GPU Nuclear

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August 8, 1984
5211-84-2199

Office of Nuclear Reactor Regulation
Attn: J. F. Stolz, Chief
Operating Reactor Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Stolz:

Three Mile Island Nuclear Station Unit 1, (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Control Room Habitability (III.D.3.4., NUREG 0737)

In response to a previous commitment made during a telephone conversation of June 1, 1984, GPU Nuclear Corporation (GPUN) has evaluated the consequences of off-site toxic chemical hazards on control room habitability using a Probabilistic Risk Assessment (PRA) approach.

Attachment 1 is a report prepared by Pickard, Lowe and Garrick, Inc., a consultant for GPUN, on this subject. This report is being submitted to you for your review.

The results of the report indicate that the aggregate of probabilities of exceedence of the toxic limit in the Control Room (CR) due to all chemical releases excluding that of chlorine, is 6.52×10^{-6} per year.

Attachments 2 and 3 tabulate the time required to reach the toxic limits and the frequency of exceedence of the toxic limit in the CR for each chemical respectively. GPUN has already committed to install a chlorine monitoring system and hence the effects of chlorine release on overall aggregate probability is not included.

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The results of the actual plant specific analysis indicated that the total frequency of all scenarios (excluding that of chlorine) which might lead to offsite doses in excess of 10CFR100 limits is 3.3×10^{-10} per year. (NOTE: Probability of off site release in excess of 10CFR100 = Probability of tank car accident leading to major release x Probability of exceeding TLV in Control Room x Average number of tank car/yr x Probability that Control Room Operator cannot take proper action to prevent core melt x probability of large release from the containment) which is well below the guidelines of the Standard Review Plan 2.2.3.

For other uilities the NRC Staff has accepted a conservative factor of 0.1 that could be applied to the probability to include the effects of operator incapacitation events that in itself would result in exposures in excess of 10CFR100 guidelines. Using even this conservative value, the probability of exceeding 10CFR100 limits is 6.52×1010^{-7} per year which is still below the probability objectives stated in SRP 2.2.3.

We conclude from this analysis that transportation of off-site chemicals in the vicinity of TMI-1 do not pose an undue threat to the control room operator, that the probability of off-site radiation doses exceeding the 10CFR100 guidelines is less than 10^{-6}, and that no toxic gas monitors (except for chlorine) are necessary.

Sincerely,

H. D. Hukill
Director - TMI-1

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Attachments