

102.2  
PDR-1  
LPDR WM-11(2)

September 10, 1987

Mr. Carl P. Gertz, Director  
Waste Management Project Office  
U.S. Department of Energy  
M/S 523  
Las Vegas, Nevada 89109

Dear Mr. Gertz:

REFERENCE 1: Letter dated June 17, 1987 from Kunich (DOE) to Linehan (NRC)

REFERENCE 2: Letter dated July 20, 1987 from Kunich (DOE) to Linehan (NRC)

In my letter of August 19, 1987 to Mitchell Kunich, DOE, it was indicated that NRC staff has recently received two letters from the DOE providing information on some of the exploratory shaft facility (ESF) open items (References 1 and 2) and that we would provide the results of our evaluation of the information contained in these letters to the DOE by September 11, 1987.

The staff has reviewed these letters, in which the DOE has addressed open items 5, 6, 16, and 18 from the August 27-28, 1985 NRC/NNWSI Project meeting summary and open item I(a) from the 1983 letter. The results of the staff review are provided in the Attachment to this letter. In summary form, the results are:

1. Our evaluation of open items 5 and 18 has been previously provided to the DOE in my August 19, 1987 letter. No new information has been received relevant to the status of these open items. Open item 5 is considered closed, while item 18 remains open.
2. The information provided by the DOE for closing out open item 6 must be reviewed in conjunction with its application to the performance analysis and DOE's exploratory shaft construction procedures. Since the DOE has not yet submitted this information for staff review, open item 6 is considered to remain open.
3. Open item 16 is considered closed based on information provided by DOE in its submittal dated July 20, 1987.
4. DOE has stated that SAND86-7001 provides a partial response to our information request I(a) of the 1983 letter. The NRC staff will review the adequacy of this information when a complete response has been submitted by the DOE for this information request.

8712010149 870910  
PDR WASTE  
WM-11 PDR

J. 299246  
WM Project: WM-11  
PDR yes  
(Return to WM, 623-SS)

WM Record File	WM Project
<u>102.2</u>	<u>11</u>
	Docket No.
	PDR <input checked="" type="checkbox"/>
	LPDR <input checked="" type="checkbox"/> (N)

WM Record File: 102.2  
Distribution: yes

(Return to WM, 623-SS)

1482

If you have any questions on this letter or the attachment, please contact King Stablein (FTS 427-4796) of my staff.

Sincerely,

*JS*

John Linehan, Section Leader  
Projects Section, Operations Branch  
Division of High-Level Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosure:  
As stated

cc: J. Knight, DOE/HQ  
R. Stein, DOE/HQ  
D. Alexander, DOE/HQ  
E. Regnier, DOE/HQ

9/10

ATTACHMENTNRC STAFF EVALUATION OF INFORMATION  
PROVIDED BY DOE IN LETTERS, DATED  
JUNE 17 AND JULY 20, 1987,  
TO NRC

The NRC staff has received two letters dated June 17 and July 20, 1987 providing information related to closing out open items 5, 6, 16 and 18 from the August 27-28, 1985 meeting and open item I (a) from the 1983 letter. We have evaluated the information provided by the DOE in these two letters.

Our evaluation of the information on open item nos. 5 and 18 was previously provided in our August 19, 1987 letter to the DOE. No new information has been received by the NRC on these open items. As indicated in our letter to the DOE, we agree that open item No. 5 is now closed. The open item No. 18 remains open because we cannot agree at this time that the DOE has provided adequate basis to close out this open item.

Our evaluation of the other open items addressed in the two DOE letters is as follows:

Open item No. 6: Need to establish a common approach to evaluating the magnitude of the damage around openings.

NRC Staff Comment

In its June 17, 1987 letter, the NNWSI Project has updated the status of this open item to be closed. The basis for this update is given as Sandia National Laboratories Report SAND85-7001. Based on our review of this report, we find that the basic technical approach to evaluating the magnitude of the damage around openings presented in this report involves combining the effects of stress redistribution and blast damage using some simplifying assumptions. In addition, the approach considers the thermal as well as geochemical effects to be insignificant.

The NRC staff considers that the adequacy of the DOE's approach to evaluating the magnitude of damage around openings should be reviewed on the basis of its application to the performance analysis, so that the effects of simplifying assumptions on the DOE's damage zone model can be appropriately evaluated. However, the DOE's performance analysis is not available for staff review at this time.

In addition, the report estimates effects of blast damage by utilizing case histories in which controlled blasting methods (such as smooth wall blasting) were used to excavate the rock. The staff considers that the validity of the approach would also depend upon the DOE's proposed construction procedures (drilling and blasting) for the exploratory shaft. So far, the DOE has not provided details of its exploratory shaft construction procedures for staff review.

The staff also notes that no analyses are presented for depths below 310 m. It is presently envisioned that ES-1 will extend well below that level in order to test properties of the Calico Hills unit. Magnitude and extent of damage of the rock mass surrounding the shaft below 310 m is conceivably more important than that above 310 m level. The DOE should present the results of any additional analyses to account for shaft penetration below 310 m in its future submittals to the NRC staff for review and comments.

In summary, since the DOE has not provided a performance analysis, exploratory shaft construction procedures and the results of analysis accounting for shaft penetration below 310 m, the staff cannot appropriately review the information provided by the DOE at this time. The open item No. 6 is considered to remain open, pending DOE's submittal and NRC staff review of the said information.

Open item No. 16: The DOE will furnish the NRC with the document which contains recent information on thickness of the Calico Hills.

#### NRC Staff Comment

The DOE has provided a discussion of this open item in its July 20, 1987 letter to the NRC and has concluded that this item is now closed. We have reviewed DOE's response and concur with the clarification provided in the response. DOE has stated that the same term "Calico Hills" was previously being used to refer to stratigraphic, thermo-mechanical, zeolitic as well as hydrological units, and in the future, the stratigraphic unit only will be designated the "Calico Hills" to avoid confusion. The DOE has further given the estimated thickness of Calico Hills as 99 m at ES-1, while the zeolitized interval II is estimated to be 136-137 m thick at this location. We consider that the information and clarification provided by the DOE is adequate to close this open item. This open item is considered closed. However, the DOE should ensure that data on Calico Hills thickness used in any future analyses would reflect the comments made by the DOE in its July 20, 1987 letter to the NRC.

Open item I (a): Provide an analysis of the potential effects of construction of the exploratory shaft on long-term sealing capabilities of the rock mass and identify factors that determine the nature and extent of such effects.

NRC Staff Comment

In its June 17, 1987 letter to the NRC, the DOE has stated that the SAND86-7001 document provides a partial response to this request. The staff will review the adequacy of this information when a complete response to this information request is provided by the DOE. We consider this item to remain open.