

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 • Seldon Street, Berlin, Connecticut

P.O. BOX 270
HARTFORD, CONNECTICUT 06141-0270
(203) 666-6911

April 29, 1983

Docket No. 50-336
A03124

Director of Nuclear Reactor Regulation
Attn: Mr. Robert A. Clark, Chief
Operating Reactors Branch #3
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

- References: (1) R. A. Clark letter W. G. Council, dated March 16, 1983.
(2) W. G. Council letter to R. A. Clark, dated February 12, 1982.
(3) E. L. Conner letter to W. G. Council, dated March 5, 1983.
(4) W. G. Council letter to R. A. Clark, dated January 22, 1982.

Millstone Nuclear Power Station, Unit No. 2
Cycle 6 Refueling Outage Steam Generator Inspection Plans

In Reference (1), the NRC Staff issued license Amendment No. 83 and the supporting Safety Evaluation to Facility Operating License No. DPR-65, for Millstone Unit No. 2. Documented in Reference (1) was a request for Northeast Nuclear Energy Company (NNECO) to provide the plans for the Cycle 6 reload outage steam generator inspection, thirty (30) days prior to the outage.

In response to that commitment, NNECO provides the following information.

The Millstone Unit No. 2 steam generators (SG) will be inspected during the May 1983 Refueling Outage using advanced multifrequency eddy current inspection techniques in accordance with Technical Specification Requirements. The inspection plan which will be implemented will be in excess of the required 3 percent sample and will include at least 10 percent of the unplugged tubes in the hot legs of each of the two SGs. The areas to be inspected are outlined in the attached Table 1.

Approximately 40 percent of the tubes included in the inspection plan will be inspected full length (from the hot-leg tubesheet to the cold-leg tubesheet). The

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remaining tubes to be inspected will be from the hot-leg tubesheet completely around the U-bend to the top tube support plate on the cold-leg side.

Above and beyond the Technical Specification Requirements, the following actions are planned for this inspection:

1. Thirty-three tubes in SG No. 1, and 21 tubes in SG No. 2 which were not inspected during the December 1981 Refueling Outage, (as identified in Reference (2)) in fulfillment of the Reference (3) commitment.
2. A representative sample from each SG of tubes typifying the leaking tube found during the March 1983 plant shutdown.
3. A representative sample from each SG of the accessible outer peripheral tubes.

In addition to inspecting for tube defects, a Supplementary Program for denting assessment will also be performed on a best effort basis. Advanced multifrequency eddy current and profilometer methods will be used to assess the status of and progression of SG tube denting in this Supplementary Program. The techniques represent an advanced level of nondestructive testing technology and should provide results with optimum definition.

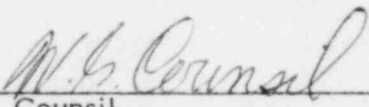
Table 2 of the attachment outlines the Supplementary Steam Generator Testing Program and includes a tube plugging criterion which represents a gauging criteria in combination with tube strain based on profilometer data. Since the profilometer measurements represent the actual tube shape, the strain computed from the measurement represents optimum definition of tube strain.

NNECO concludes that the planned steam generator inspections outlined in the attached Tables 1 and 2 will provide the necessary information to ensure the probability of a SG tube failure remain acceptably low during Cycle 6 operation of Millstone Unit No. 2.

We trust you will find this information responsive to the Reference (1) request.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY



W. G. Council
Senior Vice President

Definitions

Accessible Tube: A tube that is accessible to remote, manipulator type of devices used for conducting eddy current examinations.

Affected Areas: These areas of the steam generator where tube pitting has been concentrated (Reference 4).

Blockage: Tube condition that prevents passage of a probe of the nominal diameter indicated.

Denting: Constriction of the Inconel tubing that occurs at the tube/tube support junctions as a result of magnetite build-up in these regions.

Profilometer: Device for measuring eight or more internal tube radii as a function of axial position.

Unaffected areas: Those areas of the steam generator where no tube pitting has been found (Reference 4).

TABLE 1

Inspection Program for Tube Defect Assessment

| <u>Approximate Sample Size (Percent of Unplugged Tubes)</u> | <u>Sample Location*</u> |
|---|---|
| 10% | Hot-Leg Tubes in Affected Areas of each SG |
| 6% | Cold-Leg Tubes in Affected Areas of each SG |
| 10% | Hot-Leg Tubes in Unaffected Areas of each SG |
| 3% | Cold-Leg Tubes in Unaffected Areas of each SG |

*Includes tubes where flaws have been identified previously.

TABLE 2

SUPPLEMENTARY STEAM GENERATOR TESTING PROGRAM (EDDY CURRENT TESTS EXCEPT AS NOTED)

| Sample Size/Location | Result | Action Requirements | |
|--|--|--|--|
| 1.0 10 percent of the tubes of each steam generator. | 1.1 Blockage of .540* diameter probe at support elevation, hot-leg side. | 1.1.1 Perform profilometer test and determine maximum tube strain, or plug tube. | |
| | | 1.1.1.1 If maximum strain is less than 14%, no action is required. | |
| | | 1.1.1.2 If maximum strain is greater than or equal to 14%, plug tube. | |
| | 1.1.2 An adjacent tube shall be selected and subjected to a tube inspection. | 1.2 Blockage of .540* inch diameter probe at cold-leg side. | 1.2.1 None, provided that no blockage is found on hot-leg side in 10% sample population. |
| | 1.2.2 Retest from cold-leg side, if blockage is encountered. | | |
| | 1.2.2.1 If blocked, perform profilometer test and determine maximum tube strain, or plug tube. | | |
| | 1.2.2.1.1 If maximum strain is less than 14%, no action is required. | | |
| | 1.2.2.1.2 If maximum strain is greater than or equal to 14%, plug tube. | | |
| | 1.3.1 None | | 1.3 Nonblockage of .540* inch diameter probe at support elevations hot-leg and cold-leg |
| | | | |

*May be changed to .460 inch diameter probe depending on the outcome of a study comparing minimum diameter to strain, based on profilometry data from previous Millstone 2 outages.