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

General Offices • Selden Street, Berlin, Connecticut

P.O. BOX 270
HARTFORD, CONNECTICUT 06141-0270
(203) 665-5000

March 25, 1991

Docket No. 50-423
B13784

Re: ASME Section XI

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

Gentlemen:

Millstone Nuclear Power Station, Unit No. 3
Modification to Pipe 3SWP*P1C
Relief Request from ASME Code Section XI Requirements

The purpose of this letter is to request, in accordance with NRC Generic Letter 90-05, relief from ASME Boiler and Pressure Vessel Code Section XI requirements pursuant to 10CFR50.55a(g)(6)(i). Attachment 1 provides a description of actions taken by Northeast Nuclear Energy Company (NNECO) to make interim repairs to the leak in this piping as an alternative to an IWA-7000 replacement. However, Generic Letter 90-05 would not permit start-up from the current refueling outage with an interim noncode repair in place. Relief is requested from the requirements of the generic letter to allow operation with this interim repair until such time as the manufacturer is able to provide a replacement expansion joint for the affected pump, but no later than the next refueling outage.

NNECO has completed the technical evaluation (Attachment 2) to ensure structure integrity, corrective action, and subsequent monitoring of routine repairs of erosion/corrosion damage in service water piping; however, consistent with the provisions of the generic letter, NNECO is submitting this relief request for temporary noncode repairs. The Resident Inspector at Millstone Unit No. 3 has been informed of this repair and, as has been our practice, we will keep the Resident Inspector fully informed and current on all future repairs.

A leak at the 30" service water system expansion joint 3SWP*EJ1C was initially identified on March 11, 1991. An engineering review was completed on March 12, 1991. Due to limited resources, the first detailed visual inspection took place on March 15, 1991. The visual examination (external only) was expanded to other service water pump expansion joints. These additional examinations were completed on March 25, 1991. Based on the data from these visual examinations, the failure mechanism is limited to the expansion joint 3SWP*EJ1C and is caused by pitting due to corrosion. Replacement expansion joints are in the process of being ordered. The new joint will be a different material which is more resistant to pitting corrosion. Based on

previous experience, NNECO currently expects the replacement to be available within 6 months, at which time it will be installed. The subject piping is isolable during power operation; therefore, installation will not require an additional plant shutdown.

In accordance with recent discussions between NNECO and the NRC Staff, NNECO hereby requests relief from the requirements of ASME Section XI which precludes ascending in modes if a temporary non-ASME code repair is in place. Millstone Unit No. 3 has been in a refueling outage since February 2, 1991, and this request for relief is required to support timely resumption of operation (start-up--Mode 4) which is currently scheduled for March 27, 1991.

Prompt relief is requested in order to minimize any delay in start-up of the plant. It should be noted that the service water system will remain in OPERABLE status without the service water pump 3SWP*P1C in operation. It is NNECO's intention to resume plant operation if the NRC staff is unable to provide relief from the ASME Section XI requirements by March 27, 1991. The duration of the relief is requested to remain valid until the manufacturer has provided a new expansion joint or until the next refueling outage.

Based upon the information contained in this submittal there are no significant radiological or nonradiological impacts associated with the requested relief and the request for relief will not have a significant effect on the quality of the human environment.

We also wish to emphasize our conclusions that this proposed request for relief involves no undue safety risk. We are therefore requesting this action to permit timely resumption of plant operation, an action which is in the best interest of the health and safety of the public, our customers, and shareholders.

We believe the above information provides a complete basis for approval of the requested relief from the requirements of ASME Section XI. We will continue to keep you informed on matters relevant to this request.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

E. J. Mroczka
Senior Vice President

cc: T. T. Martin, Region I Administrator
D. H. Jaffe, NRC Project Manager, Millstone Unit No. 3
W. J. Raymond, Senior Resident Inspector, Millstone Unit Nos. 1, 2, and 3

Docket No. 50-423
B13784

Attachment 1

Millstone Nuclear Power Station, Unit No 3

Details Pertaining to Relief From
ASME Section XI Requirements

March 1991

Millstone Nuclear Power Station, Unit No 3
Details Pertaining to Relief From
ASME Section XI Requirements

A. DESIGN DETAILS

Piping System: Service Water System on the discharge of the 3SWP*P1C pump.

Pipe Size and Schedule: 30" expansion joint, no applicable schedule.

Pipe Nominal Wall Thickness: 0.062" (bellows)

Pipe Safety Code Class: Class 3

Pipe Material: SB 127 Monel 400

Design Pressure: 106 PSIG

Design/Operating Temperature: 75°F

Code Minimum Wall Thickness: 0.050"

B. FLAW CHARACTERIZATION

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

See the attached drawing. There are two holes, one approximately 1/16" diameter and one 1/16" wide and 1/8" long that are located on the bottom of the first full convolution from the pump end of the expansion joint. The remainder of the joint was visually inspected. The hole is caused by localized pitting and is not characteristic of overall degradation.

