SEP 19 1989

Dr. Charles G. Interrante, Program Manager
Metallurgy Division - Corrosion Section
National Institute for Standards and Technology
U.S. Department of Commerce
Gaithersburg, MD 20899

Dear Dr. Interrante:

We have reviewed the January 1989 NIST Monthly Letter Report for FIN A-4171, "Evaluation and Compilation of DOE Waste Package Test Data." Comments on the MLR are presented in the enclosure.

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,

C. H. Peterson

Charles H. Peterson
Engineering Branch, DHLWM
Office of Nuclear Material Safety
and Safeguards

Enclosure: As stated

cc: w/Enc.

Dr. Neville Pugh
Dr. Richard E. Ricker

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CONCURRENCES

| OFC | :HLEN | :HLEN | :HLEN | : | : | : | : |
|---|---|---|---|---|---|---|---|
| NAME | :CHPeterson | :RAWeller | :JOBunting | : | : | : | : |
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WM-11
A-4171
NH17

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ENCLOSURE

COMMENTS ON THE MONTHLY LETTER STATUS REPORT
JANUARY 1989 (FIN A-4171-9)

The procedure for reviewing the Monthly Letter Reports (MLRs) has been revised with regard to resolution of comments. Beginning December 1988, comments and questions on each MLR will be discussed with the NIST to resolve them more expeditiously. The documentation provided here serves to facilitate review of the semi-annual reports and revision of the entries in the NRC/NIST database.

TASK 3 -- LABORATORY TESTING

A. Crack Propagation Studies

1. It was noted that the report for this laboratory investigation is identical to that sent to the NRC in December. The correct report will be submitted in a subsequent MLR.

B. Pitting Corrosion of Steel

1. A correct report for January 1989 will be submitted in a subsequent MLR.

C. Zircaloy Corrosion

1. Table 1 was reported in December. Details for January will be submitted in a subsequent MLR.

2. The investigator should provide some details as to what kinds of tests are planned, what kinds of test specimens will be used, how many tests will be made, and what is the objective of the tests.

REVIEWS OF TECHNICAL REPORTS

A. Smyrl et al: Copper Corrosion in Irradiated Environments. The Influence of Hydrogen Peroxide on the Electrochemistry of Copper Dissolution in Hydrochloric Acid Electrolyte.

1. Spell out chemical formulas: searching probably will not be done by keywords that are chemical formulas.

2. In the Conclusions section, clarify to which behavior and for what material the statements made apply.

3. In the same section, clarify whether the film is cuprous chloride or cupric chloride? Include any authors' details as to postulated mechanisms.

4. Under Comments, clarify what "anomalous results" are.

5. The Author's Abstract talks about selection of five iron-based materials, although the paper was supposed to be about copper. This abstract is identical to the one in the following document review. Correct the database accordingly.

B. Russell, McCright, and O'Neal: Containment Barrier Metals for HIgh-Level Waste Packages in a Tuff Repository.

1. Even though the weighting factors for each property considered were not given in the report, the reviewer should include information on what were, or what appeared to be, the important properties.

2. "Weighing" should be "Weighting".

3. NIST should feel free to call the authors directly to obtain additional information. This should be on the basis of not trying to get the authors to change their conclusions, but to obtain a fuller understanding of how they arrived at their conclusions.

C. Jantzen: Prediction of Glass Durability as a Function of Glass Composition and Test Conditions: Thermodynamics and Kinetics".

1. TEST CONDITIONS

a. Under Modeling, the statement in the first bullet needs proofreading, after which the second bullet can be deleted.

b. The material in the third bullet appears inconsistent with that in the last bullet. The reviewer does comment on this later.

c. Under Experimental, the volume of solution is probably 40 $cm^3$, not 40 $m^3$.

2. UNCERTAINTIES IN DATA

a. Under Experimental, "errors of 100 + 5%" is not clear.

3. COMMENTS OF THE REVIEWER

a. The reviewer has made some excellent points regarding the validity of the approach to prediction in the document reviewed. When the work on PNL-5157 is complete, it would appear appropriate to have an in-depth review of what is known about glass dissolution to arrive at an NRC position on it.

b. On p 16, the reviewer notes that leachant concentration was not included in the kinetic formulation. Further details should be provided as to whether the reviewer meant this literally or that it was the S/V ratio that did not appear.