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March 2, 1983  
NRC/TMI 83-016

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: Make-Up and Purification Demineralizer Resin Sampling

Reference: Letter from B. K. Kanga to L. H. Barrett, 4410-83-L-0043, dated February 25, 1983

The TMI:PO staff has reviewed your proposed plan and safety evaluation for collecting resin samples from both the "A" and "B" Purification Demineralizer vessels. We've also reviewed related activities including measurements of radionuclide loadings and fuel content, gas sampling, vessel depressurization and inerting, and preparatory steps for collecting the resin samples.

The resin sampling system includes the use of two possible resin collection devices (vacuum pickup or mechanical system), a valve blocking assembly, a fiber-optics system and support hardware for containment of the collected samples. The pathway for resin sampling will be via the previously inerted resin fill connection and through the diaphragm isolation valve. The sequence of events includes: (1) Opening and observing the operation of the resin fill (diaphragm) valve, (2) Insertion of the fiber optics system to inspect and bench mark the level and condition of the resin bed, (3) Installation of the valve blocking assembly on the diaphragm valve (this device can also be used to mechanically open the diaphragm valve if the normal air actuator fails), (4) Insertion and collection of resin samples via the vacuum pickup resin collection device (the mechanical resin sample device will be used if significant water is identified above the resin bed), and (5) All devices will be removed from the vessel and diaphragm valve assembly and the system will be isolated by closing both the diaphragm valve and newly installed isolation ball-valves on each purification demineralizer vessel.

The NRC staff has previously reviewed and approved the hardware modifications to the resin fill connections. Additionally, the staff monitored the testing and integration of the various sub-systems, which were performed on-site, and we determine that adequate testing and feasibility demonstration has been performed. We've also monitored the training of operations and the Rad-Control

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personnel and have determined that significant attention has been dedicated to this task and adequate training has been completed.

In regard to establishing and maintaining safe conditions within the demineralizer vessels during resin sampling, the staff concurs that adequate measurements for fuel loadings, curie content, and combustible gas control have been taken. The three independent non-destructive assay (NDA) analyses for fuel content indicate greater than an order of magnitude safety margin when considering "worst case" recriticality conditions. The depressurization and inerting of the vessels and resin fill lines, in conjunction with the low H<sub>2</sub> gas generation rates, preclude the potential for encountering combustible gas conditions. Additionally, the use of sample containment boxes, air filters, equipment bagging, lead shielding, radiation and airborne particulate monitors will provide added safety margins for both containment and controlling personnel exposures.

The TMI:PO staff, therefore, approves your proposed plan for collecting resin samples from both purification demineralizer vessels. Pursuant to Technical Specification 6.8.2 we require the submittal of the detailed special operating procedures (SOP) for NRC review and approval before implementation.

Lake H. Barrett  
Deputy Program Director  
TMI Program Office

- cc: J. J. Barton
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