

JUN 22 1988

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

Dear Dr. Interrante:

As followup to the meeting with you and your staff on 16 June 1988 at NBS, Attachment 1 represents my understanding of the revised format for the waste package database structure for making document reviews under FIN A4171. The NBS contributions toward making these reviews more responsive to NRC information needs are very much appreciated. It was a pleasure to find that all of your staff participated actively in the discussions since it was through this process that significant viewpoints were identified.

Our objective is to have the document reviews identify information that would be useful in future licensing concerns as well as in management of technical assistance contracts, and to make this information readily accessible. We continue to regard the NBS assessments of the documents reviewed as the key contribution setting this database apart from others. We do not look to the reviews themselves as sources of detailed data, partly because of the possibility of transcription errors, and partly because of the time required to make such transcriptions. However, it is considered useful to include selected summary data. As an example, the review of a document on corrosion might include a bounding value of corrosion rate along with the conditions under which it is applicable. For the detailed data, the database user should refer to the original document.

With respect to the section in the reviews on relation to licensing issues, the NBS should continue to identify relevant issues. Perhaps each reviewer should do this to acquire familiarity with these issues. Consideration should be given to identifying at least to the first level the major issue addressed by the documents that are not given in-depth reviews at this time and are merely entered into the database.

Please review Attachment 1 within the next two weeks so that we may complete the work on modification of the structure in time for use with preparation of Volume 6. It is our understanding that Volume 5 will contain some reviews on a partially modified structure and reviews going in to this volume will be completed by July 31. The final form of Attachment 1 should be included in Volume 6.

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PDR WMRES EUSNBS
A-4171 PDR

OFC	:HLTR	<i>CP</i>	:HLTR	<i>RAW</i>	:	:	:	:	:	<i>A4171</i>
NAME	:CHPeterson	:	:RAWeller	:	:	:	:	:	:	<i>Wm-11</i>
DATE	:88/06/22	:	:88/06/22	:	:	:	:	:	:	<i>NH18</i>

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,



Charles H. Peterson, Project Manager
Materials Engineering Section
Technical Review Branch
Division of High-Level Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: Att. 1

cc: Dr. Neville Pugh, Director
Metallurgy Division

Dr. Dale Hall, Group Leader
Corrosion Group, Metallurgy Division

DISTRIBUTION WITH ATT. 1

Central File
PDR

NMSS r/f
LPDR

HLTR r/f
CNWRA

LSS

REBrowning, HLWM
RAWeller, HLTR
PAItomare, HLSE

RLBallard, HLTR
CHPeterson, HLTR
ABender, IRM

JOBunting, HLSE
KCChang, HLTR

BJYoungblood, HLOB
DBrooks, HLTR

MSilberberg, RES

EBooy, WMB

ATTACHMENT 1

WASTE PACKAGE DOCUMENT REVIEW FORMAT
AND GUIDELINES

DATA SOURCE

Guidelines: Enter full document reference as per illustrations below. The listing should give the reader enough information to enable him to obtain a copy of the document. Include the name of the sponsoring organization.

Format:

(a) Organization Producing Data. Contractor, if any.

Example: Lawrence Livermore National Laboratory, Livermore, CA. For the NNWSI Project, U.S. DOE.

(b) Citation

Format: Authors. Title of Document. Document Number. Journal Name: Volume Number, Issue Number, Inclusive page numbers. Publisher, City. Date Published.

Example 1: Ogura, K. and Ohama, T. Pit Formation in the Cathodic Polarization of Passive Iron, II. Effects of Ions. Corrosion: Vol. 37, No. 10, 569-574. 1981.

Example 2: Knauss, K. G., Oversby, V. M., and Wolery, T. J. Post Emplacement Environment of Waste Packages. In: Scientific Basis for Nuclear Waste Management VII, Materials Research Symposia Proceedings, Boston, MA, November 1983, G. L. McVay, editor. Vol. 26: 301-318. North-Holland, Elsevier Science Publishing, Inc., New York. 1984.

