YUCCA MOUNTAIN PROJECT

QUALITY ASSURANCE SURVEILLANCE REPORT

OF

YUCCA MOUNTAIN PROJECT OFFICE

SURVEILLANCE NUMBER YMP-SR-90-031

CONDUCTED ON JUNE 5 THROUGH JUNE 21, 1990

ACTIVITY SURVEILLED:

STUDY PLANS

Prepared by: _____ Date: 7/24/90
Stephen R. Dana
Surveillance Team Leader
Quality Assurance Engineer

Approved By: _____ Date: 7/27/90
Donald G. Horton, Director
Quality Assurance
Yucca Mountain Project Office

1.0 INTRODUCTION

This report contains the results of Yucca Mountain Project Office (Project Office) Quality Assurance (QA) Surveillance No. YMP-SR-90-031 of the Project Office, conducted in Las Vegas, Nevada, June 5 through June 21, 1990.

2.0 SCOPE

The scope of this surveillance was to evaluate the Project Office study plan process to determine whether it meets the requirements imposed by the Quality Assurance Program Description (DOE/RW-0215), Revision 2, and Administrative Procedure-Quality AP-1.10Q, "Preparation, Review, and Approval of SCP Study Plans," Revision 1. This was done by verifying implementation and effectiveness of the systems in place, as well as verifying compliance with requirements.

3.0 SURVEILLANCE PERSONNEL

This surveillance was performed by the following personnel:

Stephen R. Dana, Lead, Project Office QA
Martha J. Mitchell, Technical Specialist, Project Office QA

In addition to the surveillance team, the following personnel participated as observers:

J. Gilray, U.S. Nuclear Regulatory Commission (NRC), Las Vegas, Nevada
T. Verma, NRC, Washington, DC
S. Zimmerman, State of Nevada, Carson City, Nevada

4.0 EXECUTIVE SUMMARY

In the opinion of the Project Office surveillance team (Team), the effectiveness of the Project Office study plan process is marginally effective. The Team was generally able to locate the records necessary to verify the study plan process. However, due to the number of process changes since the study plan review, comment, and approval cycle was first implemented, the Team determined that the study plan process was difficult to follow. To improve effectiveness of the study plan process, the Team identified the following areas of the program that should be strengthened or enhanced.

- AP-1.10Q, Revision 1, should be revised to clearly describe the comment, review, and approval process for study plans.

- o Specific requirements for the screening review should be established. During the surveillance it was clear that not all study plan coordination staff understand the intent of the review.

- o Study plan reviews by the Project Office and the U.S. Department of Energy (DOE) Office of Civilian Radioactive Waste Management (OCRWM) Headquarters should be consolidated into one process. Currently, study plans are reviewed by the Project Office (per AP-1.10Q) and Headquarters (per Implementing Line Procedure ILP 22.3.1).

5.0 SURVEILLANCE RESULTS

The surveillance team reviewed ten completed study plans (i.e., transmitted by OCRWM to the NRC for review). The following study plans were reviewed:

Study Plan	Title
8.3.1.2.2.2	Water Movement Tracer Tests CL and CL-36 Measurement
8.3.1.2.2.4	Characterization of Yucca Mountain Percolation Unsaturated Zone-ESF Investigation
8.3.1.3.2.1	Mineralogy/Petrology, Chemistry of Transport Pathways
8.3.1.4.2.2	Characterization of Structural Features Within Site Area
8.3.1.5.2.1	Characterization of the Quaternary Regional Hydrology
8.3.1.8.5.1	Characterization of Volcanic Features
8.3.1.15.1.3	Lab Determination of Mechanical Properties Intact Rock
8.3.1.15.1.5	Excavation Investigations
8.3.1.15.2.1	Characterization Site Ambient Stress Conditions
8.3.1.17.4.2	Location and Recency of Faults Near Prospective Surface Facilities

Additional study plans in various stages of the review and comment cycle were also reviewed.

Overall implementation of the study plan process was satisfactory; however, as discussed in Section 4, the effectiveness of the process was marginal.