Examination Method: Visual by VT 1-4 qualified personnel. Due to location of flaw and shape of expansion joint and sheet metal bellow thickness, UT examination is difficult and of limited accuracy. Flaw type and mechanism does not call for Dye Penetrant exam.

Flaw Type: Thru-wall

C. ROOT CAUSE INVESTIGATION

Root Cause Description: Holes caused by pitting of Monel due to stagnant conditions between bellows and liner and the accumulation of bio-matter in the convolutions. Some minor general area wall loss, but this is not significant at this time.

D. DESCRIPTION OF PROPOSED TEMPORARY REPAIR

The pin holes will be plugged with a rubberized sealant (RTV) from both sides. It is impractical to wrap the expansion joint from outside due to circumference of joint and location of hole. Weld repair was examined. Due to the long-term exposure of the joint to salt-water, the location of the flaws, and the thickness of the material, a welded repair is not possible. A major ASME III expansion joint manufacturer was contacted on the possibility of them performing a repair. They would not recommend or give any type of guarantee on this type of repair.

E. EVALUATION SUMMARY

Estimated Wall Erosion Rate: Minimal, the plugging material will protect the Monel 400 from further attack.

Projected Flaw Size: see above.

Period of Time to Permanent Repair/Replacement: The expansion joint will be replaced as soon as replacements are available and plant conditions permit. Replacements are presently being purchased.

System Interaction Evaluation (i.e., flooding, jet sprays, loss of flow, etc.):

The holes are located on the bottom of the expansion joint and are covered by a protective shroud. There is no concern of direct spray onto other safety-related components should the temporary patches fail. The service water pump cubicle where this component is located is inspected once every 8 hours by plant operations personnel. The maximum flow rate out of the holes based on maximum system operating pressure assuming that the temporary patches fail is 7 gpm. This leak rate, along with normal pump seal leak-off, is below the capacity of the sump pump for the area.

F. FLAW MONITORING

Walkdowns: This area is subject to routine operator walkdown every shift.

Follow-Up NDE: None required as the patch will prevent further erosion of the hole once the flow is blocked. Additionally, the plugging material used for a patch will prevent examination of the immediate leak area.

Additional Examinations Required (based on root cause): The three other expansion joints on the remaining three service water pumps were visually inspected from outside and UT or ECT examination of the lower quarter of the joints will be performed once an accurate inspection method is determined.

G. AUGMENTED INSPECTION OF AFFECTED SYSTEM

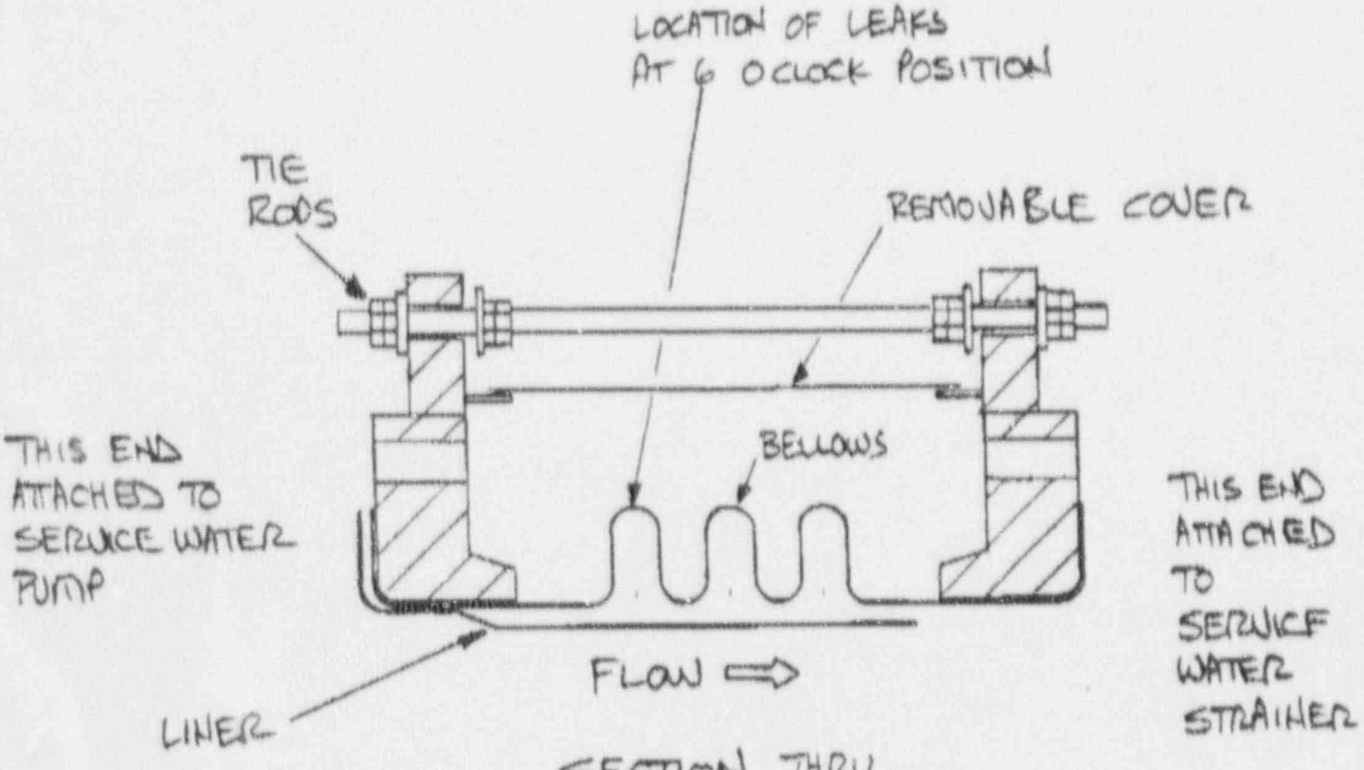
Assessments of Overall Degradation:

