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Mr. Steve Zappe
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive, Building E
Santa Fe, NM 87505

DEC 2002

Re: WIPP Hazardous Waste Act permit; proposed panel closure modification

Dear Mr. Zappe:

This letter submits comments by the Water, Environment, and Utilities Division of the New Mexico Attorney General's Office concerning a proposed modification to the Hazardous Waste Act permit for the Waste Isolation Pilot Plant (WIPP). The proposed modification concerns the panel closure design. The proposed modification is clearly significant, affects numerous parts of the permit, and has appropriately been designated for review pursuant to Class 3 procedures. Our comments are as follows:

1. The proposal contains a change in the maximum waste disposal volume from 80,514 drums to 86,500 drums. (at I-5). The Permittees should provide a sufficient explanation for this increase. No explanation is given here.
2. In light of the previous thorough studies of alternative panel closure configurations and the history of NMED's selection of Option D, we suggest that any consideration of a new closure configuration should be predicated on

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modeling analyses of the existing requirement (Option D) and the proposed new closure, which analyses are carried out using the same models and assumptions.

3. Any study of the performance of Option D and the proposed new design should consider the performance of each both at the horizon of Panel 1 and at the higher horizon authorized for the excavation of other panels.
4. The analysis of the proposed new design considers deflagration but not detonation. (see 3-21). Modeling of panel closure design should consider the possibility of detonation, since the non-occurrence of such an event depends upon the configuration of the space remaining after waste emplacement, and such configuration cannot reliably be predicted for all relevant panels.
5. The design evaluation submitted in support of the proposed modification states that the mass flow rate for various VOCs through the proposed panel closure is two orders of magnitude below Table IV.F.2.c limits and that, using Monte Carlo simulation, the maximum mass flow rate was more than an order of magnitude below such limits. (at ES-5, Fig. 3-2, Fig. 3-5). Comparative analysis of Option D should be conducted using the same modeling approach.
6. The analysis by John F. Abel, Jr. contained in Environmental Evaluation Group, Evaluation of Proposed Panel Closure Modifications at WIPP, EEG-82, Dec. 2001 ("EEG-82"), concludes that the planned 12-foot explosion isolation wall incorporated in Option D is insufficient to withstand the projected 480 pounds per square inch pressure of a methane explosion. (EEG-82, Appx. B, at 1, 19, Table 1, Fig. 12). Similar studies should be performed

of the proposed 30-foot explosion-isolation wall in the new design, both in isolation and in conjunction with the proposed rock salt element.

7. The existing permit contains the following conclusions based upon a comparison of panel closure designs which included some versions which were, and some versions which were not, keyed into the salt beds by excavating to Marker Bed 139 and Clay G:

   a. "Based on an air-flow model used to predict the mass flow rate of carbon tetrachloride through the panel-closure system for the alternatives, the air-flow analysis suggests that the fully enlarged barrier provides the highest protection for restricting VOCs during the operational period of 35 years.
   b. Results of the Fast Lagrangian Analysis of Continua (FLAC) analyses show that the recommended enlarged configuration is a circular rib-segment excavated to Clay G and under MB 139. Interface grouting would be performed at the upper boundary of the concrete barrier.
   c. The results of the transverse plane-strain models show that higher stresses would form in MB 139 following excavation, but that after installation of the panel-closure system, the barrier confinement will result in an increase in barrier-confining stress and a reduction in shear stress. The main concrete barrier would provide substantial uniform confining stresses as the barrier is subjected to secondary salt creep.
   d. The removal of the fractured salt prior to installation of the main concrete barrier would reduce the potential for flexure. The fracturing of MB 139 and the attendant fracturing of the floor could reduce structural load resistance (structural stiffness), which could initially result in barrier flexure and shear. With the removal of MB 139, the fractured salt stiffens the surrounding rock and results in the development of more uniform compression.
   e. The trade-off study also showed that a panel-closure system with an enlarged concrete barrier with the removal of the fractured salt roof and anhydrite in the floor was found to be the most protective." (Att. I1, at I1-3).

   Further, the 1996 design report by DOE emphasized that the benefits of an enlarged concrete barrier are most evident when severe ground conditions are present, as they are in the case of Panel 1, where an extended time period has passed between excavation and projected panel closure. (See

Detailed Design Report for an Operational Phase Panel-Closure System, DOE/WIPP 96-1250, at 2-26 (1996)). Given these findings, NMED could not adopt a new panel closure design for Panel 1 that fails to include the excavation of fractured salt and fails to key the barrier to the depth of Marker Bed 139 and Clay G without explaining why the points of preference noted above are no longer deemed significant or valid.

We look forward to participating in further proceedings concerning this proposed modification.

Very truly yours,

LINDSAY A. LOVEJOY, JR.
Assistant Attorney General

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