



**Department of Energy**

Washington, DC 20585

MAY 10 1991

Mr. John J. Linehan  
Director  
Division of High-Level  
Waste Management  
Office of Nuclear Material Safety  
and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mr. Linehan:

Enclosed with this letter is a controlled copy of Study Plan 8.3.1.2.2.3 prepared by the U.S. Department of Energy (DOE) for the Yucca Mountain Site. The study plan number corresponds to the same number used in the Site Characterization Plan (SCP) for the Yucca Mountain Site. The study plan is identified as follows:

<u>Number</u>	<u>Title</u>
8.3.1.2.2.3, Revision 0	Characterization of Percolation in the Unsaturated Zone, Surface-Based Study

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/Nuclear Regulatory Commission (NRC) meeting on the Level-of-Detail for the SCP (May 7-8, 1986). DOE is submitting these plans 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. Because this study plan was in preparation prior to that decision, it was not prepared under current Project Office and DOE Headquarters quality assurance (QA) procedures. During the December 15, 1988, meeting on study plans, DOE agreed to prepare an assessment of the five construction phase Exploratory Shaft Facility study plans relative to current QA requirements. This assessment was transmitted to you on June 23, 1989. An abbreviated quality assessment, similar in intent and complementary to the earlier assessment, has been performed for Study Plan 8.3.1.2.2.3 and is

9105160305 910510  
PDR WASTE PDR  
WM-11

FULL TEXT ASCII SCAN

Return Original to King Stablein  
Ltr. 01 Encl. 01

102.8  
Wm-11  
NH03

enclosed with this letter. This evaluation has been performed under current Office of Civilian Radioactive Waste Management (OCRWM) QA procedures. Results of this quality assessment indicated that the plan listed above meets all major quality assurance requirements for planning documents and is of sufficient technical quality for NRC review.

Study plans approved under current procedures do not require detailed information in 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 and milestones relative to the SCP, and, as such, represent DOE's current plans. A status on the schedule for preparation, review, and approval of study plans is provided in site characterization progress reports.

If you have any questions, please contact Sharon Skuchko of my office at (202) 586-4590.

Sincerely,



Dwight E. Shelor  
Acting Associate Director for  
Systems and Compliance  
Office of Civilian Radioactive  
Waste Management

Enclosures: *See enclosure on copy.*

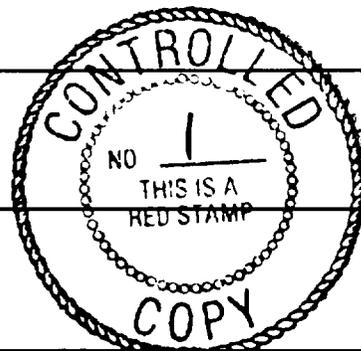
1. Study Plan 8.3.1.2.2.3, Revision 0, "Characterization of the Percolation in the Unsaturated Zone - Surface-Based Study"
2. Study Plan Assessment for 8.3.1.2.2.3

cc w/enclosures:

Arturo Ramose, CNWRA, San Antonio, TX

cc w/copy of Study Plan Assessment:  
C. Gertz, YMPO  
R. Loux, State of Nevada  
M. Baughman, Lincoln County, NV  
D. Bechtel, Clark County, NV  
S. Bradhurst, Nye County, NV  
P. Niedzielski-Eichner, Nye County, NV

*Study Plan for  
Study 8.3.1.2.2.3*



***Study Plan for Characterization of the  
Percolation in the Unsaturated Zone -  
Surface-Based Study***

*Revision 0*

***U.S. Department of Energy  
Office of Civilian Radioactive Waste Management  
Washington, DC 20585***

***Prepared by  
U.S. Geological Survey***

*revised with  
letterhead  
5/10/91*

Study Plan Assessment for 8.3.1.2.2.3:  
Characterization of the Yucca Mountain Unsaturated-Zone Percolation:  
Surface-Based Studies

1. Introduction

The Nuclear Regulatory Commission (NRC) has expressed a concern that the quality assurance (QA) Level II controls used to prepare and review the five construction phase Exploratory Shaft Facility (ESF) Study Plans may not have been adequate and therefore the technical quality of the documents should be verified (DOE, 1989). Study Plans prepared under QA Level II controls were partially prepared and reviewed prior to the effective dates of Revision 1 of the OCRWM QARD, Revision 2 of the Project Quality Assurance Plan (QAP), NNWSI/88-9, the Yucca Mountain Project Administrative Procedure (AP)-1.10Q (Preparation, Review and Approval of SCP Study Plans), and the HQ Implementing Line Procedure (ILP)-22.3.1 (DOE/HQ Review of Study Plans). NNWSI/88-9 became effective December 9, 1988, and AP-1.10Q was approved December 14, 1988.

