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July 16, 1984

TMI Program Office  
Attn: Dr. B. J. Snyder  
Program Director  
US Nuclear Regulatory Commission  
Washington, DC 20555

Dear Dr. Snyder:

Three Mile Island Nuclear Station, Unit 2 (TMI-2)  
Operating License No. DPR-73  
Docket No. 50-320  
Internals Indexing Fixture Processing Safety Evaluation Report  
Additional Information

The purpose of this letter is to provide additional information with respect to GPU Nuclear's ability to prevent/mitigate a boron dilution event.

GPU Nuclear is making additional improvements in its ability to detect a boron dilution event which are not discussed in the Internals Indexing Fixture (IIF) Processing Safety Evaluation Report (SER). These include a RCS Sampling System and improved Reactor Coolant Bleed Tank (RCBT) Level Indication.

RCS Sampling System

The RCS Sampling System (Post-Head Lift) is a temporary recovery system designed to provide RCS sampling capability from outside the Reactor Building when the reactor vessel head is removed and the IIF is in place. The system uses a self-priming pump and hose to pump water from the reactor vessel to the Nuclear Sampling System. The hose connects to the Nuclear Sampling System inside the Reactor Building so that no penetration modifications are required. The pump is supported from the side of the IIF and takes suction from the E9 Control Rod Drive Mechanism (CRDM) location at approximate Elevation 309'-0". This location provides

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samples from below the plenum in the core region of the vessel. Pump power and control is provided through an available CRDM power cable. A spare circuit breaker will be used as an on/off switch for the pump.

The addition of this system creates a potential path for unborated water to the RCS at Demineralizer Water Connection Valves SNS-V150 and SNS-V50. To isolate this potential pathway, Valves SNS-V150 and SNS-V50 shall be closed and the source of demineralizer water will be disconnected from the system at the quick disconnect.

In addition, GPU Nuclear is in the process of designing and installing a continuous sampling/monitoring system which will utilize the same RCS sampling system taking suction at Elevation 309'-0" in the core void and will be capable of accommodating a boron monitoring system, if such a device is determined to be feasible. This continuous sample stream will flow to the Nuclear Sampling System and discharge into the RCS or the RCBT's.

#### RCBT Level Indication

Improvement of the RCBT level indication involves installing a digital readout to the RCBT level indication circuitry. This will improve loop accuracy and repeatability of RCBT readings thus providing more reliable trending data. Initially, temporary digital milliammeters will be installed. These temporary instruments will be replaced by digital panel meters when the panel meters are received on-site. The temporary milliammeters and the replacement digital panel meters will allow indication resolution of the transmitter signal to less than 0.15 percent. Therefore, combined with a transmitter accuracy of 0.5 percent, instrument loop accuracy should be within  $\pm 1.25$  inches of tank level (i.e., approximately 750 gallons at the tank midpoint) and may be as accurate as  $\pm 1.0$  inch.

#### Sample Frequency

In addition to system modifications, RCS system sampling frequency during the initial phase of IIF processing will be conducted at a more frequent interval than that specified in the IIF SER, i.e., the equivalent of 75 percent of the time interval specified for each processing rate or at least once every six (6) hours for a flowrate of 15 gpm. The purpose is to establish a data base to better define RCS mixing during IIF processing and to ensure that the frequency proposed in the IIF SER is appropriate. This approach has been adopted since the actual mixing characteristics occurring within the core volume at any specific location or point in time cannot be determined with absolute certainty prior to processing.

GPU Nuclear fully intends to extend the period between samples to the limits defined in the SER, if appropriate, as the data base expands and establishes the actual required sampling interval.

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If you have any questions concerning this information, please call  
Mr. J. J. Byrne of my staff.

Sincerely,

*B. K. Kanga*  
B. K. Kanga  
Director, TMI-2

BKK/JJB/jep

cc: Acting Deputy Program Director - TMI Program Office, Mr. P. J. Grant