Example 3: Braithwaite, J. W. and M. A. Molecke. Nuclear Waste Canister Corrosion Studies Pertinent to Geologic Isolation. SAND79-1935J. October 1979.

DATE REVIEWED

Guidelines: Give the date the review was completed. Add additional dates for subsequent revisions.

Example: 11/25/86; Revised 12/01/86.

PURPOSE/SCOPE

Guidelines: Enter verbatim, in quotes, the author's stated purpose. If no purpose was stated, the reviewer's perception of the purpose should be entered. Here, as elsewhere in the review, it shall be understood that all material in quotes are the author's words and all material not in quotes represent paraphrases or interpretations by the reviewer. Enter the scope in a separate statement. Scope may be omitted if sufficient description of the boundaries of the work is given in other sections of the review.

Example: "The purpose of this work was to investigate the effect of pH on the passivation of selected stainless steels."

KEYWORDS

Guidelines: Use the database keyword checklists to choose words which accurately reflect the information given in the document and the document review. Consider the author's keywords. If he has used words not in the database checklists, or if the reviewer believes words not on the database checklists better describe the information content, these may be used and also added under the category "other" at the end of each checklist. Check off the keywords directly on the keyword form called up on the word processor. This will present the keywords in an organized fashion to further describe the document under review and permit deleting certain sections of the format previously used.

CONTENTS

Guidelines: Give a summary description of the contents of the document.

Format: Total number of pages, number of figures and tables, and either number of references or number of pages of references. (Optional)
List the titles of main sections as appropriate with number of pages in each.

Example: 70 pages with 46 figures, 20 tables, and 2 pages of references.
Literature survey of stress corrosion cracking: 15 p. Geochemical conditions in tuff: 1 p. Test methods: 14 p. C-Ring test results: 25 p. Water chemistry measurements: 8 p. Discussion and Conclusions: 2 p.

AMOUNT OF DATA

Guidelines: At the option of the reviewer, titles of selected tables and graphs may be entered. Selection should be based on relative importance, on whether they represent summary or final statements of results, and on whether they represent new information.

If a listing of figures is provided, the reviewer should add the limits given on each axis of each graph, i.e. for temperature and corrosion rate, and other explanatory information as appropriate. Sometimes a synthesis is preferable to individual listings:

Five tables of temperature and time data for five molten-glass pouring operations, each table including the data from ten sensor locations. The temperatures ranged from 1100°C to 0°C over a time period of 24 hours.

TEST CONDITIONS

Guidelines: Describe the test conditions in only enough detail to indicate to the user of the database the nature of the work. Give the test plan, if any. List experimental conditions.

Example: Test Plan 2 Materials x 2 Test Environments x 3 Test Times x
 3 Replicates = 36 specimens.
 Conditions - Materials: 304L, 316 Stainless steels
 Environments: Deionized water, J-13 wellwater
 Times: 3, 6, 12 months
 Forms: 0.75-in 0.125-in tubing, 1 x 3 x 0.25-in coupons
 Pretreatment: Annealed, as-is

UNCERTAINTIES IN DATA

Guidelines: Enter error bars and uncertainties in the data as stated by the author. This also includes qualitative statements by the author on the reliability of the data. This is not intended to require an exhaustive statement for all the data, but rather for the major conclusions.

Example 1: "Temperatures carry an accuracy of $\pm 5^\circ\text{C}$ while the times are reported to ± 15 s." Statements like this should be included only if they refer to final results and conclusions.

Example 2: "Under real glass pouring operations (without well-controlled crucible cooling) the temperature-time curves will be shifted to somewhat higher temperatures than shown here." Since the time-temperature curves represent summary results, it is informative to the user of the database to be told of this possible shift.

DEFICIENCIES/LIMITATIONS IN DATABASE

Guidelines: Enter statements by the author on the applicability of the data.

Example: "Extrapolation of the temperature-time (time less than 24 h) data presented hereto times in excess of 100 years should not be performed. The data presented are useful only for indicating trends and qualitative parameter relationships, and not for the purpose of presenting absolute values."

