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March 10, 1983
5211-83-071

Office of Nuclear Reactor Regulation
Attn: D. 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
Inadequate Core Cooling Instrumentation (NUREG 0737 II.F.2)

In response to the "Order for Modification of License" dated December 10, 1982, GPUN has developed an Inadequate Core Cooling (ICC) system using the guidelines of NUREG 0737, Item II.F.2. The system is composed of the following major elements:

- a. Subcooling Margin Monitor - which indicates the approach to ICC by showing saturation conditions and superheat conditions.
- b. Core Exit Thermocouples - which is available for determining both the existence of ICC and the trends of recovery action.
- c. RCS Inventory Trending System (RITS) - which indicates trend of inventory in the RCS above the core in the quiescent state and the trend in void fraction with RC pumps on.
- d. Other Instrumentation - such as wide range RC pressure, pressurizer pressure and level, emergency feedwater flow, wide range T_{hot} , secondary steam pressure and steam generator level which provides additional information concerning heat transfer from the core to the secondary side under condition of ICC.

Enclosures 1 and 2 to this letter describe the RCS Inventory Trending System which we now propose to install during Cycle 6 Refueling. The RITS is a differential pressure system design which is capable of tracking RCS inventory from both the top of the hot leg and from the top of the Reactor Vessel head to the low point of the hot leg with RC pumps off. By using RC pump motor power and correlating it

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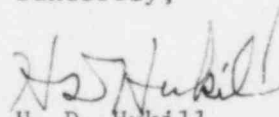
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to void fraction, GPUN will be able to trend voiding in the RCS with RC pumps on (Enclosure 2). Enclosure 3 describes the conformance of existing systems (by reference or information supplied) to the requirements of NUREG 0737, Item II.F.2. The conceptual design and the schedule for submission of engineering details are discussed in Enclosure 4. For those items for which information is not currently available, schedules for obtaining it are provided.

In order to proceed expeditiously on the detailed engineering design and long lead item procurement, it is necessary that we receive your concurrence on this conceptual design of the RITS prior to May 15, 1983.

The design of the inventory tracking system described in Enclosures 1 and 2 uses an incore instrument tube as the reference tap for the Δ -P system. It is our understanding that some of the B&W Owners propose to use the decay heat drop line for this purpose. We believe that the decay heat drop line may have some advantages over the instrument tube, particularly with regard to accuracy of the water inventory measurement. We also understand that there may be concern with the asymmetry of the decay heat drop line. In view of the complicated issues involved in choosing between these locations, our evaluation is continuing. If the evaluation results in any change to the proposed design which utilizes the incore instrument tubes, we will submit information on this change prior to April 15, 1983. Any change in our submittal would not alter our commitment to install a RITS during the Cycle 6 refueling.

Sincerely,


H. D. Hukill
Director, TMI-1

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