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March 20, 1991
C311-91-2015

US Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Gentlemen:

SUBJECT: Three Mile Island Nuclear Station Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
GPU Nuclear Final Response to NRC Bulletin 88-11,
"Pressurizer Surge Line Thermal Stratification and Striping"

GPU Nuclear Corporation (GPUN) submitted a Justification for Continued Operation, as required by Item 1.b of NRC Bulletin No. 88-11 in a letter dated January 1, 1990. By letter dated May 18, 1990 the NRC stated that there was sufficient information to justify interim operation of the individual plants until the final report was submitted. The letter also identified those issues which the NRC stated would need to be resolved in the final report in order to support the conclusion that the pressurizer surge line meets all appropriate Code limits for the 40 year plant life. The Babcock & Wilcox Owners Group (B&WOG) submitted the final topical report, BAW-2127, to the NRC on December 31, 1990. Errata pages were subsequently submitted on January 4, 1991. The purpose of this letter is to docket the topical report as being applicable to TMI-1 and to advise you of the licensee specific actions taken with respect to the bulletin. BAW-2127, in combination with this letter, addresses the issues raised by the NRC and completes the action per Item 1.d of the bulletin for TMI-1.

The pressurizer surge line configuration for TMI-1 differs from that described in BAW-2127. The TMI-1 drain piping connected to the one inch drain nozzle is two inches in diameter rather than one inch. A second difference is that the TMI-1 surge line does not utilize any seismic snubbers. These differences have been evaluated and do not affect the basis for the acceptability of the line as analyzed in BAW-2127.

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As required by Bulletin Item 1.a, inspections of the pressurizer surge line were performed on November 30, 1989 at hot shutdown conditions and during the Cycle 8 Refueling Outage (8R) in January, 1990. The first inspection verified that movement of the TMI-1 surge line was unrestricted as there was no evidence of damaged insulation. The second inspection included the removal of piping insulation, visual inspection of the piping, a survey of the horizontal piping sections, and ultrasonic examination of a section of horizontal piping adjacent to the elbow below the pressurizer. There was no noticeable piping distress and there were no reportable indications from the ultrasonic examination.

Item 1.c of the NRC bulletin requests acquisition of plant data on thermal stratification, thermal striping, and surge line deflection. Such data were acquired as part of a B&WOG task, when Oconee Unit No. 1 was instrumented. A correlation between pressurizer level changes and end point (pressurizer and hot leg) temperatures was developed from this data to predict the magnitude and temperature profile of stratification cycles. Figure Nos. 4-3 and 4-4 in BAW-2127 compare the predicted thermal stratification cycles to those measured at Oconee. These figures show that the prediction correlation bounds the magnitude of the measured thermal cycles. Pressurizer level changes due to operational occurrences were defined and predictions of resulting thermal stratification cycles (BAW-2127, Fig. No. 4-12) were used as the revised functional specification in the fatigue evaluation.

TMI-1 plant specific data and plant operating procedures have been reviewed as requested in Item 1.c. The results of that review confirm that the revised functional specification yields an acceptable, yet conservative, basis for defining the fatigue usage of the surge line and respective nozzles. The review determined that:

- 1) the analysis conservatively estimated both the number of thermal stratification cycles experienced by the plant to date, and the number of heatup and cooldown cycles for the remaining plant life; and,
- 2) the revised functional specification bounds both the magnitude and number of thermal stratification cycles that are incurred with each heatup and cooldown.

TMI-1 has taken steps to reduce future surge line thermal cycles by:

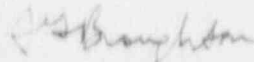
- 1) modifying the inservice test (IST) surveillance procedure (SP) 1303-11.54, "Low Pressure Injection Test" to perform the test with the Reactor Coolant System (RCS) vented; and,
- 2) adopting the preferred lower RCS subcooling margins for inclusion in plant operating procedures, as recommended in BAW-2127 (Fig. No. 8).

In addition, when the preferred lower RCS subcooling margin is not maintained, an evaluation of actual plant performance will be conducted in a programmatic manner to determine its impact on fatigue life.

Item 1.d of the bulletin requested that the licensee update stress and fatigue analyses to ensure compliance with applicable Code requirements. The necessary Code analysis which defines the surge line fatigue usage for the 40-year design life has been completed.

This completes our response to NRC Bulletin No. 88-11.

Sincerely,



T. G. Broughton
Vice President and Director, TMI-1

GMG/plp

cc: Region 1 Administrator, NRC
TMI-1 Senior Project Manager, NRC
TMI-1 Senior Resident Inspector, NRC