UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 17, 1995

Mr. Ronald A. Milner, Director
Office of Program Management and Integration
Office of Civilian Radioactive Waste Management
U.S. Department of Energy, RW 30
1000 Independence Avenue
Washington, DC 20585

SUBJECT: NRC REVIEW OF THE DOE RESPONSES TO SITE CHARACTERIZATION ANALYSIS COMMENTS 42 AND 43

Dear Mr. Milner:

In a letter dated July 23, 1992, from J. Roberts to J. Holonich, DOE submitted responses to two Site Characterization Analysis (SCA) open items - Comments 42 and 43. Both comments address the topic of erosion in varying degrees--Comment 42 in its entirety, while only a portion of Comment 43 deals with the subject. At the time of submittal of the comments to NRC for review and evaluation, it was the staff's impression that DOE's topical report on extreme erosion, "Evaluation of the Potentially Adverse Condition 'Evidence of Extreme Erosion During the Quaternary Period' at Yucca Mountain, Nevada," (hereafter, Topical Report) was to be submitted shortly. The staff's review of the two comments was deferred, pending receipt of the Topical Report since the staff felt that the likelihood of resolution of the comments would be enhanced through supplemental information related to these comments that may be contained within the Topical Report. Following transmittal of the Topical Report by DOE on March 9, 1993, and receipt of all supportive data by March 31, 1994, the staff transmitted the results of its review of the Topical Report by letter to DOE (J. Holonich to R. Milner) on August 22, 1994. Subsequent to transmittal of the letter of August 22, 1994, DOE informed NRC that its responses to the NRC's Topical Report comments are scheduled to be provided during February 1995. Since these responses may provide additional pertinent information, NRC's evaluation of SCA Comment 42 will be deferred until completion of its review of DOE's responses. The staff evaluation of SCA Comment 43 however is not dependent upon receipt and review of DOE's responses to NRC's Topical Report comments.

Based on our review and evaluation (Enclosure) of both DOE submittals (SCA responses of July 23, 1992, and Topical Report of March 9, 1993), we conclude that SCA Comment 43 is resolved, not because sufficient information has been presented to resolve the open item, but because recent (1994) staff reviews of DOE documents have resulted in the identification of open items that better reflect the staff concerns expressed in SCA Comment 43.

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If you have any questions concerning this letter or its enclosure, please contact Harold Lefevre of my staff at (301) 415-6678.

Sincerely,

/s/

Michael J. Bell, Chief
Engineering and Geosciences Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: As stated

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Enclosure

Section 8.3.1.6	Overview of the erosion program: Description of the future erosional rates required by the performance and design issues
Section 8.3.1.8	Overview of the postclosure tectonics program: Description of future tectonic processes and events required by the performance and design issues
Section 8.3.1.17	Overview of preclosure tectonics: Description of tectonic and igneous events required by performance and design requirements

SCA COMMENT 43

The rationale for numerical goals specified in Tables 8.3.1.17-3a, 8.3.1.17-4a and b, and 8.3.1.17-7 is poorly supported and the use of averaged values or rates for establishing acceptable limits for fault movement, rates of volcanism, and rates of erosion does not provide for conservative assessments of potential hazards.

EVALUATION OF DOE RESPONSE

Section 8.3.1.6

- Subsequent to receipt of DOE's July 23, 1992, responses to SCA Comments 42 and 43, the DOE topical report, "Evaluation of the Potentially Adverse Condition of 'Evidence of Extreme Erosion During the Quaternary Period' at Yucca Mountain, Nevada" (hereafter "Topical Report"), was transmitted to the NRC (DOE, 1993).

- Rates of erosion averaged over long periods of time (i.e., in excess of 100,000 years) were among the many issues considered by the NRC staff during its review (NRC, 1994a) of the Topical Report.

- DOE's approach, using long-term averaging, as expressed in the Topical Report and applied to the subject of erosion, is one of the bases underlying the development of NRC's 1989 SCA Comment 43.

