

APR 4 1984

J. William Bennett  
Director  
Geologic Repository Division  
Nuclear Waste Policy Act Project Office  
U.S. Department of Energy  
S-10  
Washington, D.C. 20545

Dear Mr. Bennett:

The attached letter (Attachment 1) to the Basalt Waste Isolation Project Office transmitted NRC staff comments on the BWIP Exploratory Shaft Test Plan (ESTP). I forward this letter because it amplifies, on a site-specific basis, the points made in our comments on the draft Mission Plan concerning site characterization testing.

Through meetings and technical reviews that we have conducted over the past several years (see Attachment 2 - References) as well as in comments on the Mission Plan, we have indicated that DOE needs to say how it plans to address the coupled thermal effects that emplaced wastes will have on surrounding rock and groundwater. We have pressed for timely resolution of this matter because lead-times for planning and preparing for such testing (should it be required), as well as the duration of actual tests, have potentially very significant impact on overall repository schedule.

We comment in the attached letter that the ESTP for BWIP does not address this question of coupled thermomechanical and hydrologic conditions; nor have previous submittals done so. In the letter, we again take the position that DOE must provide a technical evaluation of coupled behavior. We have gotten feedback on our mission plan letter and other such documents that leads us to conclude that our pressing strongly for such evaluations has resulted in an incorrect impression that the NRC considers large-scale, long-duration underground tests of thermal effects to be required. It is not our position that large-scale, direct testing of such effects is required under all circumstances. A position on what specific testing is needed, of course, cannot be prescribed without a prior knowledge of how much credit will be taken for the near-field host rock formation in meeting overall performance objectives. If the near-field host rock will be important to DOE's case on waste isolation, then some large-scale, direct testing of coupled thermal effects may be necessary for characterizing the near-field host rock.

In the attached letter, we have identified the conditions under which the staff could accept a limited program as presented in the BWIP plan. As you will note, however, these conditions still require DOE to establish the relative

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importance of various components of the natural system and engineered barriers, including isolation capabilities of the near-field host rock.

We have discussed this matter with the individual projects. As you and I discussed recently, the most appropriate next step is to hold a meeting involving headquarters as well as DOE project representatives. Attachment 3 describes a general agenda. The main contact for this meeting will be Maxine Dunkelman of the Repository Projects Branch (427-4300).

**"ORIGINAL SIGNED BY"**

Hubert J. Miller, Chief  
Repository Projects Branch  
Division of Waste Management  
Office of Nuclear Material  
Safety and Safeguards

**Enclosures:**

Letter to Olson on ESTP comments - *Let already in file - dtd 3/4/84*

**References**

Agenda for meeting on coupled Thermal Effects

cc: J. Neff  
O. L. Olson  
D. Vieth  
S. Mann

*Record note: based on my discussion of transmitted letter and agenda with Mr. P. Brooks 4/4/84 [signature]*

*Enclosure 1 located in DCC  
References attached to enclosure 2 are  
located in DCC*

\*SEE PREVIOUS CONCURRENCE PAGE

PDR has copy of attachmen

*See previous concurrences [signature] B needs AT cond.*

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Attachment 2  
References

Summary Meeting Notes, BWIP/NRC Workshop on Underground Test Plan, Richland, Washington, November 29-December 2, 1983; Critical Comments 1, 3, and 5.

Summary Meeting Notes, DOE/NRC Technical Management Meeting, Silver Spring, Maryland, August 4-5, 1983; Discussion points 2, 4, and 5 and page 3.

Notes of DOE/NRC Meeting on "BWIP Process and Response to NRC Issue Resolution and Plan for SCP Preparation," May 25, 1983; NRC Comment 3.

Meeting Report, NRC/DOE/RHO, Richland, Washington, June 9-10, 1982; Comment 17.

Minutes of the Second Meeting of NRC and DOE/NPO Preparatory to Submittal of Salt Site SCP, Silver Spring, Maryland, June 27-28, 1983; Observations and Agreements 1, 2b, 3e and 4a.

Minutes of the Third Meeting of NRC and DOE/NPO Preparatory to Submitted of the Salt Site SCP, Columbus, Ohio, August 9-10, 1983; Observations and Agreements 1a and 6b.

Summary of NRC-DOE Meeting, "Siting and Design Suitability Issues for NNWSI," Las Vegas, Nevada, May 17-19, 1982; page 4.

Memorandum from R.E. Browning, NRC, to R.F. Fraley, ACRS, "ACRS Waste Management Subcommittee Comments on the DOE Site Characterization Report," August 31, 1983; Response 3(ii). (DOE, Richland Office was a participant in this ACRS review.)

U.S. Nuclear Regulatory Commission, Draft Site Characterization Analysis, NUREG-0960, March 1983; pages xviii, 6-9, 6-10, and 6-11.

Attachment 3

Agenda: Site Characterization Testing - Coupled Thermal Effects

1. DOE plans on addressing coupled thermal effects and supporting evaluations.
2. Questions and comments from NRC

List of specific topics and questions to be addressed:

1. What are DOE's plans for establishing performance requirements for engineered and natural system components?
2. To what extent is DOE planning to use redundant barriers to compensate for uncertainties about near-field coupled thermal effects?
3. Will DOE take credit for portion of rock that will be altered by coupled thermal effects?
4. What degree of conservatism will DOE include in performance analysis?

importance of various components of the natural system and engineered barriers, including isolation capabilities of the near-field host rock. We have discussed this matter with the individual projects. As you and I discussed recently, the most appropriate next step is to hold a meeting involving headquarters as well as DOE project representatives. Attachment 3 describes a general agenda. The main contact for this meeting will be Maxine Dunkelman of the Repository Projects Branch (427-4300).

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Repository Projects Branch  
Division of Waste Management  
Office of Nuclear Material  
Safety and Safeguards

## Enclosures:

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Agenda for meeting on coupled Thermal Effects

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We comment in the attached letter that the ESTP for BWIP does not address this question of coupled thermomechanical and hydrologic conditions; nor have previous submittals done so. In the letter, we again ask that DOE provide a technical evaluation of coupled behavior. To make sure that in pressing for such evaluations, an impression is not incorrectly formed that the NRC considers that large-scale, long-duration underground tests of thermal effects are required, we have identified the conditions under which the staff could accept a limited program as presented in the BWIP plan. As you will note, however, these conditions still require DOE to establish the relative

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