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PDR-1  
LPDR Um-16 (2)

WM Record File  
106

WM Project 16  
Docket No.

PDR ✓  
XLPDR ✓ (5)

Distribution: JUL 20 1987

(Return to WM, 623-SS)

Ms. Ruth Ann Storey, Director  
Utah High-Level Nuclear Waste Office  
355 West North Temple  
3 Triad Center, Suite 330  
Salt Lake City, UT 84180

Dear Ms. Storey:

This letter is in response to comments regarding elimination of the Davis Canyon Site from further consideration as a high-level waste repository, which you presented to the Commission during the June 16, 1987 meeting with states and Indian tribes.

In your comments you indicated that because site characterization would require activities in the adjacent Canyonlands National Park, the site should be disqualified under DOE's siting guidelines and federal law governing the use of national parks. Because of these concerns, you questioned the NRC's statement in an April 13, 1987 letter from Chairman Zech to Senator Johnston that the NRC review of the final Environmental Assessments (EAs) did not identify concerns that would call into question the suitability of any of the five sites for site characterization.

In comments on the final EA for the Davis Canyon site, the NRC indicated that "... the lack of geologic and hydrologic studies in and close to the National Park, as proposed in the final EA, may result in an incomplete site characterization program insufficient to produce needed data critical to the understanding of the hydrology and the geology of the Davis Canyon site." (see enclosed Comment 9 of the final EA comments). Should further consideration of this site occur, it is likely that based on these NRC staff concerns, DOE would need to re-evaluate the field investigation program.

As stated in our response to Senator Johnston, the staff's EA review was "limited to the specific responsibilities of NRC: public health and safety and the waste isolation considerations found in 10 CFR Part 60...". We did not evaluate the environmental impacts of site characterization activities as proposed by DOE in the EA or as might result from expanded characterization, since these activities are not within the specific responsibilities of the NRC. In our response to Senator Johnston, we noted that, "In deciding whether to proceed with site characterization, the DOE has considered other factors outside NRC's regulatory responsibility (e.g., cost, schedule, ranking of sites). The NRC staff has not reviewed or commented upon such areas." Therefore, the NRC statement on the suitability of sites for characterization was made in this limited context. In this regard, we viewed it as DOE's obligation to evaluate the environmental impacts of site characterization and the means available to obtain needed site characterization data while remaining in compliance with applicable laws and regulations.

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We appreciate your comments on this matter and your participation in the Commission's states/tribal meeting. Should you have any further questions on this or other related issues, please contact me at (301-427-4069) or Nancy Still of my staff at (301-427-4664).

Sincerely,

Original Signed by  
Robert E. Browning

Robert E. Browning, Director  
Division of High-Level Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosure:  
As stated

continues to hold that the assumptions are not yet substantiated and the current range of uncertainties are not reflected in the conclusions. For example, the final EA continues to use the code BRINEMIG to model brine migration despite the fact that the code was developed using "assumptions... which do not realistically describe the movement of brine in salt" (Section C.5.11, page C.5-53). The model gave results for brine flow rates that were consistently less than observed results in in-situ heater experiments at the Waste Isolation Pilot Plant (WIPP) facility (Nowak, 1986). The use of BRINEMIG to conservatively predict brine migration rates is clearly questionable. In another example, the final EA continues to assume that brine entering a borehole will distribute itself uniformly over the overpack and that the overpack will corrode uniformly (Section 6.4.2.3.3, page 6-247). During the period the backfill remains as crushed salt, it is more likely that brine will collect at the bottom of each borehole and lead to corrosion over a limited portion of the overpack. As to the mode of corrosion, while uniform corrosion of overpack materials has been observed under some conditions (Kreiter, 1983; Westerman et al., 1983), the susceptibility of carbon steels to pitting corrosion, crevice corrosion, and stress-assisted cracking has been historically observed (Turnbull, 1983; Strutt et al., 1985; Ito et al., 1984; and Kruger, 1959) under other conditions. This observation raises significant questions regarding the long-term performance of the overpack. The final EA indicates that parametric studies have been performed (Section 6.4.2.3.3, page 6-247, paragraph 3) which use pitting ratios to account for the uncertainties in the uniform corrosion assumption. Neither the assumed pitting ratios nor the relationship between uniform and pitting or other localized corrosion process has yet been substantiated by data and analysis, but the final EA indicates (Section 6.4.2.3.3, page 6-247, paragraph 5) a high sensitivity of the computational results to non-uniform corrosion. Without adequate consideration of these alternative failure mechanisms, the NRC staff does not consider that the predicted 10,000 year container lifetime (which assumes uniform corrosion) reflects the current uncertainties.

