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June 2, 1983
NRC/TMI 83-038

Docket No. 50-320

Mr. B. K. Kanga
Director, TMI-2
GPU Nuclear Corporation
P. O. Box 480
Middletown, PA 17057

Dear Mr. Kanga:

Subject: Review of Underhead Characterization Safety Evaluation Reports (SER)

References: (1) B. K. Kanga to L. H. Barrett, same subject, dated May 19, 1983 (4410-83-0040)

(2) B. K. Kanga to L. H. Barrett, same subject, dated May 25, 1983 (4410-83-0098)

The NRC staff has reviewed the referenced letters which transmits GPU's Safety Evaluation Reports for lowering the water level in the reactor coolant system and conducting underhead characterization studies. We understand that the reference (1) SER was submitted with the assumption that the polar crane would be available for CRDM removal, while the reference (2) SER assumes the polar crane is not available and an alternate plan was developed to remove the CRDM via a hoist system under the missile shields.

In order for my staff to complete the review of the subject SER's we have attached a list of questions and clarification items for your response. The majority of these items were discussed with your staff in the May 25, 1983 meeting. We are aware that two additional SER's (i.e., Core Topographic Measurements and Core Sampling) will be submitted as part of the additional underhead characterization measurements. My staff will review each of these on an individual basis.

/s/

Lake H. Barrett
Deputy Program Director
TMI Program Office

Attachment: As Stated



| OFFICE | TMI:PO | TMI:PO | | | | | |
|---|---|---|---|---|---|---|---|
| SURNAME | PGrant:wa | LHBarrett | | | | | |
| DATE | 6/2/83 | 6/2/83 | | | | | |

ATTACHMENT 1
QUESTIONS/CLARIFICATIONS ON SER

Question:

1. Section 2.2, Reactor Coolant Pressure Boundary states that a pressure retaining boundary will no longer be required after the initiation of the underhead characterization. For example your staff stated that no gasket will be used for the flanged connection between the CRDM vessel flange and manipulator tube flange.

   It is our position that cleanup steps such as underhead characterization, should preserve as much system flexibility as practicable to permit optimum response to unexpected conditions. Specifically, we believe it is prudent to take simple steps to allow future reactor coolant system pressurization. This would preferably include the use of a manipulator tube that can be sealed or other less desirable means, e.g., replacement of the manipulator tube with a blind flange. Describe your proposed contingency plans for prompt reclosure capability.

2. Section 3.1, (p. 7) you state, "The present general area dose rate on top of the service structure is 50 to 150 mrem/hr. The increase in the general area dose rate on the top of the service structure of less than 20 mrem/hr is relatively small". Based on the above, the potential increases in general area radiation levels resulting from lowering the RCS water level and removing a CRDM are considered acceptable. Measurements will be taken for varying water level conditions to assess the actual conditions with respect to the removed CRDM.

   a.) Please describe the measurements (other than TLD) that will be taken for varying water level conditions to assess the actual radiation conditions with respect to the removed CRDM.

   b.) Provide a description of the service structure area radiation monitoring system which was discussed during our meeting on May 25, 1983. Please state the number of channels (monitoring locations) to be used in order to obtain dose rates at various points around the head and service structure.

3. We note that you are in the process of shielding the service structure. Do you intend to undertake the vessel radiation characterization before this shielding is completed? Please describe the considerations of the vessel radiation characterization, and the shielding program.

4. In Section 4.4 (p. 16) you state that "the activities are not expected to increase the airborne activity in the containment atmosphere beyond that assumed in the calculation of releases...during decontamination activities...."

   We find it difficult to relate airborne activities associated with work in the reactor vessel with your previous decontamination

activities. Describe your considerations for the potential airborne activity (including alpha emmitters) associated with opening the vessel. Describe the air sampling program associated with the vessel characterization study objectives. Describe additional sampling efforts (smears, etc.) required to effectively assess all potential radiation hazards.

5. Section 4.3.2.2, paragraph 1, provide clarification that an electrically locked out pump is an isolation boundary only when it is the source of driving head.

6. Section 4.3.2.2 (a), describe your system for verifying a pressure differential exists including periodicity and any alarms.

7. A few of the closed tagged-out valves will need to be operated to support other evolutions. What allowances and special precautions are being taken in this regard.

8. Section 2.2, Reactor Coolant Pressure Boundary. The manipulator tube material is aluminum, whereas most of the RCS is stainless steel. Provide the basis for the compatability of the aluminum material considering expected chemistry conditions.

9. Section 4.3.2.3, Sampling and Boron Measurements. Describe your location(s) for RCS sample collection and the basis for these samples being representative of core boron concentrations.

10. Describe the increased radiation precautions necessary if placing the CRDM on the service structure instead of storage in the canal (polar crane not available).

11. Do you plan to remove more than one CRDM for the detailed underhead characterization (as discussed in Planning Study TPO/TMI-028). Describe your plan and sequence for additional CRDM removal.

12. Describe your plans for meeting Technical Specification Surveillance requirements for those systems affected by the underhead characterization program.

13. Describe what chemistry/radiochemistry considerations (i.e., turbidity, crud burst, fission products spikes, pH effects) and controls for RCS processing were made recognizing the oxidation conditions within the RCS will change during the underhead characterization.

14. Provide supporting data that demonstrates the recirculation rates discussed in Section 4.6 exist.

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