



GPU Nuclear

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July 7, 1982
5211-82-163

Office of Nuclear Reactor Regulation
Attn: Darrell G. Eisenhut, Director
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Pressurized Thermal Shock (PTS) to Reactor Vessel

This letter transmits to you the TMI-1 report concerning PTS to supplement our letter dated June 1, 1982 (5211-82-132). The report was initiated by GPU Nuclear and used plant specific parameters and the latest industry thermal mixing results for probable and mechanistic transients. The report demonstrates TMI-1 Reactor Vessel (RV) integrity under PTS conditions.

The TMI-1 PTS report represents a continuation of the activities of the B&W Owner's Group RV Integrity program which was originally initiated in 1977. The early B&W generic PTS evaluations (BAW 1628 and 1648) predicted crack growth exceeding the arbitrary 1/4 T criteria for the assumed transients after 4.8 Effective Full Power Years (EFPY) of RV operation. The TMI-1 specific results indicate no defect growth or initiation through 32 EFPY. The difference is accounted for in the various conservative inputs in the generic reports versus the plant specific data and the realistic mixing model (COMMIX-1A) used in the plant specific TMI-1 evaluation.

Several significant conservatisms still remain in the TMI-1 analysis. These conservatisms include, but are not limited to, crack arrest criteria, cladding effects, warm prestress, HPI temperatures, and conservative fractures mechanics techniques.

The fluences used in the analysis are based on our current 12 month modified out-in fuel cycle. GPU Nuclear, for economic reasons as well as PTS concerns, is currently investigating an 18 month low leakage fuel cycle where projected reductions in fluence of 25-30% are achievable. If implemented, the 18 month fuel cycle would provide additional margins in RV integrity by reductions in RT_{ndt} of about 10% at 32 EFPY.

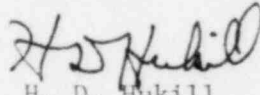
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In the area of operator training, GPU has initiated a program to reinforce operator awareness of PTS through an extensive review of procedures. This training will enable the operator to identify and mitigate potential PTS events. Conversely, the analysis used two transients that assumed minimal operator actions to drive the event towards a PTS challenge of the vessel.

Finally, GPU has committed a significant amount of time and resources on the PTS issue and plans to maintain a high level of involvement in the B&W Owner's Group RV Integrity Program to monitor and develop state of the art analytical and experimental programs to assure the integrity of the reactor vessel.

Sincerely,



H. D. Hukill
Director, TMI-1

HDH:JD:vjf

Enclosure: "TMI-1 Pressurized Thermal Shock Evaluation"

cc: H. Denton