Department of Energy
Washington, DC 20585

JUN 3 0 1989

B.J. Youngblood, Director
Division of High-Level
Waste Management
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Youngblood:

Enclosed with this letter are controlled copies of study plans 8.3.1.17.4.2, and 8.3.1.5.2.1, 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).

Number	Title
8.3.1.17.4.2, Revision 0	Evaluating the Location and Recency of Faulting Near Prospective Surface Facilities
8.3.1.5.2.1, Revision 0	Characterization of the Yucca Mountain Quaternary Regional Hydrology

DOE has reviewed the study plans 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 that meeting.

As discussed during our recent DOE/NRC meeting (December 15, 1988) on study plans, DOE will control preparation and review of study plans as a Quality Assurance (QA) Level 1 activity. Because these study plans were in preparation prior to that decision, they were not prepared under current Project Office and DOE/HQ, QA Level 1 procedures. During the December 15, 1988, DOE/NRC 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 has been transmitted to you previously. Similar quality assessments have been performed for study plans 8.3.1.17.4.2 and 8.3.1.5.2.1, and are enclosed with this letter. These evaluations have been performed under procedures consistent with NNWSI/88-9, Rev. 2, which you have accepted. Results of these quality evaluations indicated that the two plans listed above are of sufficient quality to merit NRC review.

Please note that the Quality Assurance Level Assignments (QALA) for the activities to be performed under these two study plans are included as part of a QA appendix to the study plans. These QALA's were included in the study plans to satisfy the May 7-8, 1986, Level-of-Detail Agreement for content of study plans. As you are aware, DOE is currently in the process of implementing QA procedures that are consistent with NNWSI QAP 88-9, Rev. 2 and NUREG 1318. Following the implementation of these procedures, DOE will reevaluate existing QALA's as appropriate. All study plans will be distributed as controlled documents, and as such, any revision to the study plans and appended QALA lists will be distributed as controlled documents.

DOE is also developing a definition of standard and non-standard technical procedures to ensure consistent identification and utilization of these procedures in the development of future study plans.

If you have any questions, please contact Gordon Appel of my staff at 586-1462.

Sincerely,

Ralph Stein

Ralph Stein
Associate Director for Systems
Integration and Regulations
Office of Civilian Radioactive
Waste Management

Enclosures:

1. Study Plan for Study 8.3.1.17.4.2, Characterization of the Yucca Mountain Quaternary Regional Hydrology, Revision 0, June 1989.

2. Study Plan for Study 8.3.1.5.2.1, Study Plan for Evaluating the Location and Recency of Faulting Near Prospective Surface Facilities, Revision 0, May 1989

3. Study Plan Assessment for 8.3.1.5.2.1: Quaternary Regional Hydrology

4. Study Plan Assessment for 8.3.1.17.4.2: Location and Recency of Faulting Near Potential Surface Facilities

cc: w/enclosures:

K. Stablein, NRC
J. Linehan, NRC
R. Loux, State of Nevada
D. Bechtel, Clark County, NV
S. Bradhurst, Nye County, NV
M. Baughman, Lincoln, NV

Study Plan Assessment for 8.3.1.5.2.1: Quaternary regional hydrology

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 2 of the Project Quality Assurance Plan (QAP), NNWSI/88-9, and the Yucca Mountain Project Administrative Procedure (AP)-1.10Q (Preparation, Review and Approval of SCP Study Plans). NNWSI/88-9 became effective December 9, 1988, and AP-1.10Q was approved December 14, 1988.

The Yucca Mountain Project Office has also assessed Study Plan 8.3.1.5.2.1 and associated documentation of the DOE process for preparation and review of this Study Plan against current QA requirements. This 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 8.3.1.5.2.1

2.1 Basis for the Assessment

NNWSI/88-9, Revision 2, was reviewed and approved by the Project Office, accepted by the NRC, and formally issued on December 9, 1988. A fundamental premise of this assessment is that Study Plans developed in accordance with NNWSI/88-9 are adequate to meet NRC requirements. NNWSI/88-9 imposes 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 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 NNWSI/88-9.

2.2 Description of the Review Process

At the time that this Study Plan was prepared by the U. S. Geological Survey (USGS), procedures for qualification of personnel and for technical review of plans and procedures governed by the USGS QAP were in effect at the

USGS (DOE, 1989). The review procedure required independent and documented technical review by qualified reviewers. At this time, however, Study Plan reviews were governed by DOE procedures rather than the USGS QAP. The USGS desk procedure for Study Plan preparation and review was issued on November 16, 1987, during the early phases of preparing this Study Plan. This procedure required that Study Plans be prepared in accordance with the DOE/NRC Agreement guidance and that Study Plans be reviewed in accordance with the USGS technical review procedure (DOE, 1989).

The USGS submitted an informal draft of the Study Plan to the Yucca Mountain Project Office on January 26, 1988, before the USGS technical review had been completed. The Study Plan was technically reviewed by six technical specialists following draft procedures defined in revision 2 of the SCP Management Plan (effective date: April 21, 1988). This review generated 76 technical comments from 6 technical reviewers. The comments and final disposition of each comment were documented on comment resolution forms.

