December 22, 1995

MEMORANDUM TO: Andrew Murphy, Branch Chief
Structural and Geological Engineering Branch
Division of Engineering Technology
Office of Nuclear Regulatory Research

Goutam Bagchi, Branch Chief
Civil Engineering and Geosciences Branch
Division of Engineering
Office of Nuclear Reactor Regulation

FROM: Michael J. Bell, Branch Chief
Engineering and Geosciences Branch
Division of /s/

SUBJECT: REVIEW OF THE DEPARTMENT OF ENERGY TOPICAL REPORT "SEISMIC DESIGN METHODOLOGY FOR A GEOLOGIC REPOSITORY AT YUCCA MOUNTAIN"

This memorandum is to request your assistance in reviewing the subject topical report. You may recall that earlier the Department of Energy (DOE) had submitted for our review the first of the three-part topical report series dealing with the probabilistic methodology to assess seismic hazard at the Yucca Mountain site. Your staff provided review comments on the first report during FY 1995. The current report describes DOE's "performance goal-based seismic design methodology". The next and the final report on this series will document the actual design basis events (maximum accelerations, fault displacements, etc.).

Our review schedule calls for identifying any major information gaps that might hinder our review efforts by January 19, 1996. If we need additional information to facilitate our review, we will request DOE to furnish it and proceed with the detailed review only after receiving the necessary information. The final draft comments are to be gathered for compilation by February 29, 1996. Therefore, I request that you identify any major information gaps by January 19, 1996, or simply proceed with the detailed review if no gaps are identified and provide us your comments before February 29, 1996. The Division of Waste Management uses a standard format for documenting comments which consists of: 1) a statement of the concern; 2) bases for the concern; and 3) recommendation(s). We are especially looking for your inputs and insights in the areas of consistency with seismic design approaches used in the licensing of other nuclear facilities, keeping in mind the essential differences in the levels of risk.

Your staff may contact Dr. Mysore Nataraja of my staff for any clarifications or additional information. He may be reached on 415-6695.

Attachment: Topical Report YMP/TR-003-NP
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OCT 31 1995

Joseph J. Holonich, Chief
High-Level Waste and Uranium
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Washington, DC 20555

U.S. DEPARTMENT OF ENERGY (DOE) TOPICAL REPORT, "SEISMIC DESIGN METHODOLOGY FOR A GEOLOGIC REPOSITORY AT YUCCA MOUNTAIN" (YMP/TR-003-NP) (SCPB: N/A)

References: (1) Ltr, Milner to Holonich, dtd 8/22/94
(2) Ltr, Bell to Milner, dtd 11/3/94
(3) Ltr, Milner to Holonich, dtd 1/26/95
(4) Ltr, Bell to Milner, dtd 2/14/95
(5) Ltr, Holonich to Shelor, dtd 2/28/94

Enclosed for review by the U.S. Nuclear Regulatory Commission (NRC) is the DOE topical report, *Seismic Design Methodology for a Geologic Repository at Yucca Mountain* (YMP/TR-003-NP). This topical report describes the design methodology and criteria that DOE intends to use to accommodate vibratory ground motion and fault displacement hazards during preclosure at a potential repository at Yucca Mountain, Nevada. This is the second of three topical reports that together describe DOE's seismic design process for Yucca Mountain. A previous topical report, *Methodology to Assess Fault Displacement and Vibratory Ground Motion Hazards at Yucca Mountain* (YMP/TR-002-NP), described the probabilistic seismic hazard assessment methodology that DOE will use at Yucca Mountain. A third topical report will document DOE's determination of design basis vibratory ground motions and fault displacements.

The seismic design methodology and criteria described in this report are founded on DOE's safety performance goal-based seismic design methodology. Four safety performance categories have been established for surface and subsurface structures, systems, and components (SSCs) of a potential geologic repository

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