Department of Energy
Washington, DC 20585

DEC 23 1992

Mr. Joseph J. Holonich, Director
Repository Licensing & Quality Assurance
Project Directorate
Division of High-Level Waste Management
Office of Nuclear Material Safety
and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Holonich:

Enclosed with this letter is a controlled copy of Study Plan 8.3.1.8.2.1 prepared by the U.S. Department of Energy (DOE) for the Yucca Mountain site. The study plan numbers correspond to the same numbers used in the Site Characterization Plan (SCP) for the Yucca Mountain site.

Number	Title
8.3.1.8.2.1	"Analysis of Waste Package Rupture Due to Tectonic Processes and Events"

DOE has reviewed the study plan for consistency with the content requirements for study plans, as given in Attachment B to the Summary of the DOE/U.S. Nuclear Regulatory Commission (NRC) meeting on the Level-of-Detail for the SCP (May 7-8, 1986). DOE is submitting this plan to NRC as agreed to in the meeting.

As discussed during the DOE/NRC meeting (December 15, 1988) on study plans, DOE has decided to control preparation and review of study plans as a quality activity. This study plan was reviewed under current Yucca Mountain Site Characterization Project Office (YMPO) and U.S. Department of Energy/Headquarters quality assurance (QA) procedures.

Study plans prepared under current procedures do not require detailed information on QA requirements. To satisfy the May 7-8, 1986, agreement to provide specific QA requirements, current study plans indicate that applicable QA criteria will be specified in Yucca Mountain Site Characterization Project QA Grading Reports, which are issued as separate controlled documents.

It should also be noted that there may be some inconsistencies in the milestone report titles and schedules given in this study plan and those in the SCP. Study plans, in general, represent a further evolution of the study in the areas related to schedules

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and milestones relative to the SCP, and as such, represent DOE's current plans.

DOE wishes to call to NRC's attention Site Characterization Analysis (SCA) Open Comments 47, 48 and 59 which were directed to Study 8.3.1.8.2.1. Enclosure 2 provides a discussion of how these open items are addressed in the study plan.

The Document Transmittal/Acknowledgement Record for your controlled copy of the study plan should be signed and dated and returned to the Document Control Center in Las Vegas, Nevada.

If you have any questions, please contact Mr. Chris Einberg of my office at 202-586-8869.

Sincerely,

Linda J. Desell

for John P. Roberts
Acting Associate Director for
Systems and Compliance
Office of Civilian Radioactive
Waste Management

Enclosures: as the one of
1. Study Plan 8.3.1.8.2.1
2. Relation of Study Plan 8.3.1.8.2.1 to NRC Open Items

cc: w\enclosures
Alice Cortinas, CNWRA, San Antonio, TX

cc: w\enclosure 2
C. Gertz, YMPO
R. Loux, State of Nevada
T. Hickey, Nevada Legislative Commission
M. Baughman, Lincoln County, NV
J. Bingham, Clark County, NV
B. Raper, Nye County, NV
P. Niedzielski-Eichner, Nye County, NV
G. Derby, Lander County, NV
P. Goicoechea, Eureka, NV
C. Schank, Churchill County, NV
F. Mariani, White Pine County, NV
V. Poe, Mineral County, NV
E. Wright, Lincoln County, NV
J. Pitts, Lincoln County, NV
R. Williams, Lander County, NV
J. Hayes, Esmeralda County, NV
B. Mettam, Inyo County, CA
C. Abrams, NRC

RELATION OF STUDY PLAN 8.3.1.8.2.1 TO NRC OPEN ITEMS

Comment 47:

The issues of new or undetected faults are discussed in Section 3.2 of the study plan. This study plan covers the methods that will be used to analyze field data and estimate probabilities for waste package rupture. Actual field data will be collected by other studies. The other studies that will supply this data, and the data they are expected to supply, are listed in Section 2.3.2 and in the "Data Input Requirements for the Analysis" subpart of Section 3.2.

Comment 48:

Section 3.2 of the study plan indicates that faults that are detected in the underground drifts and considered to have a potential for damaging waste packages (based on the total offset in the Topopah Spring FM or Tiva Canyon FM) will be avoided in selecting emplacement locations. This would leave concerns related to undetected or new faults as the remaining factor to be considered in estimating waste package failure rates due to faulting. The nature of the problem requires that a probabilistic approach be used to address this issue. The probabilistic approach proposed to be employed is discussed in Section 3.2

Comment 59:

Data requirements for faulting in this study, and the studies that are expected to supply the data, are listed in Section 2.3.2 and in the "Data Input Requirements for the Analysis" subpart of Section 3.2. Prototype testing is not required for any of the data called for, as all of the data called for will be gathered by standard techniques. The sequencing of other studies does not affect this study because it is an analysis study that will be completed after field data gathering is complete and before a final licensing or suitability analysis is done. It is only required that data called for in Sections 3.1, 3.2, 3.3, and 3.4 be gathered sometime during site characterization. Geophysical studies are not relied on to a great extent in the faulting analysis to be conducted by this study because the faults of concern for this issue will be of small enough displacement that geophysical methods would be unreliable in detecting them.

Enclosure 2