- As the site characterization program has matured, the NRC's 1989 SCA concern (Comment 43) with DOE's approach to averaged long-term rates of erosion has been reiterated by the staff and has been transmitted to DOE as Topical Report Comment 1 (NRC, 1994a). The staff considers the Topical Report comment a more appropriate manner for tracking this concern.

- The staff considers the erosion-related aspects of this comment resolved.

Section 8.3.1.8

- In the area of postclosure tectonics (faulting and seismicity) the DOE site characterization program has matured considerably. Based on discussions conducted between the NRC and DOE, the DOE initiated development of a series of topical reports which will address the issues forming the basis for the tectonics (faulting/seismicity) portion of this comment. The first of these topical reports (DOE, 1994) has been submitted to the NRC.

- Although the NRC review of the above topical report (DOE, 1994) is ongoing, it is apparent that staff concerns such as the cumulative slip earthquake are no longer being considered by DOE, since this matter has been excluded from the topical report submitted by the DOE.

- As the primary purpose of the above planned topical reports is to provide a basis by which the NRC and DOE can agree on the appropriate methodology to determine appropriate faulting and seismic values for use in design and performance assessment, the staff considers the concerns contained within Comment 43 are no longer appropriate. Concerns that may be raised as a result of the staff review of these topical reports are considered a more efficient and appropriate way to track the postclosure tectonics (faulting/seismicity) portion of Comment 43.

- The staff considers the postclosure tectonics (faulting/seismicity) -related aspects of this comment resolved.

Section 8.3.1.17

- In the area of volcanism DOE has submitted several study plans for NRC review. The concerns forming the basis of the volcanism portion of Comment 43 also form the basis for several NRC (1994b) comments (Study Plan 8.3.1.8.1.1, Probability of Magmatic Disruption of the Repository).

- While there are still many open concerns with the volcanism methodology being used by the DOE, the main focus of these concerns is reflected in NRC comments (SP Comments 6 and 7) on the above study plan. The status of these study plan comments is reflected in NRC 1994b. Tracking these volcanism concerns through the above study plan comments appears to the staff to be more efficient and appropriate than through SCA Comment 43 which deals with several subjects (erosion and tectonism) in addition to volcanism.

- The staff considers the volcanic-related aspects of this comment resolved.

REFERENCES

U.S. Department of Energy, 1993, Letter from Dwight E. Shelor, U.S. Department of Energy/Office of Civilian Radioactive Waste Management, to Joseph J. Holonich, U.S. Nuclear Regulatory Commission/Division of High-Level Waste Management [Subject: Transmittal of Topical Report "Evaluation of the Potentially Adverse Condition 'Evidence of Extreme Erosion During the Quaternary Period' at Yucca Mountain, Nevada", Office of Civilian Radioactive Waste Management, YMP/9241-TPR], March 9, 1993.

U.S. Department of Energy, 1994, Letter from Dwight E. Shelor, U.S. Department of Energy/Office of Civilian Radioactive Waste Management, to Joseph J. Holonich, U.S. Nuclear Regulatory Commission/Division of Waste Management [Subject: Transmittal of DOE Topical Report "Methodology to Assess Fault Displacement and Vibratory Ground Motion Hazards at Yucca Mountain"], June 30, 1994.

U.S. Nuclear Regulatory Commission, 1994a, Letter from Joseph J. Holonich, U.S. Nuclear Regulatory Commission/Division of Waste Management, to Ronald A. Milner, U.S. Department of Energy/Office of Civilian Radioactive Waste Management [Subject: NRC Staff Review of the U.S. Department of Energy Topical Report on Extreme Erosion], August 22, 1994.

U.S. Nuclear Regulatory Commission, 1994b, Letter from Joseph J. Holonich, U.S. Nuclear Regulatory Commission/Division of Waste Management, to Dwight Shelor, U.S. Department of Energy/Office of Civilian Radioactive Waste Management [Subject: Review of U.S. Department of Energy Study Plan "Probability of Magmatic Disruption of the Repository," Revision 2], Feb. 8, 1994.