

FEB 11 1985

DMB-016

Docket No. 50-289

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Mr. Henry D. Hukill, Vice President  
and Director - TMI-1  
GPU Nuclear Corporation  
P. O. Box 480  
Middletown, Pennsylvania 17057

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Dear Mr. Hukill:

Our letter of August 22, 1984 transmitting our safety evaluation for NUREG-0737 Item III.D.3.4, Control Room Habitability, identified two open items remaining to be reviewed. We have completed our review of off-site toxic gas hazards and our safety evaluation is enclosed. We conclude that the TMI-1 control room operators are adequately protected from off-site toxic gas hazards in accordance with NUREG-0737, Item III.D.3.4.

The other open item, analysis of single component failure in the ventilation system, is under staff review and will be addressed in separate correspondence.

Sincerely,

\*ORIGINAL SIGNED BY

JOHN F. STOLZ\*

John F. Stolz, Chief  
Operating Reactors Branch #4  
Division of Licensing

Enclosure:  
Safety Evaluation

cc w/enclosure:  
See next page

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SER INPUT FOR THREE MILE ISLAND UNIT 1 WITH RESPECT TO TOXIC GAS  
PROTECTION OF THE CONTROL ROOM

The staff has evaluated the August 8, 1985 submittal by GPU Nuclear Corporation on the toxic gas protection of Three Mile Island Unit 1. The staff finds that the postulated train accident and hazardous material spill rates are in agreement with the statistical data regularly published by the Department of Transportation (DOT) and the National Transportation Safety Board (NTSB). The meteorological data also have been found to be reasonable. Hence, the probabilities of exceeding the toxicity limits for the various hazardous materials shipped past the site, as listed in Attachment 3 to PLG-370 (attached to the August 8, 1985 letter), are judged to be reasonable. The total probability for exceeding a toxic limit (excluding chlorine, because the control room is equipped with chlorine detectors) is listed as  $6.52 \times 10^{-6}$  per year. The staff's own estimate, based on a more conservative approach, indicates that the frequency may be as high as  $2 \times 10^{-5}$  per year.

According to SRP 2.2.3, the measure of acceptability is in terms of the probability of exceeding  $10^{-6}$  for a radioactive release from the plant which exceeds the 10 CFR Part 100 exposure guidelines. The licensee has submitted a report (PLG-370) that includes a Probabilistic Risk Assessment (PRA) for estimating the probability of a Part 100 release given a toxicity exceedance in the control room. This probability is

composed of three factors:

1. probability for the fraction of the time when operator action is required to mitigate toxic chemical release initiated scenarios;
2. probability that the manual actions required to be made can be; and
3. probability of uncovered core events which could lead to an offsite exposures in excess of the guideline values of 10 CFR Part 100.

PLG-370 assigns values of 0.05, 0.1 and much less than  $10^{-2}$  to these three factors, respectively.

The staff has not extensively reviewed the analysis of these three factors. However, the staff can conclude that even a pessimistic assignment of probabilities to the three factors would produce results that meet the criteria of SRP Section 2.2.3. Therefore, the staff concludes that the toxic gas protection afforded to the control room operators at Three Mile Island Unit 1 is adequate and meets NUREG-0737, Item III.D.3.4.

The following staff contributed to this Safety Evaluation:  
R. Campe and T. Quay