This document provides the Yucca Mountain Site Characterization Project Office assessment of Study Plan 8.3.1.2.2.3 and associated documentation of the DOE process for preparation and review of this Study Plan against current QA requirements. The purpose of this assessment is to evaluate the controls that were in place during the development of this Study Plan and to determine whether the document is of the technical quality expected under QA level I controls.

2. Evaluation of Study Plan 8.3.1.2.2.3

2.1 Basis for the Assessment

Since responsibility for preparation and review of Study Plans has been delegated by OCRWM to the Project Office, the evaluation is based on the requirements established in the Project Office QAP, NNWSI/88-9, revision 2 which was accepted by the NRC on December 30, 1988. A fundamental premise of this assessment is that Study Plans developed in accordance with NNWSI/88-9 are adequate to meet NRC requirements. To support this premise, OCRWM maintains documentation that relevant requirements established in NNWSI/88-9, revision 2 were not reduced in subsequent revisions, nor in the consolidated OCRWM-HQ and Project Office QA Requirements contained in the QARD, revision 4. NNWSI/88-9 imposed several requirements on the preparation, review and approval of Study Plans:

- 1) Study Plans must be prepared and reviewed by qualified personnel
- 2) The format and content of Study Plans must meet all applicable requirements (including specific provisions for technical, regulatory and quality-related content).
- 3) The process of development, review, approval, issuance and revision must be controlled.
- 4) Records documenting that all the requirements have been met must be

*1028*  
ENCLOSURE 2

TMSS/029/2  
01/16/91  
Revision No.: 1

**TECHNICAL & MANAGEMENT SUPPORT SERVICES  
DOCUMENT TRANSMITTAL/ACKNOWLEDGMENT RECORD**

WBS: 1.2.9  
QA: N/A  
Page 1 of 1

TO:  
LINEHAN J J  
NRC/WASHINGTON  
  
ONE WHITE FLINT NORTH  
11555 ROCKVILE PIKE  
ROCKVILLE, MD 20852-0000

FROM: Science Applications Int. Corp.  
Document Control Center  
101 Convention Center Drive  
Suite 407, Mail Stop 517 / T-34  
Las Vegas, Nevada 89109  
FTS 544-7810 or (702)794-7810  
TRANSMITTAL DATE: 04/18/91

COPY NO.: 1

DOCUMENT TITLE: CHARACTERIZATION OF THE PERCOLATION IN THE UNSATURATED ZONE -...  
DOCUMENT REVISION: 0 DOCUMENT IDENTIFICATION NUMBER: 8.3.1.2.2.3

**DIRECTIONS**

CONTROL AND ISSUANCE OF THE:

STUDY PLAN FOR CHARACTERIZATION OF THE PERCOLATION IN  
THE UNSATURATED ZONE - SURFACE-BASED STUDY

YOU ARE NOW ON CONTROLLED DISTRIBUTION FOR THIS DOCUMENT

\*\* New issue - no obsolete material \*\*

SIGN/DATE IN BLACK INK BELOW TO CONFIRM THAT THE ABOVE DIRECTIONS HAVE BEEN FOLLOWED,  
AND RETURN THIS TRANSMITTAL RECORD, WITH THE OBSOLETE MATERIAL, AS APPROPRIATE, TO THE  
ABOVE ADDRESS BY:

05/09/91  
Due Date

\_\_\_\_\_  
Document Holder Signature

\_\_\_\_\_  
Date

<<< FOR DOCUMENT CONTROL CENTER USE ONLY >>>

OBSOLETE MATERIAL RECEIVED: \_\_\_\_\_  
DCC Personnel Initials Date

maintained.