The USGS completed their technical review of this Study Plan, revised the plan to address the technical comments generated during this review and formally submitted the revised plan to the Project Office on May 31, 1988. The Project Office forwarded the revised Study Plan to DOE/HQ for their review on June 10, 1988. The DOE/HQ review was governed by their revised final procedure for DOE/HQ approval of Study Plans which became effective on April 14, 1987, and the July 26, 1987, clarification of their final procedure (DOE, 1989). DOE/HQ provided 13 technical specialists who generated 106 technical comments. A comment resolution meeting was held on December 19 and 20, 1988, to reach agreement on the proposed resolution to each DOE/HQ comment. These comments and their actual disposition were documented on comment resolution forms. The Study Plan was revised and resubmitted to DOE/HQ. DOE/HQ reviewed the revised document to verify the resolution of their comments before they approved the Study Plan.

An AP-1.10Q screening review was not completed on this Study Plan because of the earlier Project technical reviews. A technical review of the Study Plan was completed using AP-1.10Q comment resolution forms in November of 1988 prior to the effective date of the procedure (December 14, 1988). The Project Office initiated an AP-1.10Q management, regulatory and QA reviews of the Study Plan on January 25, 1989. The plan was reviewed by 5 reviewers who generated 47 comments (23 QA, 1 management, and 23 regulatory). The USGS revised the Study Plan to address these comments. The comments and final disposition were documented on comment resolution forms. The Project Office verified the resolution of each comment prior to approval of the Study Plan.

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 Program procedures to improve the implementation of the relevant quality requirements,

these changes would not affect the technical content of this Study Plan. Documented, traceable technical reviews were completed by several 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 8.3.1.5.2.1 were substantially in accordance with AP-1.10Q, which implements the NRC-reviewed and accepted controls described in NNWSI/88-9. This assessment demonstrates that the development of the Study Plan was conducted under quality controls that were substantially 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, 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.

Approval:

Chief, Regulatory Interactions Branch 6/8/89

Director, Regulatory and Site Evaluation Division 6/8/89

Acting Director, Quality Assurance 6/9/89

Study Plan Assessment for 8.3.1.17.4.2: Location and recency of faulting near potential surface facilities

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 2 of the Project Quality Assurance Plan (QAP), NNWSI/88-9, and the Yucca Mountain Project Administrative Procedure (AP)-1.10Q (Preparation, Review and Approval of SCP Study Plans). NNWSI/88-9 became effective December 9, 1988, and AP-1.10Q was approved December 14, 1988.

The Yucca Mountain Project Office has also assessed Study Plan 8.3.1.17.4.2 and associated documentation of the DOE process for preparation and review of this Study Plan against current QA requirements. This 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 8.3.1.17.4.2

2.1 Basis for the Assessment

NNWSI/88-9, Revision 2, was reviewed and approved by the Project Office, accepted by the NRC, and formally issued on December 9, 1988. A fundamental premise of this assessment is that Study Plans developed in accordance with NNWSI/88-9 are adequate to meet NRC requirements. NNWSI/88-9 imposes 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 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 NNWSI/88-9.

2.2 Description of the Review Process

At the time that this Study Plan was prepared by Sandia National Laboratory (SNL), procedures for Study Plan preparation, qualification of personnel, and

for technical review were in place at SNL (DOE, 1989). The review procedure required independent and documented technical and QA reviews. SNL submitted a draft of the Study Plan to the Yucca Mountain Project Office on December 6, 1988. An AP-1.10Q screening review was completed on December 14, 1988. This screening review was completed before the effective date for AP-1.10Q. After the screening review, the Project Office forwarded the Study Plan to DOE/HQ for their review on December 16, 1988. The DOE/HQ review was governed by their interim procedure for Study Plan reviews; this procedure became effective on September 8, 1988.

The Project Office initiated an AP-1.10Q technical, management, regulatory and QA reviews of the Study Plan on December 12, 1988. The plan was reviewed by seven reviewers who generated 72 comments (5 QA, 1 management, 9 regulatory, and 57 technical). SNL revised the Study Plan to address these comments. The comments and final disposition were documented on comment resolution forms. The Project Office verified the resolution of each comment prior to approving the plan.

DOE/HQ provided eleven technical specialists to review the Study Plan. These reviewers generated eighty-five comments that were documented on comment resolution forms. A comment resolution meeting was held with DOE/HQ on January 18 and 19, 1989, to develop proposed resolutions to each comment. SNL then revised the Study Plan to address the DOE/HQ comments. The final disposition of each comment was documented on comment resolution forms and the DOE verified the resolution of each comment prior to approving the Study Plan.

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 SNL, 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 Program procedures to improve the implementation of the relevant quality requirements, these changes would not affect the technical content of this Study Plan. Documented, traceable technical reviews were completed by several 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 8.3.1.17.4.2 were substantially in accordance with AP-1.10Q, which implements the NRC-reviewed and accepted controls described in NNWSI/88-9. This assessment demonstrates that the development of the Study Plan was conducted under quality controls that were substantially 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, 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.

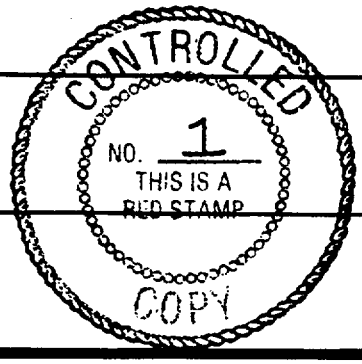
Approval:

Chief, Regulatory Interactions Branch 6/8/89

Director, Regulatory and Site Evaluation Division 6/8/89

Acting Director, Quality Assurance 6/8/89

Study Plan for
Study 8.3.1.17.4.2



Study Plan for Evaluating the Location and Recency of Faulting Near Prospective Surface Facilities

Revision 0

May 1989

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