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May 9, 1980
TLL 228

Office of Inspection and Enforcement
Attn: B. H. Grier, Director
U. S. Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, Pa. 19406

Dear Sir:

Three Mile Island Nuclear Station, Unit I (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
IE Bulletin 80-04

Attached please find the response to IE Bulletin 80-04, "Analysis of a PWR Main Steam Line Break With Continued Feedwater Addition". Based on the results of our review, we conclude that the items raised by the subject bulletin are not a concern for TMI-I.

Sincerely,

J. G. Herbein
Vice President
TMI-I

JGH:DGM:hah

Attachment

cc: Office of Inspection and Enforcement
Division of Reactor Operations Inspection
Washington, D.C. 20555

J. T. Collins
B. J. Snyder

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Attachment 1
TLL 228

RESPONSE TO IE BULLETIN 80-04

The response of TMI-I to a steam line break is addressed to FSAR Section 14. 1.2.9.4. The TMI-I facility was designed with a steam line detection system, which automatically isolates both main and emergency feedwater (EFW) to the steam generator that has sustained a broken steam line. Isolation of main and emergency feedwater to a steam generator with a broken steam line would occur at 600 psig.

The analysis in the FSAR did not account for EFW supplied to the steam generator with the broken steam line between the time that EFW is automatically initiated until the EFW flow to the impaired steam generator is isolated. Following a steam line break, the pressure in the steam generator with a broken steam line would quickly fall below 600 psig. If EFW were to automatically be initiated, the mechanical delays associated with EFW system (approximately 10 seconds) would reduce EFW injection prior to the 600 psig feedwater isolation signal. Peak containment pressure for the steam line break accident is 28 psig. Design containment pressure is 60 psig, and thus the limited EFW addition to the steam generator with a broken steam line would not significantly increase peak containment pressure following a steam line break.

Based upon a previous commitment contained in our response to Restart Report Question 4, Supplement 1, Part 3, cavitating venturis will be installed in the EFW discharge lines. If EFW is initiated following a steam line break, EFW flow to the depressurized steam generator would be limited to no more than 625 gpm. With the addition of the venturis in the EFW discharge line, the TMI-I response is bounded by the TMI-II steam line break analysis (refer to TMI-II FSAR Appendix 15B). This analysis assumed failure of the feedwater regulating valve to close, causing additional inventory until the feedwater block valve closed. The TMI-II analysis further assumed that an EFW flow of 625 gpm was initiated at 2 sec following the steam line break and continued throughout the accident. The peak containment pressure for this case was less than TMI-I containment design pressure of 60 psig.

With regard to concerns relating to return to power following a steam line break, Section 14.1.2.9.4 of the TMI-I FSAR addresses the reactivity increase following a steam line break. For this event, feedwater is assumed to be isolated by the steam line rupture detection system. Even with the blowdown of both steam generators following a steam line break, there is no return to criticality.

As indicated in Section 8.3.9 of the TMI-I Restart Report, the issue of core return to power was evaluated in the GPUSC Safety Evaluation for Cycle 5 operation of TMI-I (the present cycle). Based on analyses performed for TMI-II (refer to Appendix 15B and References 6 and 7 of the Restart Report, Section 8), it was verified that the TMI-II analyses bounded the TMI-I core design for Cycle 5. The assumptions used in the TMI-II analysis are more severe than the licensing basis for TMI-I Cycle 5, since it assumes a failure of two steam lines and the failure of both feedwater trains to isolate flow. The TMI-II analyses demonstrated that as long as a 2% shutdown margin is available, a core does not return to criticality nor does it generate substantial power due to subcritical multiplication. The design of the TMI-I core for Cycle 5 operation maintains at least a 2% shutdown margin throughout its cycle.