

NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
MILLSTONE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

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June 28, 1991

Docket No. 50-336
B13864

Re: ASME Section XI

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

Gentlemen:

Millstone Nuclear Power Station, Unit No. 2
Temporary Repair to X-182 Heat Exchanger Tube

The purpose of this letter is to provide, for information only, details pertaining to a temporary repair made to X-182 heat exchanger tube--service water side--at Millstone Unit No. 2. Northeast Nuclear Energy Company (NNECO) is providing the attached information on this leak in the interest of keeping the Staff fully informed on leaks in the service water system, even though this particular leak is located in a nominal pipe size exempt from Section XI rules under IWA-7400(d). The X-182 heat exchanger serves the Vital AC Switchgear room.

An ASME Code Section XI repair cannot be performed on the subject heat exchanger tube due to inaccessibility caused by the design of the heat exchanger. Shutdown of the plant will not be necessary for replacement of the heat exchanger, which is scheduled to be done within the next six months.

The attached details of the temporary repair made to the heat exchanger tube are in a format similar to that usually submitted for a request for relief from ASME Code Section XI. However, NNECO reiterates that this submittal is for information only and no code relief is required or requested for this temporary repair.


Please contact us if you have any questions.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: E. J. Mroczka
Senior Vice President

BY:


C. F. Sears
Vice President

cc: See Page 2

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cc: T. T. Martin, Region I Administrator
G. S. Vissing, NRC Project Manager, Millstone Unit No. 2
P. Habighorst, Resident Inspector, Millstone Unit No. 2
W. J. Raymond, Senior Resident Inspector, Millstone Unit Nos. 1, 2, and 3

Docket No. 50-336
B11004

Attachment 1

Millstone Nuclear Power Station, Unit No. 2
Details of Temporary Repair
to
X-182 Heat Exchanger Tube

June 1991

TECHNICAL REVIEW

LEAK IN X-182 HEAT EXCHANGER TUBE - SERVICE WATER SIDE

A. DESIGN DETAILS

Piping System: Service Water

Pipe Size and Schedule: 5/8 inch OD heat exchanger tube.

Pipe Nominal Wall Thickness: .049 inch wall.

Pipe Safety Code Class: Class I

Pipe Material: 90-10 CU-Ni ASME SB171 CDA706

Design Pressure: 100 psig

Design/Operating Temperature: 120°F

B. FLAW CHARACTERIZATION

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

A visual inspection was performed on the affected tube and indicates that the hole is approximately 1/16 inch in diameter. The adjacent wall thickness could not be determined. There was only one hole found. The other tubes were visually inspected for leaks.

Flaw Location: 1 1/2 inches from the inlet header; see attached sketch.

Examination Method: Visual

TECHNICAL REVIEW (CONTINUED)

LEAK IN X-182 HEAT EXCHANGER TUBE - SERVICE WATER SIDE

C. ROOT CAUSE INVESTIGATION

Root Cause Description: The root cause of this defect is the erosion/
corrosion encountered during the fifteen year life of the heat
exchanger.

D. DESCRIPTION OF PROPOSED TEMPORARY REPAIR

A reversible repair consisting of a soft patch will be placed over the
hole and held in place with a hose clamp.

E. EVALUATION SUMMARY

Method used (i.e. LEFM, Area Reinforcement, Wall Thinning):

None, failure of the heat exchanger will not affect the operation of
the plant during an accident since the heat loads in the room are less
than during normal operation.

Estimated Wall Erosion Rate: None predicted, any leakage encountered be-
fore replacement will be contained with no effect on the plant.

Projected Flaw Size: No projections were made.

Period of time to permanent Repair/Replacement: Approximately 6 months.

Design Loading Conditions met? Not analyzed.

System Interaction Evaluation
(i.e. Flooding?, Jet sprays?, loss of flow?, etc.)

The heat exchanger is surrounded with a sheet metal shield which will
act as a spray guard if the patch leaks. No flooding is expected as
the heat exchanger is surrounded with a dike and is drained; in
addition, a pressure activated valve will close upon sensing a
catastrophic tube failure.

Impact to Safe Shutdown Capability? None anticipated.

TECHNICAL REVIEW (CONTINUED)

LEAK IN X-182 HEAT EXCHANGER TUBE - SERVICE WATER SIDE

F. FLAW MONITORING

Walkdowns: The area is surveyed once per shift on PEO rounds.

Follow-up NDE: None, the leak area cannot be inspected.

Additional Examinations Required (Based on root cause)

No additional examinations are required since all the heat exchangers of this type are scheduled to be replaced within the next six months.

G. AUGMENTED INSPECTION OF AFFECTED SYSTEM

Assessment of over all degradation:

Minor, the copper-nickel material is generally resistant to corrosion by sea water.

If Additional examinations are required, Specify Number of Inspection Locations:

The remaining tubes were visually inspected, the other similar heat exchangers are also being replaced and therefore do not require any additional specific inspections; see Additional Comments.

Description of Areas selected for Augmented inspection:

None, the other similar heat exchangers are also scheduled to be replaced.

H. ADDITIONAL COMMENTS

The heat load on these heat exchangers is highest during normal operation as fewer breakers are in use during an accident. Periodic performance testing including infrared scanning is performed on these heat exchangers to determine their effectiveness. A drop in performance would initiate a cleaning and inspection operation. These heat exchangers are cleaned and inspected every refuel at a minimum.

S.W.
INLET HEADER →

LEAK >

5/8" O.D. X .049 30-100V-N
ASME SB-71

X-182

