GPU Nuclear

April 24, 1992

C311-92-2054

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

Dear Sir:

Subject: Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Spent Fuel Pool Rerack

This letter confirms the substance of a teleconference between GPUN and the NRC staff on March 26, 1992, regarding clarification of the load handling safety margin and future load test procedures for reuse of the rack lift rig post-layup or storage.

The TMI-1 Fuel Handling Building crane has a rated capacity of 110 tons. The new fuel rack weighs approximately 13 tons. Although not single failure proof this provides a safety factor of 8.46:1. Hoists are designed with a 5:1 ultimate strength safety factor (110 tons x 5 = 550 tons) which yields an ultimate strength to load safety factor of 42.3:1. Hoisting rope safety factors for the main hoist are based on the following:

bottom block	=	5,000 lbs.
rated load	=	220,000 lbs.
parts of rope	=	12 (1 1/8" each)
rope published breaking strength	=	100,000 lbs

Resulting safety factor = 100,000/((220,000 + 5,000)/12) = 5.33:1

When lifting a fuel rack at 13 tons or 26,000 lbs, the resulting safety factor = 100,000/(26,000 + 5,000)/12) = 38.7:1. The dynamic factors were calculated conservatively at no-load conditions. Under load conditions, stopping time would be longer, and dynamic factors correspondingly smaller. It was determined that the maximum dynamic load would be approximately 1% of the actual load. Therefore, the dynamic loading may be ignored. In an effort to prevent lowering the main hoist block into the spent fuel pool water it is planned to interpose a 40 ton intermediate hoist between the main hoist hook and the fuel rack rigging. This 40 ton hoist will be used to lower the fuel racks into the pool. Although not single failure proof, the safety factor for the 40 ton hoist is (80,000 + 26,000) = 3.08:1, with an ultimate strength to load safety factor of 15.38:1.
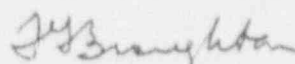
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The rack lifting rig is subject to load testing, as well as visual inspection and liquid penetrant examination of primary structural weld locations prior to initial use in the rerack project. Any future use of the lift rig after an extended storage or layup period will necessitate that the lift rig be subject to visual inspection, and procedures will be established for additional load testing at that time.

If any additional information is required, please contact David J. Distel at (201) 316-7955.

Sincerely,

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

DJD/amk

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