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The Northeast Utilities System

SEP 14 2000

Docket No. 50-336
B18219

Re: ASME Section XI
GL 90-05
10 CFR 50.55a(g)(6)(i)

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

Millstone Nuclear Power Station, Unit No. 2
Relief Request from ASME Code Section XI Requirements

The purpose of this letter is to request relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI requirements pursuant to 10 CFR 50.55a(g)(6)(i). Consistent with the provisions of Generic Letter 90-05, Northeast Nuclear Energy Company (NNECO) is submitting this request to make a temporary Non Code repair on a Service Water (SW) system piping leak, which was detected during plant operation. Permanent Code repair for this flaw will be performed during the next refueling outage, expected to begin in March 2002.

Attachment 1 provides a description of actions to be taken by NNECO to make interim repairs on a leak in the "B" Service Water (SW) system discharge piping (line 2" -HUD-130) "Service Water Inlet to West 480V Vital Switchgear Room Cooler X-181B" as a temporary alternative to repair/replacement in accordance with IWA-4000/7000.

The Resident Inspector at Millstone Unit No. 2 has been informed of this course of action. As has been our practice, we will keep the Resident Inspector informed of future ASME Code repairs and/or replacement activities.

NNECO believes that it is impractical to comply with the ASME repair requirement at this time. Additionally, it is NNECO's belief that the temporary repair and augmented inspection provides reasonable assurance of structural integrity and will not endanger the life or property or the common defense and security, and is in the public interest giving due consideration to the burden that could result if the requirements to complete permanent repairs were imposed at this time.

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There are no regulatory commitments contained within this letter.

Should you have any questions on the information provided, please contact Mr. David W. Dodson at (860) 447-1791, extension 2346.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

Stephen E. Scace
Director - Nuclear Oversight and
Regulatory Affairs

Attachment (1): Relief Request from ASME Code Section XI Requirements

cc: H. J. Miller, Region I Administrator
J. I. Zimmerman, NRC Project Manager, Millstone Unit No. 2
S. R. Jones, Senior Resident Inspector, Millstone Unit No. 2

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Attachment 1

Millstone Nuclear Power Station, Unit No. 2

Relief Request from ASME Code Section XI Requirements

RELIEF REQUEST FROM ASME SECTION XI REQUIREMENTS

UNIT: MILLSTONE UNIT # 2

DATE: 8/13/00 TIME: 10:00

APPLICABLE AMERICAN SOCIETY OF MECHANICAL ENGINEERS CODE AND ADDENDA

American Society of Mechanical Engineers (ASME) Code Section XI, IWA-4000/7000: "Repair Procedure" provides the rules and requirements for repair of pressure retaining components and their supports, including appurtenances, subassemblies, parts of components, and core supports, by welding, brazing, and metal removal.

1. FLAW DETECTION AND IMPRACTICALITY DETERMINATION

1.1. FLAW DETECTION

On August 13, 2000, a Site security officer discovered water leaking into the vital switchgear cooling coil (X-181A) berm. This condition was reported to the Millstone Unit 2 Control Room. As a result, plant equipment operators were dispatched to investigate and observed water coming from under the piping insulation in the pipe run containing the heat exchanger drain valve (2-SW-128). Following removal of the foam insulation, a pin-hole leak was discovered in the two (2) inch supply piping above a weld on the supply line pipe tee.

1.2. IMPRACTICALITY DETERMINATION

Although the flaw is isolable, a permanent repair (pipe replacement) will require welding within the West 480V Vital Switchgear Room. Welding is not allowed in this room in Modes 1 through 4 due to possible electronic noise interference with the Steam Turbine EHC cabinets located in the room. Therefore, a plant shutdown would be required to perform the repair. Therefore it is deemed impractical to perform a Code repair at this time.

2. ROOT CAUSE DETERMINATION AND FLAW CHARACTERIZATION

2.1. ROOT CAUSE DETERMINATION

Although the piping can not be disassembled for inspection at this time, the location of the pinhole is consistent with past erosion/corrosion types of failure for Copper-Nickel (CuNi) piping in the Millstone unit 2 Service Water system which have resulted from localized eddies in the flow stream. These localized eddies have resulted in localized metal degradation. The root cause, however,

will not be fully determined until the pipe spool is removed from service for repair/replacement.

2.2. FLAW CHARACTERIZATION

2.2.1. Flaw

The flaw location is approximately two feet above the floor of the Unit 2 West 480V Vital Switchgear Room. Based upon review of the isometric drawing and the UT examination results the flaw location is adjacent to the branch weld of the tee located 3 feet 2 inches south of valve 2-SW-128 along line 2"-HUD-130. The Service Water line 2"-HUD-130 is the Service Water supply to the vital switchgear cooling coil X-181B. This line was determined to have a through wall pinhole leak surrounded by a degraded area approximately 1/4 inch diameter in the vicinity of X-181B.

