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May 6, 1986
NRC/TMI 86-046

Docket No. 50-320

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

Dear Mr. Standerfer:

Subject: Safety Evaluation Report for the Addition of a Biocide to the TMI-2 Reactor Coolant System

Reference: Letter 4410-86-L-0078, F. Standerfer to W. Travers, Safety Evaluation Report for the Addition of a Biocide to the TMI-2 Reactor Coolant System, dated May 5, 1986

This letter is in response to the reference which forwarded your safety evaluation of the proposed addition of hydrogen peroxide (H_2O_2) as a biocide to the reactor coolant system. The purpose of the biocide treatment is to disinfect the RCS to aid in the removal of the biological contamination which is presently causing reduced water clarity and fouling of water processing system filters.

We have completed our review of your submittal which evaluated the compatibility of 200 parts per million (ppm) H_2O_2 with the RCS chemistry and the water processing systems, as well as the effects on criticality, defueling canister catalytic recombiners, and waste disposal.

We concur with your assessment that the most significant effect expected on RCS chemistry is an increase in reactor coolant activity levels. A factor of 10 increase could occur but will not have a significant impact on worker safety with the implementation of normal radiological control practices. No significant accelerated corrosion of reactor internal components is expected at the proposed concentrations of H_2O_2. In addition, since the biocide will be added as a water solution, borated to the RCS technical specification limit, it will not present a potential for boron dilution or criticality. Laboratory testing has shown that H_2O_2 does not cause a permanent degradation of the catalyst material used in the defueling canisters. No significant reduction in the performance of the zeolite and organic resins used in the water processing systems is expected. Any reduction in the resin's ion exchange capacity would require an increase in the frequency of resin replacement but would have no impact on the safety of the systems' operation.

We conclude that the proposed addition of H_2O_2 in sufficient quantity to attain a 200 ppm residual in the RCS does not pose a significant risk to the health and safety of the public or the occupational work force and does not involve an unreviewed safety question.

We therefore approve your proposed biocide addition to the RCS contingent upon the submittal of the related procedures subject to Technical Specification 6.8.2.

Sincerely,

ORIGINAL SIGNED BY:
William D. Travers

William D. Travers
Director
TMI-2 Cleanup Project Directorate

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