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The Northeast Utilities System

FEB 11 2000

Docket No. 50-336
B17994

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, consistent with the intent of NRC Generic Letter (GL) 90-05, relief from the ASME Boiler and Pressure Vessel Code Section XI requirements pursuant to 10 CFR 50.55a(g)(6)(i). Attachment 1 provides a description of actions taken by Northeast Nuclear Energy Company (NNECO) to make interim repairs on a leak in the "B" Service Water (SW) system discharge piping (line 24" - JGD-6, spool SK 923) from the Reactor Building Closed Cooling Water (RBCCW) system heat exchangers as an alternative to an IWA-4000/7000 repair/replacement.

Consistent with the provisions of GL 90-05, NNECO is submitting this relief request for a temporary Non-Code repair on a SW system piping leak prior to performing a Code repair. The Resident Inspector at Millstone Unit No. 2 has been informed of this course of action and, as has been our practice, we will keep the Resident Inspector fully informed of all future repairs and/or replacement activities. Permanent Code repair for this flaw is scheduled for the next refueling outage, expected to begin in April 2000.

There are no regulatory commitments contained within this letter.

Should you have any questions regarding this submittal, please contact Mr. Ravi G. Joshi at (860) 440-2080.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

Stephen E. Scace
Director - Nuclear Oversight and
Regulatory Affairs

Attachment

cc: H. J. Miller, Region I Administrator
J. I. Zimmerman, NRC Project Manager, Millstone Unit No. 2
D. P. Beaulieu, Senior Resident Inspector, Millstone Unit No. 2

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B17994

Attachment 1

Millstone Nuclear Power Station, Unit No. 2

Relief Request from ASME Code Section XI Requirements

February 2000

ATACHMENT 9.A

TRACKING FORM FOR RELIEF REQUEST FROM ASME SECTION XI REQUIREMENTS

MUST BE COMPLETED AND FILED WITH NRC WITHIN 30 CALENDAR DAYS

UNIT: MILLSTONE UNIT # 2 CYAPCO _____

NCR/CR # CR M2-00-0155 DATE: 1/18/00 TIME: 1400

1.0 ORIGINATOR (PTSG)

Processing Time: should not exceed 24 hours

1.1 PERFORM INITIAL OPERABILITY ASSESSMENT PER RP 5 (GL 91-18)

The Initial Operability Assessment was approved by the Shift Manager on 1/18/00. This assessment concluded that Reasonable Expectation of Continued Operability based on the following:

1) A qualitative assessment of the impact of the degraded area on the structural integrity of the piping system concluded that the structural integrity of the pipe is maintained with the 2" diameter hole.
2) The flaw is downstream of the component being cooled and thus, the leak rate from the pipe has no impact on the heat removal capacity of the Service Water System.

1.2 COMPLETE SECTION 1 OF ATTACMENT 9.B

1.3 NOTIFY RESIDENT NRC INSPECTOR

Person Contacted: Steve Jones (Resident Inspector) Date: 1/18/00

1.4 FORWARDED COMPLETED ATTACHMENTS 9.A AND 9.B, NCR AND NDE MEASUREMENTS TO SUPERVISOR OF PLANT DESIGN ENGINEERING GROUP (PDEG)

Originator: Thomas A. Moore Date: 1/19/00
(Signature/Printed name)

****

2.0 PDEG SECTION Date Received: 1/19/00

Processing Time: 72 hours from flaw detection for documented preliminary operability assessment per RP 5 (GL 90-05).

25 calendar days from flaw detection for final operability assessment per RP 5 (GL 90-05).

2.1 PRELIMINARY FLAW EVALUATION

Evaluation Completed By: Craig D. Stewart Date: 1/19/00

Notify PTSG

Person Contacted: Thomas A. Moore Date: 1/19/00

2.2 END OF CYCLE FLAW EVALUATION

Evaluation Completed By: Craig D. Stewart Date: 1/20/00

2.3 REVIEW RESULTS OF AUGMENTED INSPECTION

Completed By: Thomas A. Moore Date: 1/31/00

If additional inspections are required, notify PTSG Engineer.

