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January 14, 1985

WGC - R531

Mr. Benjamin Rice, Project Manager
 Geotechnical Branch
 Division of Waste Management
 Office of Nuclear Material Safety & Safeguards
 U.S. Nuclear Regulatory Commission
 Washington, DC 20555

Subject: Davis Canyon Site, Utah DEA Review Comments

Dear Mr. Rice:

The enclosed comments are the result of Weston Geophysical's review of the above referenced DEA. Our comments are presented in the format described in "Standard Review Plan for Draft Environmental Assessments", dated December 12, 1984.

As directed by you and your fellow staff members, we have concentrated our comments on significant aspects of the DEA documents which impact guideline criteria.

Should you have any questions or require clarification regarding this submittal, please contact us.

Very truly yours,

WESTON GEOPHYSICAL CORPORATION


 John P. Imse

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DEA

DAVIS CANYON SITE, UTAH

REVIEW COMMENTS
PREPARED BY
WESTON GEOPHYSICAL CORPORATION

FOR
THE UNITED STATES NUCLEAR REGULATORY COMMISSION

MAJOR COMMENT #1

DEA: DAVIS

Subject: HYDROGEOLOGY

Comment: All calculations for groundwater travel time are based on Darcian porous media flow. The authors do acknowledge that studies conducted at the WIPP site indicate that porous media theory is not satisfactory for predicting flow [p. 6-81]. In fact, the results indicate that travel times were an order of magnitude or more less than predicted flow times. If the authors are correct, that vertical flow downward through the salt will be unaffected by interbeds, a change in travel times by one order of magnitude [12,000 vs. 120,000] will still meet the guidelines. A change greater than the one order of magnitude may result in difficulties since the site cannot have a 10 kilometer controlled area downgradient because of Canyonlands National Park. In addition, if fracture flow is the dominant mechanism, the more brittle interbeds may become significant conduits due to more extensive fracturing. The first interbed below repository level is reached in 4,000-5,000 years assuming the much slower Darcian flow rates.

DETAILED COMMENT #3-1

DEA: DAVIS

Section: 3.2.5.1 Faulting, p. 3-40, para. 2

COMMENT: Authors state that fault offset diminishing in Pennsylvanian strata is evidence for cessation of fault movement in the Pennsylvanian. This is not necessarily true. The fault may have had insufficient offset at depth to propagate to the surface or the ductile salt strata may have taken-up the offset through plastic deformation. In both cases, the faulting may be younger than Pennsylvanian.

DETAILED COMMENT #3-2

DEA: DAVIS

Section: 3.2.5.2 Seismicity, p. 3-45, para. 4

Comment: Aeromagnetic data are discussed as evidence for faulting within the Colorado lineament. What aeromagnetic data are referred to; no figure presents the data.

DETAILED COMMENT #3-3

DEA: DAVIS

Section: 3.2.7.1 Host Rock Chemical Properties, p. 3-70, para. 3

Comment: The authors state that Cycle 6 in the site should have lower carnallite and kieserite because the site is outside the potash limit drawn by Hite. Because this limit is poorly constrained, as the authors admit [p. 3-27], this statement does not have a great deal of basis.

DETAILED COMMENT #3-4

DEA: DAVIS

Section: 3.2.8.2.2 Potash, p. 3-109, para. 6

Comment: see Comment 3-3.

DETAILED COMMENT #3.5

DEA: DAVIS

Section: 3.2.8.2.2 Potash, p. 3-110, para. 2

Comment: see Comment 3-3.

DETAILED COMMENT #6-1

DEA: DAVIS

Section: 6.3.1.1.2 Evaluation Process, p. 6-82, para. 1

Comment: The authors have used the maximum distance of 10 kilometers to calculate travel time to the accessible environment in the Lower HSU. Based on Figure 3-40 groundwater flow in the Lower HSU is westward from the site toward Canyonlands. Since the controlled area cannot be in a national park and Canyonlands is less than 10 kilometers from the site, the maximum travel path cannot be applied at this site. The authors have stated that the largest control area is not necessary, calculations to support that contention should be presented.

DETAILED COMMENT #6-2

DEA: DAVIS

Section: 6.3.1.1.2 Analysis of Favorable Conditions, p. 6-82, para. 4

Comment: The authors define accessible environment as 10 kilometers down gradient in the Leadville limestone [Lower HSU]. See Comment 6-1.

DETAILED COMMENT #6-3

DEA: DAVIS

Section: 6.4.2.3.5 Geologic Subsystem Performance, p. 211, para. 5

Comment: Again the authors site applicability of 10km controlled area, see Comment 6-1.

Section: 6.4.2.3.5 Geologic Subsystem Performance, p. 211, para. 5

Comment: The authors state that vertical travel time through the salt is 120,000 year and horizontal flow time in the Lower HSU is 3,000-33,000 years. In Section 6.3.1.1.2, p. 6-82, vertical travel time is stated as 125,000 years and horizontal travel time as 12,000 to 114,000 years. What are the bases for the differing travel time calculations?