Based upon review of the available ultrasonic inspection, there is a cavity-like inner surface flaw of approximately 1/4 inch in diameter. Outside this region, the data indicates approximately 0.100 inch pipe thickness for a diameter of approximately 2 inches indicating general surface corrosion. The values outside the 2 inch diameter area approached the nominal pipe thickness. Therefore, an average value of 0.090 inch was conservatively used to represent the remaining pipe section.

2.2.2. System Design Details

The safety function of the Service Water (SW) System is to provide sufficient cooling water to various QA heat loads throughout the plant. The system is required to perform this function both during and following a seismic event. Line 2"-HUD-130 directs Service Water to the West 480V Switchgear Room Cooler X-181B. The safety function of the piping is to provide pressure boundary.

System: Service Water (2326A)

Component: Line 2"-HUD-130,

Piping Size and Schedule: 2", Schedule STD

Nominal Wall Thickness: 0.156"

Safety Code Class: 3

Material: B466 Copper - Nickel pipe

Design Pressure: 100 psig

Design/Operating Temperature: 100 °F / 30° to 75°F

Code Minimum Wall Thickness: 0.062"

Piping/Component Drawing No.: DCN DM2-S-0864-94 SHT 10

P&ID No.: 25203-26008 Sht 3 of 4

3. FLAW EVALUATION

3.1. "THROUGH-WALL FLAW" APPROACH

An Initial Operability Assessment completed on August 15, 2000, concluded that there was Reasonable Expectation of Continued Operability based on a qualitative assessment of the impact of the degraded area on the structural integrity of the piping system. This assessment concluded that the structural integrity of the pipe is maintained with a postulated 1/2 inch diameter through wall hole. This assessment was performed using the Linear Elastic Fracture Mechanics method described in GL 90-05. The limiting flaw size assumed for this assessment was a 1/2 inch diameter through wall flaw which is sufficiently conservative to bound the 1/4 inch diameter actual degradation area to allow for future wall loss.

Calculation No. 00CP-02995-M2, Rev. 00 concluded that the through wall flaw meets the structural acceptance criteria of GL 90-05 for temporary non code repair and continued operation to the next refueling outage. The calculation conservatively assumed a 1/2 inch through wall hole. The calculated stress intensity factor (K_I) for the assumed flaw resulted in a Factor of Safety of 7.75 relative to the critical stress intensity (K_{Ic}). Loads evaluated with the calculation included combined pressure, dead load, thermal, and seismic.

3.2. SYSTEM INTERACTION EVALUATION

3.2.1. Flooding

Although highly unlikely, failure of the patch with complete loss of the 1/4 inch diameter pipe wall at the pinhole location would not result in the flooding of safety related components based on the following:

Any water released would collect in the existing cofferdam located beneath X-181A/B designed specifically to collect and remove any leaking Service Water from the coolers. Additionally, if a significant leak at the patch location were to occur, it would be noticed in a timely manner by Operations personnel during Auxiliary Building rounds which require the Plant Equipment Operator (PEO) to be in the West 480V Switchgear Room where the patch is located at least twice per 12 hour shift.

3.2.2. Jet Spray

The flaw is located in the West 480V Vital Switchgear Room. To minimize the potential for seawater spray from the flaw to impact switchgear located nearby, an exterior rubber patch / hose clamp has

been installed around the circumference of the pipe encompassing the flaw. Installation of the clamp successfully stopped the leaking seawater. The clamp is a non engineered device and no credit is taken for the clamp relative to pressure or structural integrity of the pipe.

Additionally, plastic sheeting has been installed over the patch to further ensure that any water leaking past the rubber patch would not spray onto nearby components.

The patch and plastic were installed in accordance with CRED M2-00-2265 and AWO M2-00-15164

3.2.3. Loss of Flow

Due to the relatively small size of the leak, it does not affect required Service Water flowing through the vital switchgear room coolers and accordingly has no impact on the heat removal capabilities of the Service Water System.

3.2.4. Other Interactions

None

3.2.5. Failure Consequences?

None

3.2.6. Impact to Safe Shutdown Capability?

None

4. AUGMENTED INSPECTION

The following augmented inspections have been or will be performed:

a) Ultrasonic examinations of degraded area were performed to determine the extent of the degradation.

b) An exterior rubber patch / pipe clamp with plastic wrap was installed encompassing the leak.

c) Ultrasonic (UT) inspections were performed at 5 locations in the Service Water system of similar design and operating parameters. All 5 locations were on similar small bore CuNi piping. Results of the UTs have been reviewed and found acceptable.

d) The clamp will be removed and additional UT inspections will be performed at the flaw location within 90 days from the initial date of discovery (i.e. prior to November 22, 2000) of the leak to determine if there has been any further degradation. The need for additional UTs and the appropriate frequency of subsequent inspections will be determined based on the results.