2.4 FORWARD COMPLETED ATTACHMENTS 9.A AND 9.B TO NUCLEAR LICENSING

Supervisor, PDEG Section:

/ R. B. Roy Date: 2/2/00
(Signature/Printed name)

****

3.0 NUCLEAR LICENSING

Processing Time: should not exceed 30 calendar days from flaw detection.

3.1 RELIEF REQUEST SUBMITTED in letter B17994

By: Mohamed A. Elmaghrabi Date: 2/11/00

Docket No. 50-336

ATACHMENT 9.B

NORTHEAST UTILITIES

RELIEF REQUEST FORM FOR RELIEF REQUEST
FROM ASME SECTION XI REQUIREMENTS

UNIT: Millstone Unit 2 NRC # CR M2-00-0155 DATE: 1/18/00 Time: 1400

1.0 ORIGINATOR (PTSG)

1.1 DESCRIPTION OF FLAW

The flaw is located in the "B" Service Water (SW) system discharge piping (line 24"-JGD-6, spool SK 923) from the Reactor Building Closed Cooling Water (RBCCW) heat exchangers. The flaw is a pin hole sized through wall flaw surrounded by an approximate 2" diameter area in which the wall thickness ranges from 0.060" to 0.264" (nominal pipe wall is 0.688").

Piping/Component Drawing No.:

Isometric Drawing No. 25203-201150, Sheet 106
Spool Drawing No. 25203-20194, Sheet 923

P&ID No.: **25203-26008, Sheet 2**

1.2 IMPRACTICALITY OF CODE REPAIR

A Code repair (weld repair of flawed area or complete spool replacement) requires the section of piping to be isolated from SW discharge flow. This piping section is required to maintain the RBCCW system Operable during power operation. This line may only be isolated while the unit is shutdown.

1.3 DESCRIPTION OF PROPOSED TEMPORARY REPAIR

The proposed temporary repair consists of a mechanical clamp with a rubber insert to be installed around the pipe circumference over the area of the flaw. This clamp is intended to control any leakage such that surrounding equipment would not be impacted. Additionally, a tarpaulin will be installed below the leak in the event the mechanical clamp does not fully contain the leak.

1.4 SAFETY SIGNIFICANCE: System Interaction Evaluation

Flooding?

Although highly unlikely, failure of the clamp with complete loss of the 2" diameter pipe wall at the flaw location would not result in the flooding of safety related components in the area. A review of the areas potentially impacted showed safety related motors elevated above the floor and sufficient floor drains and/or sumps in the locations to contain any leak.

Jet Spray?

The location and orientation of the flaw is such that any jet spray would not effect any safety related components.

Loss of Flow?

The flaw is located downstream of the RBCCW heat exchangers being cooled by SW system and thus has no effect on the cooling capacity of the SW System.

Other Interactions:

None

Failure Consequences?

The clamp and tarpaulin are considered housekeeping only. If the clamp and/or tarp were to fail, safe shutdown equipment would not be impacted by water spray or flooding.

Impact to Safe Shutdown Capability?

None. (All safety related components in the area are not affected by the flaw. Additionally, the ability of the SW system to cool the RBCCW heat exchangers is not impacted by the flaw. If the clamp and/or tarp were to fail, safe shutdown equipment would not be impacted by water spray or flooding).

1.5 ROOT CAUSE CAUSAL FACTOR INVESTIGATION

Root Cause Description:

The root cause will not be fully determined until the pipe spool is removed from service for repair/replacement. The most likely cause is a defect in the rubberized PVC pipe liner which allowed the seawater to contact and attack the carbon steel host pipe.

Other Systems Affected?

The RBCCW heat exchangers being cooled by this line are unaffected.

