CHP/A4171 N088

MAY 08 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 November 1988 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

DISTRIBUTION W/Enc.

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ENCLOSURE

COMMENTS ON THE MONTHLY LETTER STATUS REPORT
NOVEMBER 1988 (FIN A-4171-9)

Task 1 - Review of Waste Package Data Base

1. We concur with the redirection of document review efforts from general topics to more specific topics on materials degradation.

2. In our comments on the September MLR, we requested inclusion of two tables summarizing the status of the review efforts. These are intended to provide clearer perspective on the status of this task. The first of these has been included; please provide both in subsequent MLRs.

3. With respect to documents entered into the database by citation only, there is a question as to how these might be retrieved. Is it feasible to enter also even an abbreviated keyword list?

4. The work on Chapter 4 of PNL-5157 seems to be in abeyance. When is it expected that this review will be completed?

Task 3 - Laboratory Testing

1. Crack Propagation Studies

   a. How was the initial stress intensity determined? What is the expected range of initial values?

   b. How frequent were the switching noises relative to the desired acoustic emissions?

   c. How would the operator reject the switching noises from the record?

   d. What action will be taken with respect to the transducer which showed a decrease in sensitivity?

2. Resistivity and Transport Studies

   a. How are the actual weight losses determined and what is the accuracy of these measurements?

   b. Are the pit distributions spatially random?

3. Pitting Corrosion of Steel

   a. Comments submitted on the draft report should be resolved and a final report prepared to close out this phase of the work.

h. In the section on Applicability of Data to Licensing, the questions dealing with brine are no longer appropriate. Substitute "groundwater" for "brine" in every case.

Wolery: Calculation of Chemical Equilibirum between Aqueous Solution and Minerals - the EQ3/6 Software Package.

a. Pg 23: Was there any discussion about the validity of equilibrating the input system?

b. Pg 24: Typing of exponents needs to be improved. We suggest use of Fortran notation - 1E-06 to 1E-10.

c. Pg 24: Clarify "...the singularity of the ill-condition of the Jacobian matrix..."

d. Pg 26: Clarify the statement about the divergence of numerical iteration not being the key criterion for deterining the phases present.

Mendel: PNL-52157, Chapter 6

a. Pg 29: Clarify the lead item in the description of the dimensions of the data.

b. Pg 30: Reaching saturation does not necessarily mean reaching equilibrium with respect to composition.

c. Pg 31: Michiels may be Machiels. Check the spelling.

d. Pg 32: In parallel with the use of "zero-exponent law", use "half- and unity-exponent time-laws".

e. Pg 32: Author's conclusion 4 should be questioned.

f. Pg 33: Clarify the statement about phase-separated microstructures.

Miscellaneous

1. Please refer to the contract as FIN A-4171-9. The last digit denotes the current fiscal year.

4. Zircaloy Corrosion

a. What is the interpretation of the rise in open circuit potential over the test period of 36 to 48 hours?

b. To what potential will the Zircaloy be subjected in the repository and how does this compare with the protection potential?

Task 4 - General Technical Assistance

a. What subjects were discussed during the CNWRA visit?

b. Were any agreements reached?

Document Reviews

As a general comment, we note that there is much more substantive material in these reviews, which considerably improves their utility. The sections on reviewer's comments also contain more specific information than previously. One more improvement we would like to see is inclusion of selective comments on the specific statements and observations made by the authors that were abstracted by the reviewers.

O'Connell and Drach: Waste Package Performance Assessment - Deterministic System Model Program Scope and Specification.

a. Pg 11: The units on the gamma ray flux should be checked. If plotted on a log scale, they would not start at zero. What is the value of the exponent n?

b. Pg 12: Shouldn't the units on the mass energy absorption coefficients be MeV?

c. Pg 12: Does steady state heat transfer mean that decay of the radionuclides is not taken into account?

d. Pg 17: Clarify the meaning of "cross-section track".

e. Pg 17: Recheck the statement about the radiation flux being inversely proportional to the sum of z and the distance of observation. Conventional wisdom is that flux would be inversely proportional to the square of some distance.

f. Pg 18: Substitute "more deleterious species" for "more dangerous species".

g. Were there any results reported from use of the code?