A4171 PDR-1
LPDR- WM-10 (2)
WM-11 (2)
WM-16 (2)

EW 4/6 M2 INTERRANTE

APR 0 8 1987

Dr. Charles G. Interrante, Program Manager
Metallurgy Division - Corrosion Section
Center for Materials Science and Engineering
National Bureau of Standards
U.S. Department of Commerce
Gaithersburg, MD 20899

Dear Dr. Interrante:

We have reviewed NBS' Draft Semi-annual Report (NUREG/CR-4735, Volume 2) and our comments are presented below.

1. The Executive Summary discusses questions concerning the Tuff program (NNWSI) in considerable detail but mentions only briefly deficient areas in the salt and basalt programs. The Executive Summary should be broadened to include more detailed discussion of deficient technical areas in the salt and basalt programs in order to present a more balanced analysis of the technical status of the three programs. For example, in discussing the salt program, the report states that "further materials research is called for." In fact, additional work seems to be required in at least two alternative areas. If DOE continues to base the design of the container on a uniform corrosion allowance, it will be necessary to develop an understanding of mechanisms for mass transport of brine in bedded salt to the waste package container. On the other hand, if DOE considers only the case of unlimited brine volume, it may be necessary to develop a data base for more corrosion resistant materials.

2. Section 6.0 (Materials Characterization Center) should be put in an appendix. This section contains much useful information but it is long and very detailed.

3. Appendices B, C and D should be deleted. These appendices do not add to the report.

4. A table of reviews should be added to Appendix A.

5. One of the reviews (p A-48) states that "...it is impossible, from a practical experimental point of view, to measure crack growth rates low enough to ensure (without extrapolation) that wall penetration or other unsatisfactory cracking behavior would not occur in 1000 years." NBS should clarify whether the above statement takes into consideration the acoustic emissions technique for measuring crack propagation.

   This comment may not be consistent with NBS' proposal of February 10, 1987 for "Evaluation of Methods for Detection of Stress-Corrosion-Crack Propagation in Fracture Mechanics Samples."

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PDR ✓
LPDR ✓ (B,N,S)

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6. Pages A-51 through A-53 contain a review of Chapter 1 (Mechanisms of Defense Waste Glass Corrosion: Dissolution of Glass Matrix) from the Final Report of the Defense High Level Waste Leaching Mechanisms Program, PNL 5157, Aug. 1984.

   Under "GENERAL COMMENTS", the review states that "This work provides an excellent review of glass corrosion as it pertains to nuclear waste glasses. There now appears to be a good understanding of the mechanisms involved in glass corrosion and the regimes where specific mechanisms are important."

   The review should state whether NBS agrees that the authors have demonstrated adequately the mechanisms of defense waste glass corrosion and whether NBS agrees with the statements made.

   In the same paragraph, the review states, "The understanding of the mechanisms as detailed by the authors (emphasis added) allows meaningful site specific tests to be designed so that accurate predictions of glass corrosion in a real repository can be made."

   The review should state whether, from the evidence presented, NBS agrees with the understanding of mechanisms as detailed by the authors.

   Additional comments, mostly editorial in nature, are presented in an enclosed copy of marked-up pages of the report.

If you wish to discuss this or have any questions, please call me.

Actions resulting from this letter are considered to be within the scope of FIN A-4171. No changes in costs or delivery of contracted products are authorized. Please notify me immediately if you feel this letter will result in additional costs or delay in delivery of contracted products.

Sincerely,

/S/

Everett A. Wick
Engineering Branch
Division of Waste Management

Enclosure:
As stated

cc: Dr. Neville Pugh, Director
Metallurgy Division

Dr. William Ruff, Section Leader
Corrosion Section - Metallurgy Division

OFFICIAL CONCURRENCE AND DISTRIBUTION RECORD

LETTER TO: Dr. Charles G. Interrante

FROM: Everett A. Wick

SUBJECT: NBS' DRAFT SEMIANNUAL REPORT

DATE: APR 0 8 1987

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JGreeves	3/6		
EAWick			

ENCLOSURES: A copy of the pencil ~~copy~~ draft of our comment letter was transmitted to the NRS Program Mgr on 3/31/87. That completes this action.

REMARKS: EAWick 3/31/87

U. S. NUCLEAR REGULATORY COMMISSION

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