

101.2

SEP 17 1980

WM-10

PDR

Return to  
wm  
623-SS

Dr. Colin Heath  
U.S. Department of Energy  
Washington, D.C. 20545

Dear Dr. Heath:

Enclosed please find a copy of the trip report prepared by the U.S. Nuclear Regulatory Commission (NRC) staff following their July 7-17 visit to assess the current status of siting studies for the Basalt Waste Isolation Project (BWIP).

I would like to bring to your attention the following points concerning the siting investigations at BWIP:

1. The compilation of tectonic studies performed for the WPPPS and BWIP siting investigations is well-conceived and should provide significant results on the state of neotectonism in the Pasco Basin and the Hanford Reservation.
2. Improvement of core drilling procedures is needed in order to permit complete recovery of rock core irrespective of rock conditions. Also rock core should be of high quality and exhibit a minimum of mechanical breakage. Core observed during the staff visit showed substantial mechanical breakage and was poorly suited for geotechnical study. Rock core observed at the site did not project the appearance of sound, tight basalt units.
3. The nearly total reliance on vertical boreholes should be re-evaluated to determine whether these boreholes allow meaningful hydrologic tests in portions of basalt flows which are characterized by nearly vertical fractures.
4. The use of drilling mud for circulation while drilling boreholes and the methods used to develop the boreholes should be re-evaluated to determine whether these techniques maximize the opportunity to perform meaningful hydrologic tests in boreholes free of the effects of drilling.
5. It is essential that the siting investigations determine whether the vertical permeability in the entablature and colonnade portions of a basalt flow, particularly the Umtanum flow, or the horizontal permeability in interbeds and flow breccia zones controls the potential releases from the repository.
6. Given that a release from the repository does occur, it is essential that the siting investigations determine whether the transport of radionuclides to the accessible environment will be vertically through overlying basalt flows or laterally through an interbed/flow breccia zone to the discharge area of the basalt aquifer.
7. The preliminary results of groundwater modeling, particularly with respect to the location and mode of discharge in the confined basalt aquifers, should

8208170376 800917  
PDR WASTE  
WM-10

PDR

OFFICE					
SURNAME					
DATE					

ORIGINAL UNAVAILABLE

00004

Dr. Colin Heath

SEP 17 1980

be re-evaluated based upon the results of continuing siting investigations. In addition, the differences between preliminary modeling results of the U.S. Geological Survey and Rockwell Hanford Operations should be resolved on the basis of future siting investigations which not only verify one of these interpretations or a new interpretation, but also, explain the shortcomings of the alternative interpretations. Agreement between several lines of evidence, such as potentiometric levels, hydrochemistry, and ground-water age determinations, will help to resolve the issue and to remove uncertainty associated with the various interpretations.

8. The Exploratory Shaft Test Facility and the tests to be performed within should be designed to permit testing of those parameters which need to be measured during site characterization. This includes not only those parameters for which direct measurements were not available by other means prior to site characterization but also confirmation of significant parameters that may have been measured by borehole and laboratory testing during site screening. Given the parameters needed to demonstrate site suitability and to demonstrate the compatibility of the conceptual design to the site, the appropriate testing techniques and instrumentation requirements should be identified and then the ESTF should be designed to accommodate the testing and to avoid interferences between tests.

9. The identification and design of tests to be performed in the ESTF should include verification of the results of tests performed in the Near Surface Test Facility where applicable.

The visit provided the technical staff an excellent opportunity to appreciate the scope of the siting investigations at BWIP, and, considerable amounts of pertinent technical information were obtained. The experience will be very beneficial to the technical staff in developing regulatory and guidance documents and in planning other technical programs. Hopefully, the observations made will be equally useful to the DOE staff and its contractors in performing future siting investigations.

We would particularly like to thank your staff, the DOE-Richland Operations staff, and the Rockwell Hanford Operations staff for their time and cooperation.

I would be pleased to meet with you to discuss your comments or further details of the trip report. We look forward to subsequent trips to continue our assessment of siting activities at BWIP.

Sincerely,

Original Signed by  
MICHAEL J. BELL

Michael J. Bell, Chief  
High-Level Waste Technical  
Development Branch  
Division of Waste Management

OFFICE	Enclosure:.....	WMHT <i>RES</i>	WMHT <i>JAW</i>	WMHT <i>MJB</i>		
SURNAME	stated.....	DSiefken:ett	LWhite	MJB		
DATE		9/16/80	9/17/80	9/17/80		