

Northeast
Utilities System

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Northeast Utilities Service Company
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November 20, 1995

Docket No. 50-423
B15442

Re: 10CFR50.55a(a)(3)(i)
and (ii)

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

Millstone Nuclear Power Station, Unit No. 3
Request to Use Alternative to ASME Code Section III

Introduction

The purpose of this letter is for Northeast Nuclear Energy Company (NNECO) to request the use of an alternative to the ASME Boiler and Pressure Vessel Code, Section III for Millstone Unit No. 3 pursuant to 10CFR50.55a(a)(3)(i) and (ii). Specifically, NNECO requests approval to credit the service water concrete encasement, housing two 26 inch service water discharge lines, to satisfy the requirements of the ASME Code Section III, Subsection ND-3640 as a pressure retaining structure.

Background

The 26 inch service water discharge lines, which are in a reinforced 8 ft. x 4 ft. 6 in. concrete encasement, extend underground from the south wall of the engineered safeguards features (ESF) building to the circulating water discharge tunnel. The concrete encasement, which is considered QA Category I, seismic, has a copper nickel liner fabricated of ASME SB467.

The copper nickel material within the encasement has experienced pitting type erosion in the lower elbow region of the lines, at elevation -4 feet. This erosion was quantified in general terms for the A Train service water piping in an internal inspection, and subsequently evaluated. In the A Train piping, the pitting depth, in some instances, was estimated to be as deep as a quarter inch. The nominal wall thickness of the copper nickel liner is a quarter inch. Therefore, the amount of remaining wall in the pipe could not be determined. The B Train piping experienced similar erosion.

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The existing structural qualification credits the copper nickel liner and the concrete encasement to perform an integrated function. The copper nickel liner is designed to provide ASME pressure boundary integrity. The concrete encasement provides deadweight and seismic integrity. In its current condition, the copper nickel liner cannot be demonstrated to perform its previous function as a pressure boundary. As a result, the ability of the integrated structure to perform this function has been investigated. The internal inspection noted that metal was present in the bottom of all identified pits. Therefore, the concrete encasement and reinforcement is not considered degraded. The concrete encasement is constructed with both longitudinal and hoop reinforcing bars. The hoop reinforcing bars are located at approximately the perimeter of the pipe's outside diameter. These bars are capable of restraining the hoop stress created by the piping at pressures well above those predicted in any system operating condition. In addition, the hoop bars are not credited in the deadweight and seismic evaluations of the concrete structure. The hoop bars/encasement are therefore capable of providing the pressure retaining function previously performed by the copper nickel liner.

To prevent further wall loss of the copper nickel, an epoxy based coating has been applied to the eroded areas. Inspections of the 26 inch service water lines will be conducted during the next refueling outage, at which time, based on the results, the need or schedule for subsequent inspections will be determined consistent with the service water piping coating inspections.

Replacement of the copper nickel liner would present undue hardship and expense with negligible increase in quality or safety over that which is currently attained by the measures taken or planned. The degraded area of the liner is located approximately 28 feet below grade in an area containing buried plant utilities. Access to this area would require extensive excavation, as well as destruction and reconstruction of the reinforced concrete encasement.

Summary and Conclusion

Based upon the above evaluation, the concrete encasement housing the two 26 inch service water system discharge lines from the ESF building has been demonstrated to maintain structural integrity, and is capable of performing its intended function considering the condition identified in the internal inspection. The application of the epoxy based coating prevents further erosion of the copper nickel and ensures structural integrity is maintained.

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Commitment

The following is NNECO's commitment made within this letter. Other statements within this letter are provided as information only.

B15449 -1 Inspect the epoxy based coating on the copper nickel liner to ensure its ability to protect the liner from further erosion. This inspection will be conducted during the next refueling outage.

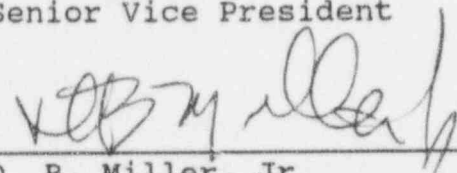
Should you have any questions regarding this submittal, please contact Mr. John S. Duddy at (860) 440-2082.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: J. F. Opeka
Senior Vice President

BY:


D. B. Miller, Jr.
Senior Vice President - Millstone

cc: T. T. Martin, Region I Administrator
V. L. Rooney, NRC Project Manager, Millstone Unit No. 3
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