1.6 AUGMENTED INSPECTION (must be completed within 15 days of flaw detection)

Assessment of overall degradation of the affected system;

Additional examinations required (based on root cause) - specify number of inspection locations (five most accessible locations for moderate energy piping systems); and

Description of areas selected for augmented inspection:

Ultrasonic (UT) exams were performed at 5 locations on SW piping which has similar characteristics to the flawed line (similar materials, service life, service conditions) per AWO M2-00-01035 between 1/27/00 and 1/31/00. The exams did not reveal any other degraded areas. All pipe wall measurements were at or above design pipe wall thickness.

2.0 PLANT DESIGN ENGINEERING (PDEG) OR STRUCTURAL AND DESIGN ENGINEERING (SDE)

2.1 DESIGN DETAILS

System: **Service Water (2326A)**

Component: **Line 24"-JGD-6, Pipe Spool No. SK 923**

Piping Size and Schedule: **24", Schedule 40**

Nominal Wall Thickness: **(0.688" nominal wall)**

Safety Code Class: **3**

Material: **PVC (rubberized) lined carbon steel pipe**

Design Pressure: **100 psig**

Design/Operating Temperature: **150 °F / 30° to 75°F**

Code Minimum Wall Thickness: **0.079"**

2.2 FLAW CHARACTERIZATION

Flaw Description/Size (i.e., flaw size, adjacent wall thickness, single/multiple flaw, total area examined, etc.);

Flaw Location: **The flaw is located in the "B" SW system discharge piping (line 24"-JGD-6, spool SK 923) from the RBCCW heat exchangers.**

Method of Examination: **UT Examination**

Flaw Type: **The flaw is a pin hole sized through wall flaw surrounded by an approximate 2" diameter area in which the wall thickness ranges from 0.060" to 0.264" (nominal pipe wall is 0.688").**

Referenced NDE Measurement Report: **AWO M2-00-00924**

2.3 PRELIMINARY FLAW EVALUATION SUMMARY

Preliminary (72 hour) Operability Assessment Details:

The Initial Operability Assessment was approved by the Shift Manager on 1/18/00. This assessment concluded that Reasonable Expectation of Continued Operability based on the following:

1) **A qualitative assessment of the impact of the degraded area on the structural integrity of the piping system concluded that the structural integrity of the pipe is maintained with a postulated 2" diameter hole.**
2) **The flaw is downstream of the component being cooled and thus, the leak rate from the pipe has no impact on the heat removal capacity of the SW System.**

Method Used: **Linear Elastic Fracture Mechanics**

Limiting Flaw Size: **2-1/2" diameter through-wall flaw was assumed which is sufficiently conservative to the 2" diameter actual degradation area to allow for future wall loss.**

Period of Time to Reach Limiting Flaw Size: **N/A (See Limiting Flaw Size: statement above)**

Evaluation Reference: **GL 90-05**

2.4 END OF CYCLE FLAW EVALUATION SUMMARY

Final Operability Assessment Details:

Structural Integrity has not been degraded:

Component Performance Engineering has issued Calculation No. 00-CP-02958 M2, Rev. 0 which concludes that the structural integrity of the pipe is maintained with the 2" diameter hole. The calculation conservatively assumed a 2-1/2" hole to account for potential further degradation. This assessment has been performed per the guidance presented in GL 90-05.

Service Water Heat Removal Capacity has not degraded:

Due to the location of the flaw it does not affect required SW flow through the RBCCW heat exchangers and accordingly has no impact on the heat removal capabilities of the SW system.

Spray concerns have been addressed:

The flaw is located approximately 6 ft above the floor at El. (-) 5'-6" in the Auxiliary Building near the non safety Primary Make-up Water (PMW) pumps. There are no safety related electrical components in the immediate vicinity of the flaw at El. (-) 5'-6". The flaw is on the north side of the pipe angled slightly to the east; spray would be toward a wall that would direct the water down to the next lower level. However, this line is located in a vertical pipe chase which is open to the (-) 25'-6" elevation. The "A" RBCCW pump and motor and valve 2-SW-3.1B (B SW Header to RBCCW HX Inlet Isolation) are located just west of the opening on the (-) 25'-6" elevation.

