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CHP/ASTM C26.13 JY88

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MEMORANDUM FOR: Ronald L. Ballard, Chief
 Technical Review Branch
 Division of High-Level Waste Management

FROM: Charles H. Peterson, Project Manager
 Technical Review Branch
 Division of High-Level Waste Management

SUBJECT: TRIP REPORT: JULY 1988 ASTM TORONTO MEETING

Attached is my trip report for participation in meetings of the C26.13 and C26.07 Subcommittees of the American Society for Testing and Materials (ASTM) at Toronto, Canada July 25 to 27, 1988. Most of the time was spent on C26.13 business, focussing on development of a national standard on extrapolation of short-term data.

If you have any questions, please contact me at 49-20531.



Charles H. Peterson, Project Manager
 Technical Review Branch
 Division of High-Level Waste Management

Attachment: As stated

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ASTM C26.13 MEETINGS

AGENDA: Continue work on development of a national standard on extrapolation of short term data and accelerated testing.

PARTICIPANTS:

T. Thornton	Babcock and Wilcox, Lynchburg, VA
R. Blauvelt	Mound Facility, Monsanto Research, Miamisburg, OH
R. Goss	Mound Facility, Miamisburg, OH
A. Berusch	DOE Headquarters, Washington, D.C.
E. Gause	Roy F. Weston, Washington, D.C.
J.C. Farmer	LLNL, Livermore, CA
J.K. Bates	ANL, Argonne, IL
M. Campbell	Westinghouse Hanford, Richland, WA
C.M. Jantzen	E.I. du Pont, SRL, Aiken, SC
P. Macedo	Catholic University of America, Washington, D.C.
A. Barkatt	CUA, Washington, D.C.
C.H. Peterson	NRC Headquarters, Washington, D.C.
C.G. Interrante	NBS, Washington, D.C.
J. Reilly	American Quality Assurance, Coudersport, PA

PROCEEDINGS AND OBSERVATIONS, C26.13

The regular meeting was scheduled for 8/26, but it was agreed that a pre-meeting would be held on 8/25. Participants were as stated above. The starting point of the discussions were the notes prepared by the NRC representative on the meeting held at CUA in Washington, D.C. in June. At that meeting a diagram had been developed representing three alternatives for extrapolation of short term data: use of a mechanistic model, use of a bounding model, and use of an empirical model.

The attendees discussed various aspects of the problem. It was noted that experiments on fuel leaching started later than those on glass, one reason being that reprocessing was being practiced. It is likely that spent fuel at a 60,000 MWd burnup may have to be considered. The oxidation potential of such fuel will be different from that at 33,000 MWd.

With respect to alternatives, the group appeared to move in the direction of concluding that there was no way of going from an empirical model directly to statements about long-term performance: it would be necessary to invoke some type of mechanistic or bounding model. It would be premature to say this is the final position, but it indicates the current doubts about the ability to assign confidence limits to extrapolations of purely empirical data. The

crucial point is that at this stage only two approaches have been identified for extrapolation of short-term data: use of a mechanistic model and use of a bounding model. As to validation, natural analogs may be useful if they support models, even if the results for the analogs are outside the ranges applicable to a repository for high-level waste.

On June 26, further efforts were relatively unproductive because of extensive debate as to the level of detail to be shown on the logic diagram. J. Farmer, in particular, appeared to view the diagram from the perspective of a computer program logic diagram and should therefore show loops. It was pointed out that such a level of detail was not the intent. It was to be understood that in the process of constructing a database, there could be many iterations between taking data and modelling them, but eventually there would be an acceptable base to support some type of model.

While use of a mechanistic model may be preferable, there is considerable doubt about developing and validating such a model in even five years. Thus, alternatives must be retained.

T. Thornton undertook to prepare a revised version of the proposed standard in the light of the discussions at Toronto and distribute it prior to a subsequent meeting at CUA in September. C.G. Interrante would continue work on the definitions section and forward revised copy to Thornton.

ASTM C26.07 MEETING

On the morning of July 27, C26.07 held its scheduled meeting, basically on low-level waste matters. The one item of interest in the HLW area was the status of the leach test, a modification of ANS 16.1. Progress on this method has apparently slowed for lack of interest. The Chairman, R. Blauvelt, will poll Subcommittee members for disposition of this item.

ATTACHMENT 1

MEETING OF ASTM C26 COMMITTEE, NUCLEAR FUEL CYCLE

DATE: July 25, 1988

LOCATION: Toronto, Canada

A workshop was held on the International Aspects of the C26 Long Range Plan for developing standards in the nuclear fuel cycle. N. M. Trahey, speaking for J. Grady, President, stated that among the goals of the ASTM was expansion of the international role of the ASTM. Standards were needed to facilitate international trade. The ASTM looked toward helping other standards making bodies including those in developing nations. The long range plan appears to address primarily the front end of the fuel cycle at present, but storage, reprocessing, waste management, and decommissioning were considered as part of the responsibilities of the committee. Activities in which standards may be required include environmental protection, packaging, shipping, safeguards, quality assurance, training, and safety.

Six invited persons were to present talks; the one from Japan was unable to attend. Gerry Day, Canada, noted that Canada produces one-third of the free world's supply of uranium and is involved in all aspects of the fuel cycles except enrichment and reprocessing. The AECB is the regulatory body at the federal level and there are several bodies involved with nuclear standards. Conflicts have developed between the federal and the local levels. A. Sarda, France, called for greater implementation of standards and more round robin experiments. Rolf Berg, Germany, noted needs for analytical methods in reprocessing. In fuels, conditions for fuel storage were needed. Isotope standards for uranium calibrated to at least 0.05% transport conditions, reactor calculation codes, and sampling of radioactive solutions were other areas in which the need for standards was perceived.

Since it appeared that the talks were basically in terms of generalities, members of C26.13 agreed at the break to a pre-meeting to have more time to work on the proposed standard for extrapolation of short term data.