The following section summarizes the controls that were in place during the preparation and review of this Study Plan and provides an evaluation of the these controls against the relevant requirements of the OCFWM QARD.

## 2.2 Description of the Review Process

At the time that this Study Plan was prepared by the United States Geological Survey (USGS), procedures for Study Plan preparation, qualification of personnel, and for technical review were in place at the USGS (DOE, 1989). The review procedure required independent and documented technical and QA reviews.

The USGS submitted an initial draft of the Study Plan to the Yucca Mountain Project Office on August 12, 1988, which was then forwarded to the Project Participants for technical review on August 29, 1988. The Project Office initiated an AP-1.10Q management, regulatory, and QA review of the Study Plan on January 18, 1989. In these two reviews, the study plan was reviewed by eleven reviewers who generated 224 comments (146 technical, 30 management, 40 regulatory, and 8 QA).

DOE/HQ performed a review of the Study Plan in accordance with its interim procedure for the preparation of study plans, and transmitted its comments to the Project Office on December 23, 1988. A comment resolution meeting was held on February 1-3, 1989, and the USGS submitted their final revised Study Plan to the Project Office on February 7, 1991.

In accordance with ILP 22.3.1, DOE/HQ verified that the most recent version of the Study Plan adequately addressed the proposed resolutions to the HQ comments. This verification was documented on the comment resolution forms. The Project Office was notified of this on February 26, 1991.

## 2.3 Evaluation of the Technical Quality of the Study Plan

The requirements of the participant, Project Office, and DOE/HQ implementing procedures for Study Plan development are summarized in the Study Plan Assessment for the Five Construction Phase Study Plans for the Exploratory Shaft Facility (DOE, 1989). For this assessment, these requirements were compared against the requirements of NNWSI/88-9. The USGS, the Yucca Mountain Project, and the DOE/HQ procedures for Study Plan preparation, review and approval adequately implement the applicable requirements of NNWSI/88-9 (DOE, 1989).

Although some minor revisions will be made to the DOE and participant procedures to improve the implementation of the relevant QA requirements, these changes would not affect the technical content of this Study Plan. Documented, traceable technical reviews by the Project Office were completed by a total of seven qualified reviewers; the Study Plan was also reviewed by QA and regulatory specialists, and management. The Project Office and DOE/HQ technical comments were reviewed and were found to constitute an adequate detailed technical review of the plan. The review process described above supports the conclusion that the technical quality of this Study Plan was not adversely impacted by the quality controls that were in place when the document was written and reviewed.

### 3. Summary and Conclusions

The DOE believes that the preparation and review of Study Plan 8.3.1.2.2.3 were substantially in accordance with AP-1.10Q and ILP 22.3.1 which implements the NRC-reviewed and accepted controls described in the OCRWM QARD. This assessment demonstrates that the development of the Study Plan was conducted under quality controls that were equivalent to those which would be found in a QA Level I program. Moreover, this assessment of the Study Plan and associated quality assurance records indicate that the technical content of the Study Plan would not change in any substantive way if the development of the Study Plan had been completed at QA Level I. The DOE considers this Study Plan to be technically acceptable for NRC review. The four requirements that provide the bases for this assessment have been fulfilled.

### 4. References

U.S. Department of Energy, Yucca Mountain Project Office, Administrative Procedure (AP)-1.10Q, Preparation, Review and Approval of SCP Study Plans, Revision 0.

U.S. Department of Energy, OCRWM Implementing Line Procedure (ILP)-22.3.1, DOE/HQ Review of Study Plans.

U.S. Department of Energy, Yucca Mountain Project Office, Quality Assurance Plan, NNWSI/88-9, Revision 2.

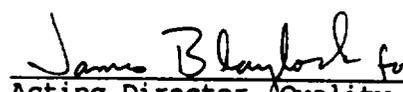
U.S. Department of Energy, Yucca Mountain Project Office (DOE), 1989, DOE Assessment of the Process Used to Review and Approve the Five Construction Phase Exploratory Shaft Study Plans.

U.S. Department of Energy, OCRWM Quality Assurance Requirements Document, DOE/RW-0214.

Approval:

  
Chief, Regulatory Interactions Branch 4/3/91

  
Director, Regulatory and Site Evaluation Division 4/4/91

  
Acting Director, Quality Assurance 4/8/91