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Docket No. 50-320

Mr. F. R. Standerfer  
Vice President/Director, TMI-2  
GPU Nuclear Corporation  
P. O. Box 480  
Hometown, PA 17057

Dear Mr. Standerfer:

Subject: Reactor Building Sump Criticality Safety Evaluation Report

- References: (a) GPUN letter, F. R. Standerfer to W. D. Travers  
Reactor Building Sump Criticality Safety Evaluation  
Report, dated January 23, 1986  
(b) NRC letter, W. D. Travers to F. R. Standerfer, dated  
March 5, 1986  
(c) GPUN letter, F. R. Standerfer to W. D. Travers,  
Reactor Building Sump Criticality Safety Evaluation  
Report, dated May 26, 1986  
(d) GPUN letter, F. R. Standerfer to W. D. Travers,  
Reactor Building Sump Criticality Safety Evaluation  
Report, dated September 5, 1986

Reference (a) forwarded for NRC staff review and approval, a safety evaluation which demonstrated that it is sufficiently unlikely that there could be an occurrence of criticality in the reactor building sump from the use of non-borated water in carrying out decontamination activities. During our review, we requested additional information in reference (b) and you responded in reference (c). You have since supplied us additional information in reference (d) to assist in our review.

The staff's review has determined that the amount of fuel in the reactor building basement is less than the conservative mass of 70 kg required to achieve criticality. We have found that your analysis bounds the amount of fuel at 2 kg to 18 kg with an average value of 15 kg (reference d) of uranium fuel in the basement of the reactor building. Our conclusion on this is based primarily on the direct results of reactor building samples which have been obtained and analyzed for their fuel and fission product content. We agree that this estimate (15 kg) and the bounding analyses of 2 kg to 18 kg are based on the best available information. We have further determined that there is enough conservatism in your analytical approach to demonstrate that the amount of fuel in the reactor building basement is sufficiently smaller

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than the 70 kg critical mass and that criticality cannot occur in the reactor building sump from the use of non-borated water in decontamination activities.

In addition, our evaluations have concluded that it is highly unlikely that the fuel presently distributed throughout the reactor building basement could be inadvertently accumulated in a geometric configuration which would support criticality.

We have completed our review of reference (a) and supporting documents and have concluded that your proposed operation of using non-borated water for decontamination purposes presents no adverse impact on public health and safety and does not involve an unreviewed safety question.

We, therefore, approve the proposed use of non-borated water for decontamination purposes as described in reference (a) contingent upon the submittal of related procedures subject to Technical Specification 6.8.2. These procedures shall address the controlled use of non-borated water for decontamination purposes and limit the accumulation of water to 70,000 gallons in the reactor building basement. This limit will assure adequate boration in the case that basement water is required for recirculation into the reactor coolant system.

Sincerely,

ORIGINAL SIGNED BY:  
William D. Travers

William D. Travers  
Director  
TRI-2 Cleanup Project Directorate

cc: T. F. Benmitt  
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