Department of Energy
Washington, DC 20585

DEC . 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 8.3.1.4.3.1 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
8.3.1.4.3.1	"Systematic Acquisition of Site Specific Subsurface Information"

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 33 and 34 and Questions 8 and 9, which were directed to Study 8.3.1.4.3.1. 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,

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

Enclosures:
1. Study Plan 8.3.1.4.3.1
2. Relation of Study Plan 8.3.1.4.3.1 to NRC Open Items

RELATION OF STUDY PLAN 8.3.1.4.3.1 TO NRC OPEN ITEMS

Comment 33

This study is a descriptive, data-acquisition activity that is intended to provide the raw information within the potential repository block regarding a number of "engineering properties". An expanded list and description of descriptive properties to be obtained by Study 8.3.1.4.3.1 is provided in Table 3.2 of the study plan and a list of the laboratory material properties to be obtained is given in Table 3.4. Additional discussion of these properties is found in the related text sections of the study plan. The intended strategy for sampling patterns to provide both areal coverage of the immediate repository site and to define sufficiently the spatial continuity patterns necessary for geostatistical modeling is presented in section 2.2 of the study plan. Study plan 8.3.1.4.3.1 provides a general discussion of data flow, the interrelationships of several SCP studies, and specific application of results from this study in Sections 2.5 and 4.0 of the study plan.

Comment 34

In general, this comment refers to issues of Project integration that are beyond the capability of any one study plan to resolve. Section 2.5 of this study plan discusses at some length the distinction between the Systematic Drilling Program as a site-centered effort and a number of other studies that are more process oriented and the need for concurrent conduct of both types of studies. Regarding the integration of some of the data from drill holes and the ESF, the study plan provides discussion in Sections 2.2.4 and 3.5.3 of how samples from both surface-based bore holes (SD- and UZ- series) and from the ESF will be used to develop a composite model of spatial continuity for use in preliminary assessments of data adequacy. Regarding the use of existing bore hole derived information, the author of this study plan is unaware of any broad-scale Project plans to qualify data from previously existing bore holes. In general, however, there are few existing holes located within the region to be investigated by Study 8.3.1.4.3.1 and the holes that are present are of a type that would be of only minor use so that plans for the Systematic Drilling Program would be impacted very little by the qualification, or non-qualification, of any existing bore hole data.

Question 8

The issue of modeling and assessing uncertainty in the resulting models is not completely appropriate for discussion in a site-characterization study focused on data collection, such as this study. In fact, those topics form the entire focus of activities conducted under study 8.3.1.4.3.2 "Three-Dimensional Rock Characteristics Models". The issue is referred to in passing in

the current study plan in Section 3.12. A moderately lengthy discussion of evaluating data during drilling to determine if there are gross inadequacies in the characterization process is presented in Section 3.5.3; however, this assessment of uncertainty is preliminary only.

Question 9

Much of the concern, among project participants, with sequential testing of multiple properties has been alleviated by the more advanced testing plans described in actual study plans. For example, work under Study 8.3.1.2.2.3 "Characterization of Yucca Mountain Unsaturated Zone Percolation" consists of routine multiple property determinations on each sample. An identical strategy will be implemented under Study 8.3.1.4.3.1 for the material properties listed in Table 3.4 and discussed in Section 3.4.

see Andrews sheet

Study Plan for the

Systematic Acquisition of Site-Specific Subsurface Information

Site Characterization Plan
Study 8.3.1.4.3.1.

C. A. Rautman
Sandia National Laboratories

December 2, 1992