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J. Collins/TMI
File
Solid Waste
SP-320

MEMORANDUM FOR: Robert E. Browning, Head
TMI-2 Waste Disposal Support Group

FROM: Timothy C. Johnson,
Low-Level Waste Licensing Branch
Division of Waste Management

SUBJECT: TRIP REPORT RE TMI EPICOR-II SOLIDIFICATION

Purpose: The purpose of this meeting was to discuss the solidification program for EPICOR-II resins with General Public Utilities (GPU) and Hittman Corporation representatives. In addition, the test procedures and the prepared specimens would be observed.

Date: June 9, 1980

Location: Hittman Corporation Facilities
Columbia, Maryland

Attendees: R. Jacobstein (GPU)
W. Phillips (Hittman)
T. Johnson (NRC/WM)

Discussion:

Hittman was to prepare solidification specimens from six resin mixes:

- A - anion resins
- B - mixed resins
- C - cation resins
- D, E, F - mixed and powdered resins

The resin samples D, E and F were to be representative of actual resin mixes used in the EPICOR-II liners. The formulations were prepared by EPICOR, Inc. and the specific content, resin types, and pretreatments remain proprietary. R. Jacobstein and W. Phillips were unaware of the specific resin formulations.

Resin solidification samples A, B, C, D and E had been prepared and were in various stages of testing. The F samples were being prepared in an assembly line fashion. Resins were measured into a 1 liter beaker, the proper amount of water was added, then cement, then sodium metasilicate, and finally the

sample was mixed with a small electric mixer. The mix formulas were based on those used successfully by Hittman for solidifying resins. Data sheets were prepared and each procedure step was logged. Half the samples were air-cured for 48 hours, the other half for seven days.¹

Prior to the visit, I reviewed the GPU Solidification Test Program Progress Report for the week of May 16, 1980. This report included results from the anion resin immersion tests. Many of the anion samples did not produce good products crumbling before and during immersion. Anion samples with 20 percent silicate were generally of poor quality.

Most of the other test samples (B, C, D and E) which I observed immersed appeared to be maintaining their integrity. A few of the B samples, however, had experienced gross swelling and all the cation samples had produced pH's of 12-13 in the immersion liquid. The samples containing the powdered resins (D and E) appeared to make the best products. Detailed analysis of these effects have not yet been performed.

All the resins had been depleted to either 33, 66 or 100 percent in accordance with specific procedures submitted by EPICOR, Inc. Boric acid and NaOH were used. Some samples of the process water were analyzed following the depletion. Boric acid and NaOH levels were below detection levels.

The screening test phase was expected to be completed the second week of July. If some samples could be identified early, the primary testing would begin prior to completion of the screening phase.

Arrangements were being made for several liner design tests. Hittman had prepared a new EPICOR-II liner design for in-situ solidification. Flow distribution, ΔP , and stable ion tracer tests are to be performed following liner fabrication and resin loading by EPICOR, Inc. These tests are to be performed at the Hittman facilities. Final scheduling of these tests are dependent on GPU authorization.

Some tests with resins contaminated with hydrazine, oil, radiacwash, and phosphoric acid are going to be performed in the screening test phase. These samples had not yet been prepared.

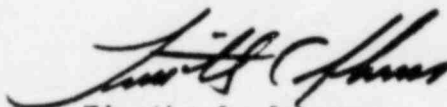
I pursued the possibility of obtaining full size solidified samples for testing at Brookhaven National Laboratory (BNL). W. Phillips indicated that full size products are going to be prepared but are expensive due to the cost of obtaining sufficient resin material. No commitment to obtain samples for BNL was made.

Robert E. Browning

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Conclusion:

I was encouraged after observing that most of the samples were maintaining their integrity. R. Jacobstein indicated GPU would continue to keep myself and J. Collin's people informed of the test program results and developments.



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