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June 10, 1985
NRC/TMI 85-042

Docket No. 50-320

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

Dear Mr. Standerfer:

Subject: Technical Evaluation Report for Defueling Canisters

By letter dated April 9, 1985, you submitted a Technical Evaluation Report (TER) describing the fuel storage canisters. Based on our initial review of the TER, we have determined that we need additional information to complete our safety evaluation of the fuel canister design. We request your response to the enclosed questions. Also, we have learned of a design change involving use of sintered B_4C pellets rather than vibrapacked B_4C powder, in the neutron absorbing tubes in the filter and knockout canisters. Since this is a change from the design discussed in the TER, in your response to the enclosed questions please advise us of any revisions this change will require to the structural and criticality analysis in the TER.

Sincerely,

Signed: PJGrant for

William D. Travers
Deputy Program Director
TMI Program Office

Enclosure: As stated

cc: T. F. Demmitt
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ATTACHMENT

1. Section 1.2 of the TER states that "criticality concerns associated with the use of lead shields around the canisters is addressed in Attachment 1", and that "criticality concerns associated with a drained spent fuel pool is addressed in Attachment 2".

   Attachment 1, TMI-2 Transfer System Criticality Technical Report, and Attachment 2, Assessment of a Drained Pool Scenario, have not been provided for NRC staff review.

2. What is the maximum predicted radiolytic gas generation rate in a canister? What is the basis for this predicted gas generation rate? Has the possibility of the generation of gases other than H_2 and O_2 been considered, such as those gases resulting from radiolytic decomposition of organic contaminants in the RCS?

3. What is the minimum volume of recombiner catalyst necessary to assure a recombination rate equal to the maximum hydrogen generation rate? How much catalyst will be inserted in each canister and how will it be distributed within the canister to assure that the minimum volume needed is not immersed in the residual water regardless of canister orientation?

4. Assuming stoichiometric H_2/O_2 generation in the canisters without recombination, at what internal canister pressure would a flammable gas mixture exist in the canister? Provide this information for both the flooded and dewatered canisters. If ignition of the gases occurred inside the canisters, what would the effect be on canister integrity?

5. Assuming an ignition source, what are the effects of ignition of the gases vented through the relief devices? In particular, can backflash into the canister occur and if so what is the effect on canister integrity?

6. What is the design basis for the setpoint of the 15 psig relief valve? What is the effect of submergence pressure on the relief setpoint?

7. What is the setpoint on the backup relief valve?

8. What are the relief capacities of both the 15 psig relief valves and the backup relief valves, and what are the safety classifications on the valves?

9. Explain the basis for your assumption that the first or second opening of the relief valve will expel enough water to expose the recombiner catalyst.

10. What provisions will be in place to contend with activity released to the pool due to a stuck open relief valve or periodic relief valve opening prior to operability of the Defueling Water Cleanup System?

11. How long will it take for a dewatered canister to reach design pressure in the event of stoichiometric gas generation with recombiner failure? How long will a dewatered canister remain stagnant prior to commencement of monitoring for water inleakage and pressure build up.

12. Section 3.1 of the TER states "examination of the shroud subjected to drop tests indicated that the inner wall [protecting the boral plates from exposure to a corrosive environment] is resistant to debris impacts and scrapes. What testing/analysis has been done to assure that the inner wall can resist puncture from dropping a small diameter object such as an individual fuel pin?

13. Section 3.1 of the TER states? "Although not expected..., leakage of the core material from the canister...is allowed provided that the contents left in the canister remain subcritical."

    If the contents that leak fall in contact with an adjacent canister, what is the effect on keff of the adjacent canister. If the leaking material falls into a dry environment such as the shallow end of the FTC or the truck bay, what is the effect of a phrophoric event?

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