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JAN 2 1995

Dr. Martin Steindler
Chairman, Materials Review Board
Argonne National Laboratory
9700 South Cass Avenue
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WM Record File

109.6

WM Project: 1

Docket No.

PDR ☒

LPDR

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Dear Dr. Steindler:

Some time ago I told you I would be asking Bob Cook, the NRC on-site representative for the Basalt Waste Isolation Project, to review the laboratory records of the Materials Characterization Center (MCC), to determine how well the MCC could document that the MCC-1P procedure was followed when the MCC-D2 data package was developed. I understand that Mr. Cook has already provided to you the results of his observations (Enclosure 1). The observations noted a number of deficiencies in the documentation. The purpose of this letter is to put these in perspective and make some observations regarding the present status of MCC-1.

My interest in asking Mr. Cook to review the documentation was forward looking. I wanted to ensure that measures were being put into place to document that MCC procedures will be followed in a way that would be useful in an NRC licensing proceeding. While Mr. Cook did observe some shortcomings with the documentation of the MCC-D2 testing program, it seems to me that most of the problems Mr. Cook observed could be remedied in future test programs by putting together a simple data form or checklist that could be filled out and signed by appropriate personnel to certify that key steps in the procedure (i.e., calibration of an instrument) were performed. This simple measure should be adequate to document that procedures are being followed for data that will be generated by the DOE program using documented procedures.

A second question that arises, however, is the validity of the data that has already been taken, were it ever to be used for licensing. While the data were taken by qualified personnel using a procedure that had been peer reviewed and given provisional approval by the MRB, the data would be subject to challenge because of lack of documentation that the procedure was actually followed. I would expect that the situation could be corrected if some of the key data were retaken with appropriate documentation that the MCC procedure was being followed, assuming the new data reproduced the old data within experimental error. While these problems need to be worked out, overall the MCC process appears to be headed in a direction that would be suitable for licensing.

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However, the recent submittal of the MCC-1 procedure for final approval seems to be counter to this general trend. I am mystified at what appears to be a major inconsistency between MRB-0363 and PNL-5157, "Final Report of the Defense High-Level Waste Leaching Mechanisms Program." PNL-5157 states: "The effect of Eh on the leaching behavior of technetium and uranium was found to be significant...A properly-cleaned platinum electrode was found satisfactory for measuring Eh." The report also describes (Section 4.2.3) measures that were used to control Eh. Yet this information apparently was not considered in preparing the draft final MCC-1. In this document the MCC states that "the state of technology for the measurement and control of redox potential is not adequate to handle the chemical complexity of typical leachates at low temperatures (less than 200°C);" and "The MCC has not identified acceptable techniques to measure or control the Eh, or level of dissolved oxygen, for the MCC-1 static leach test method." Contradictions such as these in MCC documents supporting the license applications need to be resolved in order to avoid lengthy controversy and delay in the licensing proceeding. This issue should be resolved before MCC-1 is resubmitted to the MRB.

I hope these comments prove helpful to the Materials Review Board in its overview of the DOE Materials Characterization Organization program.

Sincerely,

Original Signed by
MICHAEL J. BELL

Michael J. Bell, Deputy Director
Division of Waste Management

cc: J. Mendel, PNL
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F. R. Cook, NRC

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WM s/f 109.6
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ATTACHMENT: PNL-MCC D2 data Test Review accomplished by F. R. Cook (NRC BWIP Site Licensing Representative) on August 10, 1984

1. The MCC-D2 notebook does not provide information in way of confirming that day-to-day activities were appropriate. PNL stated there were no such records. The notebook consists primarily of data sheets. It was signed and dated August 9, 1984.
2. There was no record of overchecking of key data and operations.
3. Required qualifications for personnel involved in testing are not identified nor were records of qualifications of test personnel or other participating personnel available for ready review.
4. A records index identifying all pertinent records and their location was not available.
5. Records pertinent to the subject test are dispersed and may not be adequately controlled. A central "original" records management system was discussed.
6. A detailed day-to-day work plan (procedure) implementing the MCC-1P procedure was not prepared. PNL said they are working on such procedures.
7. There is no record of instruments used. MCC-D2 test furnace calibration was not documented. Specifically, instruments used to measure leach specimens were not recorded.
8. Timing between key events, for example, the completion of leaching and chemical analysis of leachates, is uncontrolled. It ranged from 1 day to about 3 weeks in the few samples of data I reviewed.
9. Some data pages from the chemical analyses were not labeled and these data pages were not referenced in the notebook. I did not see any signatures on the chemical analyses data sheets.
10. A determination as to whether the data is important to waste isolation or important to safety was not made. Hence the level of QA to have been applied is unclear. The intent for use of the MCC-1P (D2) data is not clearly stated in any of the records that I reviewed.
11. I was not premitted to review the MCC-D1 data package on PNL 7668 glass leaching for comparison purposes. PNL indicated this was not permitted by DOE.

The observations noted above and the comments concerning the lack of various records are based on discussions with Mendel, Lokken, Turcotte, Daniel and other PNL personnel with whom I conferred during the review.