

Sandia National Laboratories

Albuquerque, New Mexico 87185

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to: U.S. Nuclear Regulatory Commission, WMEC WM Record File
Attention: Jerome Pearring

A1755

WM Project 10, 11, 16
Docket No.
PDR
LPDR C.N.S

from: Krishan Wahi, Sandia National Laboratories

Distribution:
Pearring

(Return to WM, 623-33)
cc: Raj

subject: Comments on Letter of January 11, 1984 (and its attachment)
from J. O. Neff NWTs, DOE to H. Miller, HLW Technical
Development Branch, NRC

A. Cover Letter

The cover letter makes two strong assumptions which may or may not be substantiated. One, it states that the decommissioning seals can be placed in the repository shafts regardless of the method of construction. Two, surface based testing programs can provide the necessary data on the stratigraphy and hydrology of the site. The ability to characterize the stratigraphy and the hydrology by means other than the exploratory shaft (ES) is necessarily limited by the size of the exploratory boreholes. Therefore, the degree of extrapolation required is much higher if the opportunity of gathering geohydrologic data in the ES is not utilized. The criteria for removing "critical" sections of the shaft liner are not described either in the cover letter or the attached response (dated 11/22/83).

B. Response to NRC Letter of June 15, 1983 (11/22/83)

- o Item 3 in Section I-A appears to be a reference to the generally lower strength at reduced confining stress for several rock types. However, it is not clear as to what is meant by "loosening of the crystal structure."
- o Under Section I-C, the assertion that "the ES design specifications dealing with factors affecting sealing concern the short-term operation seals" is based on a DOE decision to arbitrarily dissociate short-term sealing from long-term sealing. In reality, some of the seals placed at the time of ES construction would have to perform on a long-term basis. Also, the activities associated with the placement of short-term seals must take into account the potential long-term implications. As such, the ES design specifications should address the long-term decommissioning seals as well.

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- o Section I-E states that the decommissioning seal components will not be tested in the ES. This is unfortunate because a reliable data base could be established by including such testing in the ES design specifications. Since the long-term seals would presumably perform at least as well as the short term seals, why not use the mix-design envisioned for the long-term seals in the fabrication of some of the short-term seals?
- o In section II-B under Prevention of Hydrofracturing, reference is made to visual inspection of the uncased salt section above the target horizon. If this is during the construction of ES, then there is a contradiction with previous statements and the proposed construction method.
- o With respect to the strength and elastic properties of cement-based materials (III-A) what data, if any, have been obtained at elevated temperatures?
- o The statement in the last paragraph on p. 13 (IV-B) about the mechanical properties (strength) of the cement grout being "not significant" is incorrect. Moreover, if sections of the liner are removed (as planned) and some of the cement grout fails (because of low strength, around the remaining liner, a potential for liner shift exists that could adversely affect the overall sealing capability of the system.