Degradation of the expansion joint is due to pitting of the Monel bellows material. Replacement expansion joints are being fabricated of Inconel 625 which is resistant to pitting.

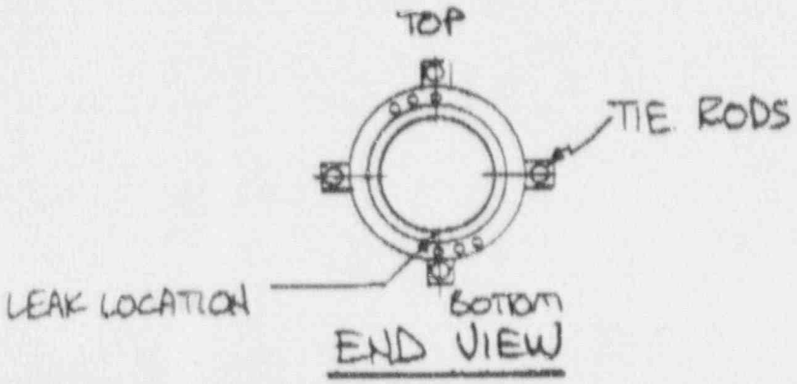
Four additional locations will be inspected. The outlet expansion joints on the containment recirculation coolers are subject to exposure to seawater. All other expansion joints in the service water systems are either (1) being replaced with Inconel 625 in the near future, (2) not exposed to seawater regularly, or (3) located in nonsafety-related portions of the system.

Description of areas selected for augmented inspection: The four expansion joins are 3SWP*EJ8E, F, G, and H. The are 15" Monel expansion joints.

EXPANSION JOINT
3SWP*EJ1C



SECTION THRU
3SWP*EJ1C



END VIEW

Docket No. 50-423
B13784

Attachment 2

Millstone Nuclear Power Station, Unit No 3

Technical Evaluation

March 1991

Millstone Nuclear Power Station, Unit No 3
Technical Evaluation

The 30" service water system (SWP) Expansion Joint 3SWP*EJ1C has experienced bellows degradation which has resulted in a thru-wall leak. Visual examination of the inside diameter shows the degradation is generally confined to the lower quarter of the bellows.

An evaluation of this expansion joint to determine structural integrity in its degraded condition shows:

1. The bellows are installed between the service water pump and the strainer, with both pieces of equipment anchored directly to the intake structure. In this configuration, the captured bellows experience extremely small lateral and angular movements.

2. The degradation does not encompass a large, continuous area, permitting the loads created by internal pressure to distribute across the bellows.

3. Input from expansion joint manufacturers indicates the bellows material (Monel 400) is a ductile material which is not prone to catastrophic failure. Therefore, local yielding in the vicinity of the hole would result in material yielding and subsequent load relaxation with no detrimental effect to the expansion joint.

4. The degraded area is to be coated with a protective material to preclude further degradation. Since the bellows are not exposed to flow, the coating will remain stable.

Based on the above, the Expansion Joint 3SWP*EJ1C is considered to maintain structural integrity in its degraded condition and remains capable of performing its intended safety function. This conclusion will be confirmed by NDE (UT/ECT) data prior to declaring the "C" service water pump and associated piping operable.