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Distribution:

(Return to WM, 623-SS)

Dr. Robert J. Wright
Senior Technical Advisor
High Level Waste Technical
Development Branch
Division of Waste Management
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Dr. Wright:

NRC QUESTIONS ON BWIP SCR (SCR-9)

As requested by your letter dated January 26, 1983, and discussed with you, R. Cook, R. Starmes, J. Graves, R. Rhoderick, NRC; J. LaRue, H. Babad, A. Tallman, Rockwell Basalt Project; and D. Squires of my staff, the following response is provided in answer to the questions presented.

Question

Is the NWTS-34 (draft) "Program Plan for the Development and Testing of NWTS Waste Package Materials," Volumes I and II (November 1981) invoked by the SCR as the test plan which the BWIP intends to use? We see that the method of designing statistical tests (SCR page 15.3-53) is invoked, but this subject represents only a small portion of the content of NWTS-34.

Response

NWTS-34, which existed in draft form during the writing of the SCR, was not specifically invoked in the BWIP SCR. However, it was used as a guideline for checking the materials/information needs included in Chapter 15 of the SCR. Attachment 1 contains a correlation of SCR work elements that contain the kind of information needs described in NWTS-34. Neither the SCR nor NWTS-34 are meant to be an all inclusive plan for the testing of waste package materials. Such information is found in the test plans that the BWIP is developing/upgrading. There are tests described in the NWTS-34 that deal with over-packs and buffer materials that are not components of the conceptual BWIP waste package, and do not apply to this project. NWTS-34 contains little reference to engineering

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scale tests that apply to determining the practicality and limitations of proposed BWIP waste package designs (such as pneumatic/mechanical emplacement of backfill in long storage holes) that are presently being tested or planned by the BWIP. The BWIP has used the material in the draft NWTS-34 (dated November 1981) as a means of guiding our project's work in the same manner that an NRC regulatory guide would show a license applicant the general direction to be followed in completing a given action/analysis/test program. It is not, however, by its own intent, a test plan for Waste Package Materials Testing that must be rigorously followed by NWTS participants.

Question

If NWTS-34 is not to be used in its entirety, what portions (by section number) does the BWIP intend to follow?

Response

The BWIP has applied the principles described in NWTS-34 to developing its site specific waste package materials test programs. This is reflected not only in the data/analysis contained in Chapters 6 and 11 of the SCR, but in the narratives and tables in Chapter 15 of that document. Specifically, the four principles described in Chapter 2 of NWTS-34 (test complexity, timeliness, test priorities and use of review for verification/validation) are utilized in the BWIP's test program in demonstrating the waste package functional requirements of retrievability, containment and control of release, as is most of the other guidance contained in NWTS-34. BWIP is concerned with the applicability of the statistical treatment of accelerated age testing as an acceptable means for providing the "reasonable assurance" required by the NRC of the performance of the waste package. There appears to be no present consensus of how this might best be done, particularly in the presence of existing materials information. Because the present test program (FY 1983 and 1984) is focused on validating/verifying the initial screening data (reported in the SCR) used in the conceptual design, we have initiated a dialog with outside experts to determine the most defensible means of extrapolating short-term laboratory/engineering materials and component tests to a repository time frame.

In addition, discussions were also held covering the proposed DOE/NRC BWIP Tectonics/Site Stability workshop which is scheduled to be held at Richland on March 23 and 24, 1983. The agenda for the workshop is being prepared and will be provided for DOE and NRC review by March 15, 1983.

If you have any questions covering this material, please call D. J. Squires of my staff.

D. J. Squires for O. L. Olson, Project Manager
Basalt Waste Isolation Project Office

BWI:DJS

Attachment

cc: R. Stein, w/attachment

A CORRRELATION OF THE BWIP SCR WITH NWTS-34

NWTS-Topic	SCR Treatment
Methodology For Designing Accelarated Ageing Tests (Section 3.*) Footnote 1.	W.3.1.A, W.3.2.A, and W.3.3.A.
Backfill Component Tests (Section 4.*) includes: Physical and Engineering Properties Mineralogic Stability Migration of Chemical Species	W.1.1.A, W.1.2.A, W.1.3.A, W.1.4.A, W.1.7.A, W.1.8.A, W.1.12.A, W.1.14.B, W.1.15.B, W.1.16.B, and W.1.20.B and related cross references.
Corrosion Resistant Structural Components (Section 5) Includes: Uniform Corrision and Non-uniform under static and possibly non-static conditions.	W.1.1.A, W.1.2.A, W.1.3.A, W.1.6.A, W.1.7.A, W.1.11.A, W.1.12.A, and related cross references.
Waste Form Components (Section 6) Includes: Static and Dynamic Tests to mimic various disruptive and gradual release scenarios.	W.1.1.A, W.1.2.A, W.1.3.A, W.1.4.A, W.1.10.A, W.1.12.A, W.1.15.B, W.1.16.B, and related cross references.
Interaction Tests (Section 7) Includes interaction testing of components, assembledges and the waste package sub-system.	W.1.3.A, W.1.4.A, W.1.5.A, W.1.12.A, W.1.15.B, W.1.16.B, W.1.20.B, W.1.27, W.2.4.A, W.3.6, and related cross references.

Footnote 1: The applicability of the general methodology for designing accelerated age tests, described in NWTS-34, to test programs at BWIP has not yet been evaluated by BWIP staff and consultants. BWIP expects to apply

- a statistically defensible methodology, possibly using techniques described in the literature or their equivalent, to the materials test program when a consensus can be obtained that they provide a supportable and defensible data base that will meet licensing needs. Feedback from the NRC on this matter would be appreciated.