

JAN 28 1993

Mr. John P. Roberts, Acting Associate Director
for Systems and Compliance
Office of Civilian Radioactive Waste Management
U. S. Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585

Dear Mr. Roberts:

SUBJECT: PHASE I REVIEW OF U.S. DEPARTMENT OF ENERGY (DOE) STUDY PLAN "FLUID FLOW IN UNSATURATED FRACTURED ROCK"

On September 15, 1992, DOE transmitted the study plan, "Fluid Flow in Unsaturated Rock" (Study Plan 8.3.1.2.2.8) to the U.S. Nuclear Regulatory Commission for review and comment. NRC has completed its Phase I Review of this document using the Review Plan for NRC Staff Review of DOE Study Plans, Revision 1 (December 6, 1990).

The material submitted in the study plan was considered to be consistent, to the extent possible at this time, with the NRC-DOE agreement on content of study plans made at the May 7-8, 1986, meeting on Level of Detail for Site Characterization Plans and Study Plans. The study plan states (Section 7.1, number 5) that the technical procedures are listed in Section 3 of the study plan. The staff found no such list in Section 3. The staff did not consider that the absence of such information compromised its ability to conduct its Phase I Review of the material provided. However, the NRC staff requests that a list of applicable technical procedures and their status be provided to NRC.

Among the references listed for this study plan the staff has identified one that is not readily available in the public domain. We therefore request that DOE provide the NRC with the reference listed in the Enclosure.

A major purpose of the Phase I 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). No field tests will be conducted under this study; therefore, it does not appear that the conduct of the activities described in this study plan will have adverse impacts on repository performance and the Phase I Review of this study plan identified no objections with any of the activities proposed.

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After completion of the Phase I Review, selected study plans are to receive a second level of review, called a Detailed Technical Review, based on the relationship of a given study plan to key site-specific issues or NRC open items, or its reliance on unique, state-of-the-art test or analysis methods. Based on these criteria, we have decided not to proceed with a Detailed Technical Review of this study plan at this time. The NRC staff will reevaluate this decision after it receives and reviews the closely related Study Plan 8.3.1.2.2.9, "Site Unsaturated-Zone Modeling and Synthesis." The subject study involves the development and validation of conceptual and numerical flow models of the unsaturated zone over various scales. The SCP describes study 8.3.1.2.2.9 as developing models for site-scale analyses. It also refers to code testing and code verification. Both studies refer to the development of conceptual and numerical models. It is not clear how work will be coordinated between these studies in the development of conceptual models, code development, and verification, and the development, application, and validation of numerical models.

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

Sincerely,

151

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

Enclosure: As stated

cc: R. Loux, State of Nevada
T. J. Hickey, Nevada Legislative Committee
C. Gertz, DOE/NV
M. Murphy, Nye County, NV
M. Baughman, Lincoln County, NV
D. Bechtel, Clark County, NV
D. Weigel, GAO
P. Niedzielski-Eichner, Nye County, NV
B. Mettam, Inyo County, CA
V. Poe, Mineral County, NV
F. Sperry, White Pine County, NV
R. Williams, Lander County, NV
P. Goicoechea, Eureka County, NV
L. Vaughan II, Esmeralda County, NV
C. Shank, Churchill County, NV
E. Holstein, Nye County, NV

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STUDY PLAN "FLUID FLOW IN INSATURATED FRACTURED ROCK"

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NOT READILY REFERENCE FOR STUDY PLAN 8.3.1.2.2.8

**Voss, R. F., 1985, Random fractals: Characterization and measurement,
Proceedings NATO A.S.I. Scaling Properties of Disordered Media, Geilo,
Norway, April 1985.**

ENCLOSURE

CONTACT:

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