To minimize the potential for seawater spray from the flaw to impact the above components, exterior bolted pipe clamp has been installed around the circumference of the pipe encompassing the flaw. The clamp consists of three segments each with stainless steel banding (7-1/2" wide, approx. 1/8" thick) with black rubber lining. The segments are held together with 304 stainless steel bolting. 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, a tarp will be installed below the piping section containing the flaw such that if seawater were to begin leaking again, it would be directed to the (-)25'-6" elevation away from the 2-SW-3.1B valve and "A" RBCCW pump/motor.

Both the clamp and tarp are being installed in accordance with CRED M2-00-0155.

Flooding concerns are addressed:

Although highly unlikely, failure of the clamp with complete loss of the 2" diameter pipe wall at the pinhole location would not result in the flooding of safety related components based on the following:

1. Any water released would either collect on the (-)5'-6" elevation or drain through the floor opening in the (-)5'-6" elevation to the RBCCW pump and heat exchanger area on the (-)25'-6" elevation of the Auxiliary Building.

2. Water collecting at the (-)5'-6" elevation would flow towards several floor drains (aerated waste) in the immediate area. The PMW pump motors (2' above the floor), Refuel Water pump motors (2' above the floor) and SFP Cooling pump motors (14" above the floor) would not be impacted.

3. Any water flowing to the (-)25'-6" would be contained within the RBCCW equipment area by the 1' high berm located west of the RBCCW equipment. Within the berm area are several floor drains (aerated waste) as well as several floor drains connected to the sump located in the northeast corner of the area.

4. The RBCCW pump motors are mounted 2' above the floor and thus would not be impacted.

5. The only other electrical components located in the RBCCW area near the floor level are four (4) non safety, process radiation monitors:

    - RI 9095 - Waste Gas Discharge to the U1 Stack RM
    - RI 6038 - RBCCW Gross Activity
    - RM 9049 - Clean Waste Discharge
    - RM 9116 - Aerated Waste Discharge Radiation Monitor

All of these monitors would fail low if flooded and alarm in the Control Room.

Additionally, if a significant leak at the clamp location were to occur, it would be noticed in a timely manner by Operations personnel during Auxiliary

Building rounds which require the PEO to be near the clamp (at the PMW pumps) and in the RBCCW pump area at least twice per 12 hour shift.

Method Used: **GL 90-05**

Estimated Erosion Rate: **N/A (Note: Pipe is coated and flaw is assumed to have occurred due to coating defect or damage)**

Projected Flaw Size: **2.5" assumed diameter for through-wall flaw.**

Period of Time to Permanent Repair/Replacement: **The spool piece will be replaced during 2R13, scheduled to begin on 4/22/00.**

Provide a Discussion of Evaluation of Design Loading Conditions: **Pipe stresses are relatively low. Loads evaluated included combined pressure, dead load thermal, and seismic.**

Evaluation Reference: **Calculation 00-CP-02958M2.**

Discussion of Augmented Inspection Results: **All 5 locations showed wall thickness at or above nominal wall for those sections of piping (Ref. AWO M2-00-01035)**

2.5 FLAW MONITORING

Walkdown Frequency (for leak monitoring): **Operators will be near the clamp and at the elevation below the clamp at least twice per 12 hour shift as part of normal Operator Rounds requirements.**

Frequency of Follow-up NDE (for erosion rate assessment): **The clamp will be removed and the an additional UT will be performed at the flaw location per AWO M2-00-01002 (currently scheduled for February 16, 2000). The need for additional UTs and frequency will be determine based on the results.**

2.6 ADDITIONAL COMMENTS (scope, limitations, and specific considerations)

None

2.7 EXCEPTIONS TO GL 90-05

Specify if ASME Code Case N-513 is used. **"No"**

2.8 REFERENCES/INPUTS

2.8.1 NRC Generic Letter 90-05, "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping," June 1990.
2.8.2 NUSCo Isometric No. 25203-20150, sheet 106
2.8.3 NUSCo Spool Drawing No. 25203-20194, Sht 923
2.84 CRED M2-00-0155
2.8.5 NUSCo Calculation No. 00-CP-02958 M2, Rev. 0