on implementing American Society of Mechanical Engineers (ASME) Section XI Code Case N-566-1, "Corrective Action for Leakage Identified at Bolted Connections" applicable to the inservice pressure testing program during the second ten-year inservice inspection interval of NMP1.

The NRC staff has reviewed NMPC's submittals and has determined that the proposed alternative to use Code Case N-566-1 is acceptable. The alternative will provide reasonable assurance of structural integrity based on maintaining the applicable Code safety margins. Details of our review are set forth in the enclosed safety evaluation.

The staff concludes that NMPC's proposed alternative will result in an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), NMPC is authorized to use Code Case N-566-1 at NMP1, for the third interval, or until such time as Code Case N-566-1 is published in 10 CFR 50.55a. At that time, if you intend to continue to implement Code Case N-566-1, you will need to follow all conditions specified in 10 CFR 50.55a, if present.

J. Mueller

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This completes all our actions on your submittals. Please contact the Project Manager, Mr. Peter Tam (301-415-1451, electronic mail at [pst@nrc.gov](mailto:pst@nrc.gov)) if you have any questions.

Sincerely,

*/RA/*

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

Docket No. 50-220

Enclosure: Safety Evaluation

cc w/encl: See next page

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This completes all our actions on your submittals. Please contact the Project Manager, Mr. Peter Tam (301-415-1451, electronic mail at [pst@nrc.gov](mailto:pst@nrc.gov)) if you have any questions.

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

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Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

USE OF CODE CASE N-566-1

AMERICAN SOCIETY OF MECHANICAL ENGINEERS BOILER AND

PRESSURE VESSEL CODE (ASME CODE)

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION, UNIT NO. 1

DOCKET NO. 50-220

1.0 INTRODUCTION

As required by 10 CFR 50.55a(g), the inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code (ASME Code) and applicable addenda, 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 (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) shall 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 initial ten-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) on the date twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for Nine Mile Point Station, Unit 1 (NMP1), during the second ten-year ISI interval is the 1989 Edition. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Commission approval.

Pursuant to 10 CFR 50.55a(g)(5), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is impractical for its facility, the licensee shall submit information to the Commission in support of that determination and a request made for relief from the ASME Code requirement. After evaluation of the determination, pursuant to 10 CFR 50.55a(g)(6)(i), the Commission may grant relief and may impose alternative requirements that are determined to be authorized by law, will not endanger life, property, or the common defense and security, and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed.

By letters dated December 27, 1999, Niagara Mohawk Power Corporation (NMPC or the licensee), requested approval of Relief Request GPTRR-4 on implementing Code Case N-566, "Corrective Action for Leakage Identified at Bolted Connections" applicable to the inservice pressure testing program during the second ten-year ISI interval of NMP1. By letter dated September 8, 2000, the licensee revised the request to reference Revision 1 of the same code case, i.e., N-566-1.

The NRC staff has reviewed and evaluated the licensee's requests for relief and the supporting information on the proposed alternative to the Code requirements, pursuant to 10 CFR 50.55a(a)(3)(i), for the third ten-year inservice inspection interval of NMP1.

## 2.0 DISCUSSION

The licensee proposed to implement provisions of ASME Section XI Code Case N-566-1 "Corrective Action for Leakage Identified at Bolted Connections" as an alternative to the Code requirements of IWA-5250(a)(2).

### 2.1 Code Requirement

ASME Section XI, 1989 Edition, paragraph IWA-5250(a)(2) states that if leakage occurs at a bolted connection during a system pressure test, the bolt nearest to the source of the leakage shall be removed, VT-3 examined, and evaluated for degradation in accordance with paragraph IWA-3100.

### 2.2 Licensee's Code Relief Request

Pursuant to 10 CFR 50.55a(a)(3)(i), the licensee requests to implement the provisions of Code Case N-566-1, "Corrective Action for Leakage Identified at Bolted Connections," as an alternative to the requirements of IWA-5250(a)(2). In addition, since the applicable Code does not provide acceptance criteria for the specified VT-3 examination, NMPC has implemented VT-1 examination in lieu of VT-3 examination using the acceptance criteria outlined in paragraph IWB-3517.

