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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: Three Mile Island Nuclear Station Unit 1, (TMI-1)
Docket No. 50-289
Operating License No. DPR-50
Guard Pipe Work Prior to Shutdown for the Cycle 10 Refueling Outage to Support Installation of Drain on DH-V6A/B

The purpose of this letter is to inform the NRC of a planned modification to provide a drain line and a drain valve (DH-V158A/B) for safety-related Decay Heat (DH) System piping between the Reactor Building (RB) containment wall and the DH-V6A/B valves. The implementation of this modification will involve the short-term cutting of access holes in the Guard Pipes over DH-V6A/B with the plant at power. GPU Nuclear is informing the NRC of the planned modification because of a previous commitment made during the design of the plant to have Guard Pipes around DH-V6A/B.

DH-V6A/B are the RB Sump suction isolation valves for post-LOCA recirculation flow from the RB Sump to the suction of the DH Removal Pumps and/or RB Spray Pumps. The slope of the piping between the RB Sump and DH-V6A/B results in the trapping of approximately 100 gallons of sump water against the DH-V6A/B isolation valves even when the RB Sump has been totally drained. Potentially contaminated sump water could drain through the DH-V6A/B valves and into the DH System when DH-V6A/B are opened each refueling for In-service Testing (IST) in accordance with 10 CFR 50.55a(f). Introduction of this fluid into the DH System causes concerns regarding:

1) The potential for introducing impurities (e.g., oil, dirt, cleaning agents, etc.) into the DH System and potentially into the Reactor Coolant System, and

2) Maintaining exposure to workers As Low As Reasonably Achievable (ALARA). Contamination of the DH System in previous outages has required extensive flushes of the DH System which has resulted in some exposure to personnel. Although the resultant doses are not large, maintaining personnel exposure ALARA would dictate elimination of this exposure potential.

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The planned modification will consist of temporarily cutting access holes in each of the Guard Pipes which cover DH-V6A/B, installing 1" drain lines close to the inlet side of DH-V6A/B, then closing the temporary access holes. Guard pipes around DH-V6A/B are required in accordance with FSAR commitments to ANSI N271-1976 (ANS 56.2) to satisfy 10 CFR 50, Appendix A, General Design Criterion 56.

The modification will be performed in 2 stages. The 1st stage will take place with the plant at power with the 2nd stage being performed during the upcoming 10R outage. The 1st stage of the modification consists of cutting an access hole into the guard pipe, welding a 1" drain nozzle onto the DH-V6A/B valve body and then reclosing the guard pipe opening. There will be no intrusion into the valve body or the Decay Heat system piping during this portion of the work therefore there will be no impact on Decay Heat system operability. The guard pipe access hole will remain open for a very limited period of time (estimated to be approximately 48 hours). Only one guard pipe will be accessed at a time. The 2nd stage of the modification, which will take place during the 10 R outage, will involve the hot tapping of the DH-V6A/B valve body via the newly installed 1 inch drain nozzle and installation of a containment isolation valve and drain line cap on the newly installed drain line.

It is desirable to perform stage 1 of the modification while the plant is at power because it lowers the radiation dose to workers. Installation of the modification with part of the work (cutting into guard pipes around DH-V6A/B) being performed during plant operation will result in a dose savings for the modification task of approximately 1.0 Man Rem when compared to the second best alternative.

Subsequent to the completion of the modification, the modified configuration will be Quality Control (QC) tested to assure the integrity of the new drain provisions. The modified Guard Pipe welds will be visually inspected to the quality standards of ANSI B31.1 code. All Decay heat piping welding, including attachment welds, shall be visually inspected and subjected to liquid penetrant examination to the requirements of ANSI B31.7. In addition, QC will perform a weld joint fit-up inspection of all welds, excluding threaded joint seal welds.

Modification of DH-V6A/B, including the performance of a portion of the modification with the plant at power, has been reviewed in accordance with 10 CFR 50.59. A safety evaluation of the modification has determined it does not involve an unreviewed safety question. The TMI Plant Review Group has also reviewed the planned modification and concurs with the conclusions of the safety evaluation.

GPU Nuclear has estimated the likelihood of a LOCA during the modification work in conjunction with a pipe break in the vicinity of the DH-V6A/B valves. The work will be completed within approximately 48-hours per line. If a Loss of Coolant Accident (LOCA) and a passive failure of the DH-V6A/B pipes occur while a Guard Pipe access hole is open, sump recirculation cooling would be unavailable and this condition could lead to core damage. However, the estimated probability of this event is very low, ranging from 2.6E-16 and 2.2E-11 with a mean average value of 3E-12. The calculation of this event uses probability data from the TMI-1 Probabilistic Risk Analysis (PRA).

Piping in the vicinity of DH-V6A/B (i.e., the process pipe and drain pipe) is moderate energy line based on design pressure, temperature, and pipe break criteria. The process pipe and drain pipe pressure + deadweight + seismic + thermal stresses are below the Safety Review Plan (SRP) 3.6.2, Mechanical Engineering Branch (MEB) Position 3-1, paragraph 2.b allowable of 0.4 (1.2 Sh + Sa). Therefore, concerning the drain pipe and the process pipe, it is unnecessary to postulate leakage cracks between the reactor building wall and DH-V6A/B or between DH-V6A/B and DH-V158A/B. The affected piping can be considered super-pipe for this design application.

Because of the low probability of an event of the type for which the guard pipes provide protection and the short period of time the guard pipes would be disabled, installation of the modification in the proposed manner would not be expected to 1) involve an increase in the probability or consequences of an accident previously evaluated; or 2) create the possibility of a new or different kind of accident from any accident previously evaluated; or 3) involve a reduction in a margin of safety.

In conclusion, GPU Nuclear believes that it is prudent and consistent with ALARA to perform the modification of DH-V6A/B as planned, including the work which disables the guard pipes for a short period of time during plant operation. Modification in this manner, is justified due to the short period of time the guard pipes will be disabled, the low probability of an event from which the guard pipes provide protection and the projected reduction in personnel exposure.

Details of the modification have been provided to the NRC Senior Project Manager, Mr. R. W. Hernan. Additional details can be provided upon request. The first stage modification work will be performed in August 1993 prior to the September 10, 1993, planned shutdown for the Cycle 10 Refueling Outage.

Sincerely,

T. G. Broughton
Vice President and Director, TMI-1

JSS

cc: Administrator, Region I
TMI Senior Resident Inspector
TMI-1 Senior Project Manager