GPU Nuclear

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May 12, 1983
4410-83-L-0095

TMI Program Office
Attn: Mr. L. H. Barrett, Deputy Program Director
US Nuclear Regulatory Commission
c/o Three Mile Island Nuclear Station
Middletown, PA 17057

Dear Sir:

Three Mile Island Nuclear Station, Unit 2 (TMI-2)
Operating License No. DPR-73
Docket No. 50-320
Make-Up and Purification Demineralizer Resin

The intent of this letter is to provide you with a status of the activities regarding Make-Up and Purification Demineralizer Resin sampling and characterization.

As we informed you in our March 31, 1983, letter, samples of the "A" and "B" Demineralizer resin beds were not obtained during the March, 1983, sampling evolutions. Since no resin samples could be obtained, it was necessary to confirm the existence of resin in the "A" Demineralizer prior to attempting another sampling evolution. Visual confirmation, via the fiberscope, promised to be a relatively direct method to accomplish the confirmation. Approximately a week after the unsuccessful attempt to sample the demineralizer resin beds, an attempt was made to visually observe the interior of the "A" Demineralizer. After the necessary preparations, a fiberscope was inserted in the "A" Demineralizer resin fill line; however, it was soon realized that the fiberscope would not pass into the tank. The obstruction was later determined to be one of the demineralizer's inlet distribution header laterals which was centered under the resin fill line opening into the tank. The fiberscope could not be negotiated around the header lateral and, therefore, was effectively blocked. A method of negotiating the fiberscope past the header lateral was developed and then implemented on April 12, 1983. The fiberscope, sheathed in a polyethelene tube, was negotiated past the header lateral and into the resin tank, thereby allowing a visual inspection of the resin bed. The following observations were made:

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- The "A" vessel does contain a bed of resin
- There is a crust over the bed
- The crust consists of boron crystals coating the top of the bed

- The center of the bed has a large void that appears to be above the resin sluicing outlet line
- The resin in the bed is agglomerated (clumps of resin)
- Below the crystalline crust the resins are amber colored

The observations concerning the resins (last two items listed above) were obtained only after the crust was broken through by repeated jabs by the guide tube (with the fiberscope retracted).

After verification of the existence of resin in the "A" Demineralizer, another sampling evolution was scheduled. On April 21, 1983, sampling commenced in the "A" Demineralizer utilizing modified sampling techniques to allow penetration of the crust and collection of the resin sample. After repeated sampling attempts using both a mechanical and vacuum sampling technique, sampling of the "A" Demineralizer was terminated. A few grams of resin were retrieved. When placed in the shipping container, the sample had a 3Rad/hr beta field and a 150 mRem/hr gamma field at the unshielded top of the container.

After completing the "A" vessel sampling, the mechanical probe was inserted into the "B" vessel. The resin bed was estimated to be approximately one foot (1') below the top of the water in the "B" vessel and 18 inches (18") thick. Samples were obtained from various depths in the resin bed. In all, 12 mechanical samples were removed with nearly 100 ml of a slurry obtained of which 50 ml was estimated to be solids. Without shielding at the top of the shipping container, the sample had a 40 Rad/hr beta field and an 800 mRem/hr gamma field.

Both the "A" and "B" vessel samples were shipped to ORNL on May 2, 1983, for analyses.

It is expected that resin sample analysis results will be available by the end of May, 1983. After GPUNC receives and reviews the results, they will be transmitted to the NRC.

The resin sampling activities accomplished to date are consistent with the original schedule provided to you in GPUNC letter 4410-82-L-0026 dated October 8, 1982. However, they are not consistent with the accelerated resin analysis schedule provided in GPUNC letter 4410-82-L-0052 dated November 18, 1982. The schedule slip resulted from the differences between the actual resin conditions and those assumed by GPUNC in the development of the overall resin characterization and removal schedule. The main differences were the existence of a crust over the resins in both demineralizers and the presence of water in the "B" Demineralizer. These conditions required additional time to verify the baseline assumptions and to modify the sampling hardware and techniques to facilitate sample retrieval.

If resin samples had been obtained in the initial sampling effort, the analysis would have been completed by the end of the first quarter as scheduled.

It is not anticipated that the delay in obtaining resin samples and, therefore, resin characterization will adversely impact GPUNC's commitment of a mid 1983 assessment of the resin removal techniques.

If you have any questions, please feel free to contact Mr. J. J. Byrne of my staff.

Sincerely,

B. K. Kanga

B. K. Kanga
Director, TMI-2

BKK/SDC/jep

CC: Dr. B. J. Snyder, Program Director - TMI Program Office