NORTHEAST UTILITIES

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

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May 25, 1984

Docket No. 50-336
B11207

Mr. Richard C. DeYoung, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Gentlemen:

Millstone Nuclear Power Station, Unit No. 2
Report of Substantial Safety Hazard

In conformance with applicable provisions and requirements of 10CFR21, Northeast Nuclear Energy Company hereby provides notification of a Substantial Safety Hazard (SSH) for Millstone Unit 2.

On May 22, 1984, Mr. T. C. Elsasser of the NRC Region I office was verbally notified of the repeated failures of the Reactor Coolant System charging pumps used in Millstone Unit No. 2. These pumps are Model NP-18 three-cylinder positive displacement pumps manufactured by the Gaulin Corporation, Everett, Massachusetts. Single pump failures were discovered on or about August 8, 1982, February 27, 1984, and April 4, 1984.

These pumps failed due to the initiation and propagation of cracks in the pump blocks. The cracks were discovered during investigation of Reactor Coolant System leakage from the Chemical and Volume Control System.

The cracks are initiated within the pump blocks and propagate between one or more of the three cylinders and the outside surface. Although the cracks appear as hairline cracks during pump examination, they evidently open up during the pump cycle and permit reactor coolant leakage. In no case did any of the pumps fail to operate while in service.

A failure analysis performed by a NNECO contractor on one failed pump block indicated that most likely the crack resulted from overstressing, with an initiating flaw of a size that was smaller than that detectable by the manufacturing inspection methods used by the manufacturer.

Short-term actions being taken by NNECO personnel include the routine Reactor Coolant System leakage monitoring and dye penetrant inspection of the pump blocks during maintenance activities. Long-term actions by NNECO include charging system piping analyses and measurements of charging pump suction conditions to determine if there are any off-normal operating conditions. In

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addition, changes in pump design and manufacturing techniques, such as shot peening of cylinder bore surfaces, are being investigated by NNECO with the manufacturer. All of these short-term and long-term actions have been initiated. It cannot be determined at this time how long these actions will take.

Millstone Unit 2 utilizes three (3) of these charging pumps in the Chemical and Volume Control System. Technical Specifications require that two charging pumps shall be operable at all times. There is a 48-hour Action Statement in the event two of the three pumps become inoperable or unavailable for operation. A charging pump is necessary in mitigating a Main Steam Line Break Accident and a small break Loss of Coolant Accident. Therefore, since (1), charging pump operability is required by Technical Specifications, (2), a type of common mode failure has been identified, (3), a clear solution to these failures has not yet been identified and (4), other licensees have experienced failures of the same model pumps, NNECO has determined that the failures of the subject pumps (potential major degradation) constitute a Substantial Safety Hazard.

The following information applicable to this SSH determination is provided as required by 10CFR21.21(b)(3), i through viii.

(i) Name and Address of Individual Informing the Commission.
William G. Counsil, Senior Vice President, Nuclear Engineering and Operations, Northeast Utilities Service Company, P. O. Box 270, Hartford, Connecticut, 06141-0270.

(ii) Identification of the Basic Component
Model NP-18 three-cylinder positive displacement Reactor Coolant System charging pumps.

(iii) Identification of the Firm Supplying the Basic Component
Gaulin Corporation
44 Garden Street
Everett, Massachusetts 02149

(iv) Nature of the Failure to Comply

(See discussion above)

(v) Date on which Information of Such Failure to Comply Was Obtained

On or about August 8, 1982, February 27, 1984, and April 4, 1984 (three failures).

(vi) The Number and Location of All Such Gaulin Charging Pumps

There are three such pumps in service at Millstone Unit No. 2. No such pumps are used at other nuclear generating units under the responsibility of Northeast Utilities.

It is our understanding that this model pump has been in use at various other facilities, including Arkansas Nuclear One and Fort Calhoun, and has been installed at other facilities employing Combustion Engineering Nuclear Steam Supply Systems. We are aware there have been pump failures at certain of the facilities.

(vii) Corrective Action, Organization Responsible, and Time to Complete Action

(See discussion above)

(xiii) Advice Related to the Failure to Comply Being Given to the Licensee.

Not applicable. Refer to supplier.

We trust this information is complete as required under 10CFR21. Please contact Mr. James R. Himmelwright of my staff if you desire additional information.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

W. G. Counsil
Senior Vice President

cc: Dr. Thomas E. Murley, Regional Administrator, Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406