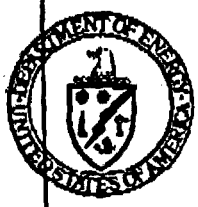

Department of Energy
Washington, DC 20585

AUG 22 1994

Mr. Joseph J. Holonich, Chief
High-Level Waste and Uranium
Recovery Projects Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Holonich:

Enclosed for review by the U.S. Nuclear Regulatory Commission (NRC) is the annotated outline for the U.S. Department of Energy (DOE) Topical Report, "Seismic Design Methodology for a Geologic Repository at Yucca Mountain." The DOE intends to develop this topical report and submit it to the NRC in March 1995. The report will address the determination of appropriate seismic hazard levels for design. In accomplishing this objective, the report will establish seismic safety categories for Geologic Repository Operations Area systems, structures, and components; associated seismic safety performance goals and risk reduction factors; and seismic design criteria to achieve the performance goals and risk reduction.

This report is the second in a series of three topical reports that will describe the methodology that DOE will use for the seismic hazard assessment and seismic design of a potential geologic repository at Yucca Mountain, Nevada. The first report, which addressed seismic hazard assessment, was submitted to the NRC by letter dated June 30, 1994 (Reference 1). The third seismic topical report will describe the development of seismic design inputs (e.g., seismic response spectra, time histories, and fault displacement levels) for the appropriate seismic hazard levels. It is currently anticipated that the third topical report will be submitted to the NRC early in the 1996 fiscal year. The second and third topical reports will address repository design to accommodate preclosure seismic hazards.

Postclosure performance will not be addressed by this report, but will be covered in the total system performance assessment of the site.

The methodology that will be described in this second topical report is based on the existing performance goal-based design methodology for DOE facilities. This design approach is consistent with the probabilistic seismic hazard assessment methodology that was described in the first seismic topical report. Appendix D of the first topical report provides more information on the performance goal-based design process and explains how that process relates to the probabilistic seismic hazards assessment methodology.

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A repository at Yucca Mountain would be a first-of-a-kind facility. The design of both surface and subsurface facilities to accommodate vibratory ground motion and fault displacement hazards must be addressed. NRC regulations and guidance documents do not provide sufficient detailed requirements or guidance on the seismic design of a geologic repository. The project schedule calls for the completion of the advanced conceptual design of the repository in the 1996 fiscal year. Therefore, NRC staff acceptance of this proposed methodology is requested to allow the repository design to proceed without undue regulatory risk.

DOE requests that the NRC perform a scoping review of this annotated outline in accordance with the NRC Topical Report Review Plan (Reference 2).

If you have any questions, please contact Mr. Chris Einberg at (202) 586-8869.

Sincerely,

Ronald A. Milner

Ronald A. Milner, Acting Director
Office of Program Management and
Integration
Office of Civilian Radioactive
Waste Management

Enclosure:
Topical Report Annotated Outline

cc:
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T. J. Hickey, Nevada Legislative Committee
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