

NOV 02 1993

Mr. Dwight Shelor, Associate Director for  
 Systems and Compliance  
 Office of Civilian Radioactive Waste Management  
 U.S. Department of Energy, RW 30  
 1000 Independence Avenue  
 Washington, DC 20585

Dear Mr. Shelor:

SUBJECT: REVIEW OF U.S. DEPARTMENT OF ENERGY (DOE) STUDY PLAN "GROUND MOTION AT THE SITE FROM CONTROLLING SEISMIC EVENTS"

On July 19, 1993, DOE transmitted the study plan, "Ground Motion at the Site From Controlling Seismic Events" (Study Plan 8.3.1.17.3.5) to the U.S. Nuclear Regulatory Commission for review and comment. NRC has completed its review of this document using the Review Plan for NRC Staff Review of DOE Study Plans, Revision 2 (March 10, 1993). The material submitted in the study plan was considered to be consistent, to the extent possible at this time, with the revised NRC-DOE "Level of Detail Agreement and Review Process for Study Plans" (Shelor to Holonich, March 22, 1993).

A major purpose of the review is to identify concerns with studies, tests, or analyses that, if started, could cause significant and irreparable adverse effects on the site, the site characterization program, or the eventual usability of the data for licensing. Such concerns would constitute objections, as that term has been used in earlier NRC staff reviews of DOE's documents related to site characterization (Consultation Draft Site Characterization Plan and the Site Characterization Plan for the Yucca Mountain site). It does not appear that the conduct of the activities described in this study plan will have adverse impacts on repository performance and the review of this study plan identified no objections with any of the activities proposed.

As part of its study plan review, the NRC staff determines whether or not detailed comments or questions are warranted. The NRC staff's review of the subject study plan has resulted in the identification of one comment (Enclosure). The enclosed comment will be tracked by the NRC staff as an open item similar to Site Characterization Analysis (SCA) comments and questions.

The staff also wishes to call DOE's attention to an existing SCA open item (Comment 66) in which a concern was expressed with the use of the 10,000 year cumulative slip earthquake (CSE) concept. This concern has not been resolved and is applicable to this study plan. In addition, as was previously noted in the staff's review of Study Plan 8.3.1.17.3.1, it is unclear whether the seismic design for facilities important to safety will be based on the 10,000 year CSE or the maximum magnitude event.

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Mr. Dwight E. Shelor

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If you have any questions concerning this letter, please contact Charlotte Abrams (301) 504-3403 of my staff.

Sincerely,

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Joseph J. Holonich, Director  
Repository Licensing and Quality Assurance  
Project Directorate  
Division of High-Level Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosures: As stated

- cc: R. Loux, State of Nevada
- T. J. Hickey, Nevada Legislative Committee
- J. Meder, Nevada Legislative Counsel Bureau
- C. Gertz, DOE/NV
- M. Murphy, Nye County, NV
- M. Baughman, Lincoln County, NV
- D. Bechtel, Clark County, NV
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- P. Niedzielski-Eichner, Nye County, NV
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- R. Williams, Lander County, NV
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**Study Plan 8.3.1.17.3.5**

**Ground Motion at the Site from Controlling  
Seismic Events**

**COMMENT 1**

The five approaches identified on Pages 2-2 and 2-3 as being potential methods for calculating ground motion are considered to be necessary, but do not include the full range of methods that should be considered.

**BASIS**

The study plan does not mention the evaluation of ground motion by empirical analysis. The empirical ground motion analysis is based on up-to-date strong motion data applicable to the seismicity and site conditions at Yucca Mountain.

**RECOMMENDATION**

The five approaches for calculating ground motion mentioned in the study plan should be supplemented and reinforced by using the empirical analysis approach. Consideration should be given to integrating the results from the empirical analysis with seismic modeling studies.

**ENCLOSURE**