CONCLUSIONS

Guidelines: Enter the author's conclusions in quotes. Sometimes, the document will not have a section explicitly identified as "Conclusions". The reviewer should then enter either his understanding of appropriate conclusions or a note to the effect that no conclusions can be drawn. In addition, the reviewer should enter a critical review of the conclusions. Distinctions should be made between "Observations", "Results" and "Conclusions".

Example 1: "The crack paths are usually difficult to determine but some are definitely intergranular and some are transgranular." This is an observation, but would be a conclusion if the stated purpose of the investigation was to determine where the crack path lay.

Example 2: "Analysis of the data showed that the time-temperature relationship was linear over the ranges of values of the variables used." This is a result, but again would be a conclusion if the stated purpose of the investigation was to determine the nature of the time-temperature relationship.

Example 3: "Based on the corrosion rate data obtained, the service life of the waste package will be less than 300 years." This is a conclusion.

Critique: In Example 1, a conclusion would address the question of what effect the experimental conditions had on the type of cracking. The reviewer might, for example, enter a statement that crack paths were apparently independent of grain boundary locations for the conditions used. He might then comment as to whether this is consistent with his understanding of cracking, or suggest that this finding be compared with the work of others.

COMMENTS OF REVIEWER

Guidelines: Enter any comments that do not fit better in one of the preceding fields. The objective is to give the user of the review an accurate and fair assessment of the document so that such a user would make the correct decision as to the usefulness of the document for answering his

questions. Do not simply enter statements like "More information is needed", but include. If the comments deal with more than one subject, include subheadings to facilitate scanning of the review by the user.

Example:

Aqueous corrosion of 316L

The work reported appears thorough. Adequate controls were included in the test plan. The quality of the data is excellent as indicated by the relatively small standard deviations observed.

Aqueous corrosion of copper

Since the data reported are of a preliminary nature, the conclusions as to service life cannot be regarded as firm.

RELATED HLW REPORTS

Guidelines: Enter the numbers of any reports known to be related to the document under review (Optional).

APPLICABILITY OF DATA TO LICENSING

Ranking: Key Data () Supporting Data ()

Guidelines: Put an X in the Key Data box if the document contains information that is of sufficient quality that it must be considered by the NRC in an evaluation of a licensing application. It must meet at least one of the following criteria:

- (1) It is an in-depth review of the pertinent literature.
- (2) It contains data that is especially significant after being assessed for scientific quality and merit.
- (3) It contains data with such a small uncertainty that it must be considered in a performance evaluation of a license application.

Otherwise, put an X in the Supporting Data box.

Licensing Issues

Guidelines: Use the waste package issues identified in the document "Draft Issue-Oriented Site Technical Position (ISTP) for Nevada Nuclear Waste Storage Investigations (NNWSI), September 1984, U.S. NRC. Put a check opposite the main issue, and enter the specific issue on the following line. Leave blank if the issues are not clear to the reviewer.

Example:

(a) Relationship to Identified Waste Package Performance Issues

- 2.1 Groundwater/waste package container contact ()
2.1.

- 2.2 Container penetration ()
2.2.

- 2.3 Radionuclide release from waste packages ()
2.3.

- 2.4 Radionuclide migration through waste packages ()
2.4.

- 2.5 Part 20 releases to unrestricted areas ()
2.5.

- 2.6 Waste package retrievability ()
2.6.

- 2.7 Hazards other than radioactivity ()
2.7.

- 2.8 Criticality ()
2.8.

- 2.9 Monitoring ()
2.9.

(b) New Issues
Enter new issues as appropriate.

(c) General Comments
Reviewer may wish to comment on the degree of applicability, or other aspects dealing with licensing.

AUTHOR'S ABSTRACT (Optional)

Guidelines: Do not automatically include the abstract. Many are poorly written, do not give useful information, and do not adequately describe the contents of the document. A good abstract will state what was done, state how the work relates to some larger problem, and give some quantitative findings as well as some important conclusions.