#### Comment 9

#### Potential Field Studies in Canyonlands National Park (Draft EA Major Comment 12)

#### Guidelines on Environmental Quality 10 CFR 960.5-2-5(a), (c)(3), (d)(2) and (d)(3)

Examination of the final EA (Section 4.1.1.1, Geologic and Hydrologic Studies) indicates that the NRC staff concerns expressed in draft EA major comment 12 about the program of field investigations proposed in Chapter 4 of the draft EA and its apparent incompleteness with respect to the hydrologic and geologic features and conditions in and in close proximity to Canyonlands National Park, at Davis Canyon proposed repository have not been addressed.

For example, the final EA for the Davis Canyon site (Section 4.2.1.1.3, page 4-88, paragraph 8) states "Site characterization activities such as borehole drilling and trenching will not occur within the boundaries of the Canyonlands National Park." The NRC staff again considers that the lack of geologic and hydrologic studies in and close to the National Park, as proposed in the final EA, may result in an incomplete site characterization program insufficient to produce needed data critical to the understanding of the hydrology and the geology of the Davis Canyon site.

Based upon the above, the NRC staff considers that the technical concerns and associated bases in its draft EA comment (major comment 12) is appropriate to the final EA and has included it as an attachment (Attachment 1).

## Comment 12

Potential Field Studies in Canyonlands National ParkGuidelines on Environmental Quality 10 CFR 960.5-2-5(a), (c)(3), (d)(2), and (d)(3).

The program of field investigations proposed in Chapter 4 of the draft EA does not address many of the geologic and hydrologic features and conditions in and in close proximity to Canyonlands National Park which might be important to repository performance. Also, consideration has not been given to the possibility that a larger control area might be needed than is presented in the draft EA (see major comment 11). The apparent incompleteness of the field program outlined would result in an under-estimation of the environmental impacts the field program will have on Canyonlands National Park.

Tectonic features, such as the Imperial fault zone, and salt dissolution features, such as the Grabens and Needles fault zones are present in the park. The relationship of such features to subsurface stratigraphy, dissolution and ground water flow is presently not well understood. The draft EA does not present a program that would resolve the NRC's concerns regarding tectonic features and dissolution (see major comments 1 and 2).

The Shay Graben appears to be part of a tectonic system that also includes the Bridger Jack and Salt Creek grabens (see detailed comment 3-10). This system is a potential active fault zone, a potential source of earthquakes, and a potential area of dissolution. It does not appear that a sufficiently detailed field program has been planned to fully evaluate this complex structural zone. The need for more borings, seismic lines and trenches has not been considered in the draft EA. This system lies within and in close proximity to Canyonlands National Park.

The DOE has identified several geophysical anomalies which do not appear to have been sufficiently analyzed (see major comments 1 and 2). Until these anomalies are understood with respect to structure and dissolution, it is impossible to predict the effect they will have on waste isolation. These features appear to overlap the eastern boundary of the park; therefore, investigations of these anomalies may have an effect on the park. The proposed field program in the draft EA does not include evaluations of these features.

The hydrologic testing scheme proposed for site characterization in chapter 4 does not describe any data collection between approximately 2 km and 22 km down gradient from the edge of the Geologic Repository Operations Area. The draft EA includes no technical justification for limiting intensive characterization to within 2 km of this area. The testing scheme may appear to be defensible on the basis of the hydrogeologic setting description presented in the draft EA which indicates that all radionuclide transport requirements can be met within

an area of limited horizontal extent. However, the NRC concludes that this testing scheme may not be consistent with the present level of uncertainty regarding the possibility of certain hydrogeologic conditions such as localized upward gradients, flow thru interbeds and vertical structurally controlled flow (see detailed comment 4-2).

If a larger controlled area is needed (see major comment 11) which might overlay the park boundary, then evaluations are needed in the final EA to determine if additional site characterization activities are needed in this area.

The field program proposed in the draft EA does not appear sufficient in scope to resolve many of the potential technical concerns. The NRC, therefore, considers the above concern has not been adequately factored into the analysis in support of the Environmental Quality Guidelines 960.5-2-5(a), 960.5-2-5(c)(3), 960.5-2-5(d)(2) and 960.5-2-5(d)(3).

In revising the draft EA, the DOE should consider re-evaluating the field investigation program to determine if it will provide the information necessary to address the concerns raised above. The DOE should also consider revising those portions of the draft EA dealing with effects on Canyonlands National Park to reflect any revisions to the field program.

GIL 6/24 M2 STOREY/2

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FROM: Browning

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SUBJECT: Response To Utah Statement

~~RESPONSE TO UTAH STATEMENT~~

DATE: JUL 29 1987

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Record note: J. Wolf (osc) has reviewed and provided input to this letter.

(Mailed by the WMDCC)

7/29/87 3:51 p.m.  
Date / / Time

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