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NUCLEAR WASTE PROJECT OFFICE**

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October 26, 1993

Mr. Dwight E. Shelor
Associate Director
Office of Systems and Compliance
Office of Civilian Radioactive
Waste Management
U.S. Department of Energy
Washington, D.C. 20585

Dear Mr. Shelor:

This Office has reviewed your letter of June 17, 1993 which outlines the Department's approach to preparing a topical report entitled "Methodology For Seismic Hazardous Assessment at Yucca Mountain" and your letter of August 18, 1993 which provides more detail on the scope and content of the topical report. The purpose of this letter is to provide some preliminary comments on those two documents. Further comments will be developed when the draft topical report is received and reviewed.

Preliminary comments are as follows:

- 1) DOE's approach in developing the methodology relies on consideration of current practice in the scientific, consulting, and regulatory environments. It is not demonstrated that any of the cited methods has been successfully applied in a regulatory process for a site in an active tectonic environment, or for a facility designated to perform satisfactorily over 10,000 years.
- 2) The methodology fails to address how the DOE intends to address 10 CFR Part 60 Potentially Adverse Conditions which relate to fault displacement and seismic hazard considerations, specifically adverse conditions 60.122(c)(12), 60.122(c)(13), and 60.122(c)(14).
- 3) The methodology needs to develop an acceptable working definition of the geologic setting for Yucca Mountain

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within which the seismic hazard methodology will be applied. In the context of the geologic setting, the topical report needs to address how potential ground motion from blind structures directly beneath Yucca Mountain will be deterministically established and the types of data which will be used in that analysis. The topical report needs also to address triggered events from distant sources.

- 4) The linkage between a deterministic approach and the proposed probabilistic approach is unclear from the outline. Deterministic evaluations should provide an assessment of the worst-case scenarios. It is likely that for Yucca Mountain a worst-case scenario cannot be ruled out, and because of the large uncertainty involved in the seismic hazard assessment, this will probably drive the final outcome.
- 5) The outline fails to recognize the extremely difficult problem of addressing fault displacement within the repository and establishing acceptable near-field vibratory ground motion parameters for both known surface faults and blind structures beneath Yucca Mountain. Since there are little useable empirical data available, particularly from within the Basin and Range, and no accepted and tested theoretical modeling techniques, early focus of the methodology should be on addressing this problem.
- 6) It is inappropriate for the DOE to proceed with design and construction of the ESF in the absence of acceptable seismic design parameters, if as presently proposed the ESF is to be incorporated in the GROA.

Should there be any questions, please contact me.

Sincerely,



Carl A. Johnson
Administrator of Technical Programs

CAJ:jem

cc: ✓ J. Holonich, NRC
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