

Docket No. 50-320

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Mr. Willis W. Bixby, Manager
DOE/TMI Site Office
U.S. Department of Energy
Idaho Operations Office
P. O. Box 88
Middletown, PA 17057

Dear Mr. Bixby:

We appreciate the recent request to review and comment upon the scope of work for resin characterization related to EPICOR-II first stage wastes being planned by your office of DOE in cooperation with GPU. As you are aware, NRC has been very interested in this project and participated actively in its inclusion in the overall TMI information and examination program. Based upon this interest, Mr. Homer Lowenberg of the TMI-2 Waste Management Task Force has been informally providing interfacing with your staff on this project and will continue to function as NRC's official point of contact for the ongoing activities. Further, we would encourage DOE to increase the scope of this project to include more liners as originally planned to more adequately cover the wide variety of liner contents.

Our comments fall into two categories; they are either broad gauge in nature and may possibly impact on the scope of the project and thus may not be appropriate at this juncture, or they may be too detailed and not necessarily require incorporation in the present scope of work. In either event, we believe that they may be helpful to you in carrying out the effort and are provided for your use as you deem appropriate. The broad comments are provided first and are followed by the more detailed ones on specific tasks of work.

The present scope of work provides a sequence of testing that will characterize the resins and their effects on the liners; however, it does not appear to provide the feedback mechanism and project flexibility that NRC would like to see that would permit project response to unexpected results that might be encountered and might indicate the need for modification of the testing nature or the sequence of tests, etc. We believe that this could be accomplished by establishing key milestones in the project at points where the DOE, NRC, and GPU staffs would be brought up to date by contractor briefings and/or by inclusion of technical data in the monthly progress reports and report distribution to the key participants and through continuing liaison with NRC and GPU at frequent intervals during the project.

We feel that this may be a very important aspect of this project since the wastes involved are unique to the commercial nuclear industry and it is not entirely possible to anticipate with certainty the actual results that may be encountered when the tests are performed.

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In addition, we believe that there are several work tasks that logically should be added to the scope of work as follows:

- a. This project should be coordinated with the related work that DOE plans in connection with sampling and analysis of resins in the Make-up and Let-down Demineralizers. In particular, duplicate resin samples from these demineralizers should be sent to the contractor for this project to familiarize its staff with the analytical requirements and to calibrate their analytical results with those of another laboratory.
- b. This project should be coordinated with related work that NRC has underway at BNL to investigate the immobilization by concrete of irradiated ion exchange materials. Specifically, the contractor for this project should be tasked to test the immobilization of sample materials removed from the liner with cement. NRC can arrange for consultation with the BNL staff knowledgeable in this testing procedure if DOE desires.

Our more detailed comments include the following:

Task I - Preparation of procedures should be expanded to include procedures for analysis of the Make-up and Let-down Demineralizer sample, preparation and testing of concrete-resin samples and the flexibility to provide for the preparation of additional procedures that may be required in the event that unexpected conditions are encountered.

Before Task II - Gas sampling is performed--It is suggested that an exterior gamma scan of the liner be performed both vertically and radially in segments such as quadrants in an attempt to determine a gamma mapping of the liner. Task II - Covering gas sampling and analysis should likely include tests for oxygen, nitrogen, CO, CO₂, and amines in addition to the specific tests noted.

Task III - Examination for corrosion should include both interior and exterior signs of corrosion and should provide for consultation with NRC and GPU in the event that significant corrosion is detected or no corrosion is detected or results are uncertain.

Assuming that the tasks are generally listed in chronological order, it is suggested that Task V - Liquid Sampling be scheduled before Task IV - Resin Sampling. This may be accomplished by means similar to those being used by GPU on liner PF-16 this month and the DOE contractor should be advised of how that test is performed and its results. In addition, the limited liquid analyses proposed covering pH and acidity do not appear adequate. We believe that a more comprehensive analytical program including inorganic, organic, and radiochemical tests similar to the analyses planned by GPU for PF-16 should be planned. This was discussed with DOE-TIO and contractor staffs in a meeting at the TMI site on November 5, 1980; and a

copy is attached for your use. In particular, the liquid analysis should look for any signs of corrosion products or organic resin degradation products.

The Resin sampling phase, Task IV, should include samples taken as close to the center of the liner and as close to the wall of the liner as practical to detect radial as well as vertical gradients. In taking these samples, it would appear desirable to provide for a pipe or tube "cassion" to be left in place after the sample is removed to facilitate interior gamma scanning or liquid withdrawal and to avoid undue disturbance of the liner contents.

Task VI - Examination of the ion exchange media should include checks for liquids, corrosion products, and possible agglomeration of organics.

We believe that Task VII covering gamma scans and radiochemical analysis should include a gamma scan of the "cassioned" holes left in the liner after the various core samples are removed to obtain a measure of interior gamma dose. In analyzing the removed sample materials, the pH or acidity should be checked as well as the radiochemical analysis. In the event that there are significant gradations in the stratum of maximum radiological deposition, then analyses at top, middle, and bottom of the stratum may be desirable.

With regard to Task VII on extended liner storage and sampling over two years, we presume that the samples taken will be additional cores of ion exchange materials from the liner. However, no testing of these materials is specified; we believe that these samples should be handled similar to the original samples as covered in Tasks IV, VI, and VII and our comments on those tasks above would apply to these extended storage samples as well.

Task IX covering the return of liners to TMI-2 should be the last task and should include coordination with appropriate regulatory bodies. Task X covering the shipment of a core sample to PNL for elution and immobilization testing should indicate that the sample is from the region of maximum radiological dose.

Task XI covering monthly progress reports should include the requirement for reporting of technical results. In addition, any results of significance such as unexpected conditions or ones that indicate the overall liner integrity or resin stability conditions should be communicated; and the concerned parties such as DOE, NRC, and GPU should be promptly advised without waiting for regular reporting schedules.

We think this effort is important to TMI-2 waste management planning and would encourage the expediting of the activities and broadening the effort to include more liners. We look forward to continued close cooperation

Mr. Willis Bixby

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with the DOE and contractor staffs on this project and hope that the above inputs are helpful for meaningful accomplishment of the project objectives.

Very truly yours,

Original Signature
Robert E. Browning

Robert E. Browning, Deputy Director
Division of Waste Management

Enclosure: As stated

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