April 13, 2000

Mr. S. E. Scace - Director
Nuclear Oversight and Regulatory Affairs
c/o Mr. David A. Smith
Northeast Nuclear Energy Company
P. O. Box 128
Waterford, CT 06385-0128

SUBJECT: SAFETY EVALUATION FOR RELIEF REQUEST ASSOCIATED WITH ASME CODE REPAIR REQUIREMENTS FOR ASME CLASS 3 SERVICE WATER SYSTEM DISCHARGE PIPING, MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2 (TAC NO. MA8203)

Dear Mr. Scace:

By letter dated February 11, 2000, and supplemented by letter dated March 16, 2000, you requested relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (the Code) Section XI requirements pursuant to the provisions of 10 CFR 50.55a(g)(6)(i). Specifically, you requested relief for a temporary Non-Code repair on a service water (SW) system piping leak prior to performing a Code repair during the next refueling outage, expected to begin in April 2000.

We evaluated your request in accordance with Generic Letter (GL) 90-05, "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping" and determined that you followed the analytical methods provided in GL 90-05. Further, the staff finds that performing a Code repair on the leaking SW system discharge piping while the Unit is operating is impractical. The staff concludes that the granting of relief where Code requirements are impractical and imposing alternative requirements is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest, given due consideration to the burden upon the licensee and facility that could result if the Code requirements were imposed on the facility. Therefore, pursuant to 10 CFR 50.55a(g)(6)(i) and consistent with the guidance in GL 90-05, relief is granted through the refueling outage 2R13, scheduled for April 2000. Our detailed evaluation and conclusions are documented in the enclosed safety evaluation.

Sincerely,
/RA/
James W. Clifford, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-336

Enclosure: Safety Evaluation

cc w/encl: See next page

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*SE Input provided on 3/28/00 w/no major changes **No legal objection

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO REQUEST FOR RELIEF FROM ASME CODE REPAIR REQUIREMENTS

FOR ASME CODE CLASS 3 PIPING SERVICE WATER SYSTEM DISCHARGE PIPING

NORTHEAST NUCLEAR ENERGY COMPANY, ET AL.

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 2

DOCKET NO. 50-336

1.0 INTRODUCTION

By letter dated February 11, 2000, and supplemented by letter dated March 16, 2000, Northeast Nuclear Energy Company (NNECO) requested relief from the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (the ASME Code), Section XI requirements regarding repair to a leak in a Class 3, moderate energy pipe at Millstone Nuclear Power Station Unit 2 (Millstone). The leak was detected in a 24-inch nominal pipe size service water (SW) system discharge piping from the reactor building closed cooling water (RBCCW) heat exchangers. The SW system has a design temperature of 150 °F and pressure of 100 psig. The pipe is PVC-lined carbon steel of nominal wall thickness of 0.688 inch.

An ultrasonic (UT) examination at the leak location revealed that the flaw is a through-wall pin hole surrounded by a degraded area approximately 3.5 inches in diameter. However, the minimum wall thickness outside an area of 3.0-inch diameter, is 0.62 inch, a little more than 87.5% of nominal pipe thickness. NNECO currently attributed the leak to a defect in the rubberized PVC pipe liner which allowed the seawater to contact and corrode the carbon steel piping.

NNECO considered the on-line repair of the SW piping not practical because a Code repair requires this section of piping to be isolated from SW discharge flow. The leaking SW line, which is required to maintain the RBCCW system operable, cannot be removed from service during plant operations. Based upon the above, NNECO submitted a relief request in accordance with the provisions of Generic Letter (GL) 90-05, "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping." NNECO requested relief until a Code repair can be performed during the refueling outage 2R13, scheduled for April 2000.

Enclosure

2.0 DISCUSSION AND EVALUATION

Title 10 of the Code of Federal Regulations Section 50.55a(g) (10 CFR 50.55a(g)), requires nuclear power facility piping and components to meet the applicable requirements of Section XI of the Code. This section of the Code specifies Code-acceptable repair methods for flaws that exceed Code acceptance limits in piping that is in service. A Code repair is required to restore the structural integrity of flawed Code piping, independent of the operational mode of the plant when the flaw is detected. Those repairs not in compliance with Section XI of the Code are non-Code repairs.

In some circumstances the required Code repair may be impractical unless the facility is shut down. In such cases, the Commission may evaluate determinations of impracticality and may grant relief and impose alternative requirements pursuant to 10 CFR 50.55a(g)(6)(i). GL 90-05 provides guidance to the staff for evaluating relief requests submitted by licensees for temporary non-Code repairs to Code class 3 piping.

On November 7, 1991, the Commission issued GL 91-18, "Information to Licensees regarding two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability." This GL and the NRC Inspection Manual Part 9900 provided detailed discussions of specific operability determinations, one of which was operational leakage. In this regard, Section 6.15 of Part 9900 states the following:

> Upon discovery of leakage from a Class 1, 2, or 3 component pressure wall (i.e., pipe wall, valve body, pump casing, etc.) the licensee should declare the component inoperable. The only exception is Class 3 moderate energy piping as discussed in Generic Letter 90-05. For Class 3 moderate energy piping, the licensee may treat the system containing the through-wall flaw(s), evaluated and found to meet the acceptance criteria in Generic Letter 90-05, as operable until relief is obtained from the NRC.

NNECO has evaluated the flaw in accordance with GL 90-05 and has used the "through-wall flaw" approach of the GL for the pin hole area of the SW pipe. The flaw is assumed to be 3 inches long, and the pipe wall is assumed to be 0.62 inch, based on the revised UT data taken on March 2, 2000. The applied stress intensity factor due to the combination of deadweight, pressure, thermal expansion, and design basis earthquake (DBE) was calculated for the as-is condition by NNECO to be 8.7 ksi$\sqrt{\text{in.}}$ for the emergency and faulted loading condition. The fracture toughness for the pipe was the lower bound value of 35 ksi$\sqrt{\text{in.}}$ for ferritic steel. Since the applied stress intensity factor is less than the fracture toughness by a large margin, NNECO concluded that the structural integrity is adequate for continued operation of Unit 2 until the refueling outage 2R13, scheduled for April 2000. A rubber-lined band was installed over the hole using clamps to stop the leakage from the SW pipe pin hole for housekeeping purposes. The staff reviewed NNECO's evaluation and confirmed that it is in accordance with GL 90-05. Further, the issues of flooding, water spraying on other equipment, and loss of flow were analyzed and found to be insignificant to the operation of the SW system.

NNECO has also performed an augmented UT inspection on five locations on SW piping having similar characteristics to the flawed line. This inspection did not reveal any other degraded areas. The walkdown frequency for leak monitoring is at least twice per 12-hour shift.

3.0 CONCLUSION

The staff has evaluated NNECO's request for relief and finds that they have followed the analytical methods provided in GL 90-05. Further, the staff finds that performing a Code repair on the leaking SW system discharge piping while the Unit is operating is impractical. The staff concludes that the granting of relief where Code requirements are impractical and imposing alternative requirements is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest, given due consideration to the burden upon the licensee and facility that could result if the Code requirements were imposed on the facility. Pursuant to 10 CFR 50.55a(g)(6)(i) and consistent with the guidance in GL 90-05, relief is granted through refueling outage 2R13, scheduled for April 2000.

Principal Contributor: S. Sheng

Date: April 13, 2000

Millstone Nuclear Power Station
Unit 2

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