### 2.3 Licensee's Basis for Relief Request

NMPC requests approval of use of Code Case N-566-1 pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that the alternative would provide an acceptable level of quality and safety. Removal of pressure retaining bolting at mechanical connections for VT-1 visual examination

and subsequent evaluation in locations where leakage has been identified is not always the most prudent course of action to determine the condition of the bolting or the cause of the leak. In lieu of the requirements of paragraph IWA-5250(a)(2) of the Code, Code Case N-566-1 states that the requirements of (a) or (b) below shall be met.

- (a) The leakage shall be stopped, and the bolting and component material shall be reviewed for joint integrity as described in (c) below.
- (b) If the leakage is not stopped, the joint shall be evaluated in accordance with IWB-3142.4 for joint integrity. This evaluation shall include considerations listed in (c) below.
- (c) The evaluation of (a) and (b) above is to determine the susceptibility of the bolting to corrosion and failure. This evaluation shall include the following:
  - (1) the number and service age of the bolts;
  - (2) bolt and component material;
  - (3) corrosiveness of process fluid;
  - (4) leakage location and system function;
  - (5) leakage history at the connection or other system components;
  - (6) visual evidence of corrosion at the assembled connection.

The IWA-5250(a)(2) requirement to remove, examine, and evaluate bolting in this situation does not allow consideration of other factors, which may indicate the condition of mechanical joint bolting. NMPC considers this requirement to be unnecessarily restrictive.

#### 2.4 Licensee's Requested Authorization

NMPC requests authorization to perform an alternative to the Code-required removal: a visual examination VT-1 in lieu of the VT-3 of bolting if evidence of leakage is identified during a system pressure test of Class 1, 2, and 3 systems, in accordance with Code Case N-566-1.

#### 3.0 EVALUATION

In accordance with the 1989 Edition of the ASME Code, Section XI, when leakage occurs at a bolted connection during a system pressure test, the bolt nearest to the source of the leakage shall be removed, VT-3 examined, and evaluated for degradation in accordance with IWA-3100. In lieu of the Code-required removal of bolting to perform a VT-3 visual examination, NMPC proposed to use Code Case N-566-1 which requires that the leakage be stopped and the joint integrity be reviewed. If the leakage is not stopped, the joint shall be evaluated in accordance with IWB-3142.4 for joint integrity, which relies on an analytical evaluation of a component containing relevant conditions for continued service. The evaluation for the specific case would consider the number and service age of the bolts, bolt and component material, corrosiveness of process fluid, leakage location and system function, leakage history at the connection or other components and visual evidence of corrosion at the assembled connection. This alternative allows the licensee to use a systematic approach and sound engineering judgment, provided that as a minimum, all of the evaluation factors listed in the code case are considered.

In addition, if the joint is acceptable for continued service based on analytical evaluation, it shall be subsequently examined in accordance with IWB-2420(b) and (c). Furthermore, if NMPC's evaluation requires removal of a bolt, the visual evidence of corrosion will be performed by a VT-1 visual examination in lieu of the VT-3. The requirements of IWB-3517 shall be applied for the VT-1. Code Case N-566-1 further requires that the evaluation of integrity of the joint be performed in accordance with IWB-3142.4 applicable to Class 1 piping irrespective of the piping class; this requirement is more stringent than that of the applicable Code. Therefore, the use of Code Case N-566-1 in lieu of the requirements of IWA-5250(a)(2) in regard to corrective action for leakage identified at bolted connections will provide an acceptable level of quality and safety since the integrity of the joint will be maintained. The staff authorizes the licensee's proposed use of Code Case N-566-1 at NMP2 for the third interval, or until such time as Code Case N-566-1 is published in 10 CFR 50.55a. At that time, if the licensee intends to continue to implement Code Case N-566-1, the licensee should follow all conditions specified in 10 CFR 50.55a, if present.

#### 4.0 CONCLUSION

Based on a review of NMPC's submittal, the NRC staff concludes that NMPC's proposed alternative will result in an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the NRC staff authorizes the licensee's proposed use of Code Case N-566-1 at NMP1 for the third interval, or until such time as Code Case N-566-1 is published in 10 CFR 50.55a. At that time, if NMPC intends to continue to implement Code Case N-566-1, NMPC will need to follow all conditions specified in 10 CFR 50.55a, if present.

Principal Contributor: A. Keim

Date: November 13, 2000