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Office of Nuclear Reactor Regulation  
Attn: John F. Stolz, Chief  
Operating Reactors Branch No. 4  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

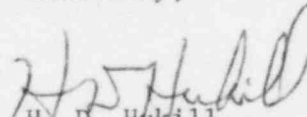
Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)  
Operating License No. DPR-50  
Docket No. 50-289  
EFW Seismic Qualification Supplement

In supplement to our response of February 4, 1983 (83-040) enclosed please find our response to Item 8 which arose from our meeting with NRC Staff/Lawrence Livermore Labs on January 7, 1983. Based on our analysis, we have concluded that TMI-1 can be safely shutdown following a seismic event concurrent with a small break LOCA or loss of feedwater event with an EFW flow rate of 450 gpm subject to a 20 minute delay in delivery of EFW to the steam generators.

Due to the results of our analysis, (subject to EFW flowrate confirmation), we are committing at this time to lock open the recirculation lines on the EFW pumps. This resolves the NRC concern raised in Item 6 of the January 7th Action Items over possible pump damage caused by an EFW pump running at shutoff with the recirculation line closed. Our commitment to lock-open the recirculation line valves at this time eliminates the need for upgrading the controls for EFW-8A, B & C to Safety Grade during the first refueling outage.

Sincerely,

  
H. D. Hukill  
Director, TMI-1

HDH:LWH:vjf  
Enclosure  
cc: R. C. Haynes  
J. Van Vliet

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"Item 8. Provide reference to analyses determining AFW elec. pump capacity and required AFW flow."

Response:

The bounding analysis for B&W plants (including TMI-1) is provided in the Restart Report Section 8.3.13 and Appendix 8A and 2.1.1.7.6, including Question 3 to Supplement 1, Part 2. As indicated in these references, the minimum Emergency Feedwater flow requirement is 500 gpm.

GPUN has analyzed the capabilities of the TMI-1 Emergency Feedwater System. One (1) motor driven EFW pump can deliver 515\* gpm to two (2) intact steam generators with the recirculation line closed or 455 gpm with the recirculation line open or ruptured in the non-seismic category I portion of the line.

GPUN has performed analyses for the worst case event (small break LOCA and Loss of Feedwater (LOFW)) with only 450 gpm EFW delivery to the steam generators following a twenty minute delay. The results of these analyses are given below.

For Small Break LOCA

Assumptions

All assumptions are in accordance with the B&W analysis, "Evaluation of Transient Behavior and Small Reactor Coolant System Breaks in the 177 Fuel Assembly Plant", Section 6, by Babcock & Wilcox dated May 7, 1979, except as follows:

- a. Only one (1) EFW pump (motor driven) available.
- b. 450 gpm EFW delivered to the OTSG's after a 20 minute delay due to EFW pump recirculation line broken in the non-seismic portion.
- c. Reactor at 102% of 2535 MWt at start of event.
- d. High Pressure Injection (HPI) is unavailable in the first 20 minutes. Automatic initiation subsequently occurs when the 1600 psig ESAS set point is reached. (This is the TMI-1 setpoint.) The set point is reached as a result of the RCS being depressurized by EFW cooling.

Results

The results indicate no change in conclusions from the B&W analysis including:

- No core uncover.
- No Power Operated Relief Valve (PORV) lift, and the pressurizer does not go solid.

Therefore, with a 450 pm EFW flow rate, following a 20 minute delay, after a seismic event the plant can be safely shut down with the available inventory

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\*The flowrate of the EFW system with single motor driven pump operation will be measured during hot functional testing. In the event that the 515 gpm flowrate is not achievable, appropriate justification will be provided.

as identified in item 1 of our letter of February 4, 1983 (83-040).

For Loss of Feedwater (LOFW)

Assumptions

- a. Only one (1) EFW pump (motor driven available).
- b. 450 gpm EFW delivered to the OTSG's due to EFW pump recirculation line broken in the non-seismic portion after a 20 minute delay.
- c. Reactor at 102% of 2535 MWt at start of event.
- d. HPI automatic initiation at 1600 psig; initiation occurs about 40 minutes after the start of the event.
- e. Reactor Coolant Pump Heat not included.

Results

- No core uncover
- PORV lifts 8 minutes after start of event.
- Pressurizer goes solid in 15 minutes, following a 20 minute delay. The plant can be safely shut down with the water inventory identified in our previous letter.

It should be noted that these analyses for LOCA and LOFW are conservative in that no credit is taken for the following TMI-1 system features and procedural requirements:

- Operator starting the EFW pumps on loss of main feedwater
- EFW actuation on Loss of Feedwater or trip of four (4) Reactor Coolant Pumps.
- Manual HPI actuation on loss of all feedwater.

Therefore, we conclude that TMI-1 can be safely shutdown following a seismic event with a small break LOCA or LOFW event with an EFW flow rate of 450 gpm subject to a 20 minute delay in delivery of EFW to the steam generators.