

August 30, 1995

Mr. T. Gary Broughton, Vice President
and Director - TMI
GPU Nuclear Corporation
P.O. Box 480
Middletown, PA 17057-0480

SUBJECT: THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 1 (TMI-1) - REQUEST FOR
ADDITIONAL INFORMATION (TAC NO. M92283)

Dear Mr. Broughton:

On April 28, 1995, the U.S. Nuclear Regulatory Commission issued Generic Letter (GL) 95-03 "Circumferential Cracking of Steam Generator Tubes" which requested addressees to evaluate recent operating experience related to circumferential cracking, to justify continued operation until the next scheduled steam generator tube inspections, and to develop plans for the next steam generator tube inspections.

By letter of June 20, 1995, GPU Nuclear provided the TMI-1 response to GL 95-03. The staff has reviewed your response. As a result of our review, the staff has identified areas for which additional information and/or clarification is needed. The enclosure to this letter contains the information needed to complete our review of your response to GL 95-03. Please provide a written response to the information described in the enclosure within 30 days of the date of this letter.

This request is within the original reporting burden for information collection of 350 hours covered by the Office of Management and Budget clearance number 3150-0011, which expires July 31, 1997.

Sincerely,

Original signed by:

Ronald W. Hernan, Senior Project Manager
Project Directorate I-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-289

Enclosure: Request for Additional
Information

cc w/encl: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20565-0001
August 30, 1995

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and Director - TMI
GPU Nuclear Corporation
P.O. Box 480
Middletown, PA 17057-0480

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Sincerely,

A handwritten signature in cursive script that reads "Ronald W. Hernan".

Ronald W. Hernan, Senior Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor regulation

Docket No. 50-289

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cc w/encl: See next page

T. G. Broughton
GPU Nuclear Corporation

Three Mile Island Nuclear Station,
Unit No. 1

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REQUEST FOR ADDITIONAL INFORMATION BY
THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATING TO THE TMI-1 GENERIC LETTER 85-03 RESPONSE

TAC NO. M92283

Circumferential cracking (and/or circumferential oriented degradation) has been observed in steam generators at the expansion transition region, dented regions including dented tube support plates, in the lane/wedge region of tubes at the 15th tube support plate and the upper tubesheet (UTS), and at sleeve joints. Based on the examinations to date, circumferential cracking has only been observed in the lane/wedge region.

1. Discuss the design differences between the TMI-1 steam generators and the generic design information provided in the B&W Owners Group response, if any.
2. Dented Regions including dented tube support plates

The Electric Power Research Institute (EPRI) report NP-6201 "PWR Steam Generator Examination Guidelines: Revision 3," dated November 1992, indicated that B&W plants have experienced denting at tube support plates and in the lower tubesheet. Circumferential indications have been observed at dented areas in recirculating steam generators. If denting has been observed at TMI-1 and it is a location susceptible to circumferential cracking, please submit the information requested in Generic Letter (GL) 95-03 per the guidance contained in the GL. If a voltage threshold is used for determining the threshold for examining dents, provide the calibration procedure used (e.g., 4.0 volts on 4-20% through-wall ASME holes at 550/130 mix).

EPRI report NP-6201 indicates that the 15th tube support plate contains both broached holes and drilled holes, the drilled holes being prone to denting. Please clarify whether all of the tube support plates are of the broached hole designs or whether a number of them contain drilled holes. Discuss whether denting has been limited to the drilled hole locations, if applicable, or if it has been observed at other support plate intersections (i.e., broached holes).

3. Expansion transition examinations

Discuss the extent of the kinetic expansions at TMI-1 (e.g., 1000 tubes expanded 10", 2000 tubes expanded 15", remaining tubes have 1" roll expansion, etc.). Provide the number of tubes currently in service that were rerolled after the furnace stress relief.

Clarify the inspections performed during the last outage at the expansion transition region. Address the probe used and the number of tubes inspected.

The TMI-1 response indicates that the kinetic expansion transitions for unsleeved tubes in the lane region will be inspected (approximately 280 tubes per Once-Through Steam Generator (OTSG)). However, the report indicates that all OTSG plants have completed sleeving tubes in their defined lane/wedge region. Please clarify the inspection plans at the kinetic expansions at TMI-1. Please clarify if all tubes in the lane/wedge region have been sleeved at TMI-1. Please describe the basis for limiting the inspection to the lane region. Please discuss the expansion criteria to be used if indications are detected at the kinetic expansions.

Clarify what is meant by no "confirmed" service-induced tube cracks have been found in the TMI-1 kinetic expansions. It is stated that leak tests since 1985 have consistently found that there were no leaking kinetic expansion transitions. Describe how these tests are performed (e.g., test pressure, how leakage is monitored, etc).

Provide the criteria to be used for determining whether expansion of the inspections for expansion transition indications is necessary.

4. Lane/Wedge Region

Clarify the inspection scope in the lane/wedge region during the last steam generator tube inspections (including the probe type and number (and/or percentage) of tubes inspected).

Provide the criteria to be used for determining whether the expanded inspection scope around any identified indications adjacent to the sleeved lane/wedge region is bounded.

5. Recently, several tubes have been pulled from B&W once through steam generators (OTSGs). Discuss any analyses performed on these pulled tubes for monitoring the development of circumferential cracking. For example, discuss the destructive and non-destructive examinations performed on these pulled tubes in the laboratory at the expansion transition area.

6. Clarify whether the inspection method to be used at TMI-1 is qualified for the detection of circumferential cracks per Appendix H of EPRI report NP-6201 or whether a site specific qualification program will be used. If using site specific qualification procedures, state the differences and provide the justification for these criteria including a discussion of pulled tube data to support the detectability of circumferential cracks in the field.

7. Discuss the number and types of sleeves used at TMI-1 along with their installation dates (i.e., month/year).

Discuss the inspections performed on the sleeved portions of these tubes during the last outage.