



Department of Energy

Washington, DC 20585

JUL 27 1994

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

Dear Mr. Holonich:

In June 1994 the U.S. Nuclear Regulatory Commission (NRC) was sent two reports documenting results of recent work on the Total System Performance Assessment (TSPA) for Yucca Mountain. The first report was the two-volume Sandia National Laboratories (SNL), "TSPA for Yucca Mountain, Second Iteration - 1993" (SAND93-2675). The second report was prepared by the Civilian Radioactive Waste Management System Management and Operating Contractor (CRWMS M&O), "TSPA-1993: An Evaluation of the Potential Yucca Mountain Repository." Distribution of these documents to NRC took place at the same time they were sent to other recipients on the distribution list for Yucca Mountain Site Characterization Office technical reports. A complete distribution list is shown in an appendix to each report.

Several significant improvements have been made since SNL's 1991 TSPA, which include:

1. Incorporating new information made available since 1991, such as revised hydrogeologic parameter distributions, representation of the lithologic description using geostatistical methods, estimates of radionuclide retardation and solubility, gas-phase velocities, and spent fuel alteration and glass dissolution rates.
2. Establishing a more defensible distribution for percolation flux, explicitly including the potential effects for climate change.
3. Directly incorporating the near-field thermo-hydrologic behavior and the dependence on this behavior on the waste package performance and the release to the near-field environment.
4. Incorporating new design alternatives that have been proposed since 1991 for thermal load, waste package emplacement mode, and waste package size and wall thickness.
5. Testing the significance of alternative conceptual representations such as the initiation and rate of container corrosion, the fracture-matrix interaction in hydrologic flow and transport, and the saturated zone system.
6. Expanding the representation of disturbed scenarios with basaltic volcanic activity and human interference.

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7. Evaluating the significance of alternative measures of total system performance such as the cumulative release of radionuclides to the accessible environment of the peak individual dose associated with the release.

The CRWMS M&O has prepared an integrated report entitled "Total System Performance Assessment 1993: Preliminary Performance Estimates for a Potential Yucca Mountain, Nevada, Repository System." This report is currently in U.S. Department of Energy (DOE) review. It will provide an overview of TSPAs for potential Yucca Mountain repositories that have been published to date, with emphasis on the calculations contained in the TSPA 1993 documents. This document will be sent to the NRC using the same distribution undertaken for the documents referenced above, after it is approved by DOE.

DOE requests that NRC review the SNL document and provide informal comments prior to the September 12-13, 1994, Technical Exchange on TSPA-1993 in Rockville, Maryland. This request is in keeping with past efforts to establish and maintain an informal dialog between staff involved in each agency's performance assessment program and the documentation produced from it.

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

Sincerely,



Ronald A. Milner, Acting Director
Office of Program Management
and Integration
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cc:

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