As a result of this surveillance, two Standard Deficiency Reports (SDRs) and six Observations were issued. The SDRs were written against the review process for AP-1.10Q and not the study plan process. Also, a deficiency was identified relative to an improper dispute resolution. However, a similar deficiency had previously been identified on SDR No. 487; therefore, the additional occurrence of an improper dispute resolution identified during the surveillance was addressed in SDR No. 487.

It should be noted that all study plan QA record packages located in the Local Records Center (LRC), that were requested by the Team were retrieved by LRC staff in a timely manner. Also, all final records and records of in-progress study plan activities, which were identified as received by the Project Office, could be located by the surveillance team.

6.0 PERSONNEL CONTACTED

The following personnel were contacted during the course of this surveillance:

T. Grant, Science Applications International Corporation (SAIC)
M. Pendleton, SAIC
D. Dobson, Yucca Mountain Project
E. Spangler, SAIC
F. Peters, SAIC
W. Sublette, SAIC
B. Hurley, SAIC
L. Shepard, Sandia National Laboratories (SNL)
R. Peters, SNL

7.0 SYNOPSIS OF DEFICIENCY DOCUMENTS/OBSERVATIONS

7.1 Standard Deficiency Reports

The following SDRs were issued as a result of the surveillance:

No. 550 Subsequent to the document review and approval process, AP-1.10Q, Revision 1 (draft), was changed (i.e., the document reviewers reviewed a different version of AP-1.10Q than was submitted for final approval).

No. 551 The Manager of the Technical Assurance Department initialed and dated Document Review Sheets, accepting the reviewer's disposition for major comments. However, the manager was not trained to Quality Management Procedure QMP-06-03.

7.2 Observations

Observations generated from the surveillance are as follows:

No. YMP-SR-90-031-01 During a review of procedure AP-1.10Q, Revision 1, numerous weaknesses were identified. (Reference Observation No. 1 for additional detail).

No. YMP-SR-90-021-02 During review of Site Characterization Plan (SCP) Study Plan 8.3.1.8.5.1, the surveillance team noted several OCRWM Document Review Records (DRRs) that stated in Block 14, "Actual Disposition," that a change to the SCP was required. AP-1.10Q does not describe a tracking mechanism to ensure changes to SCP sections referenced in the OCRWM DRRs or the Project Comment Resolution Forms (CRFs) will be addressed in the SCP if it is placed under formal change control per AP-3.3Q.

No. YMP-SR-90-031-03 Study Plan 8.3.1.15.1.3 references only Technical Procedures (TPs) from the authoring organization, which is SNL. TPs are the lower level of technical implementing procedures and are used under and controlled by upper level technical implementing procedures called Experimental Procedures (EPs). It is the EPs that establish the majority of the quality requirements for data collection activities carried out using the TPs. To evaluate the quality assurance controls proposed for a study, the EP-level procedures should be referenced and their status given in the study plans. The EPs that reference this study also reference TPs not cited in the study plan.

No. YMP-SR-90-031-04 There is no specific requirement for the study plan screening review to be made part of the QA records package. The review can result in comments made with regard to the document and resolved during the Project Office review cycle. The remainder of the reviewers are not made aware of these previously identified comments. The criteria used in the screening review are concerned with the level of detail. It appears that the screening review is clearly a quality-affecting activity and is no different from the other reviews; thus, it should be documented as such and included in the records package.

No. YMP-SR-90-031-05 It is difficult to determine if the record package for the study plan review represents the actions taken during the review process. This is due to the following conditions associated with the review process: (1) there is often no specific identifier, such as date,

associated with a specific version of the study plan text; (2) there is no indication of the process that took place during comment resolution when the comment and the agreed upon change are not connected logically; and (3) It is difficult to determine (from the agreed upon resolution and the final text containing the revision) where the change is in the text for a specific comment.

No. YMP-SR-90-031-06 QA reviews for some study plans have included comments that indicate that the information from the Level of Detail Agreement (LODA) have not been met. As an example, in Study Plan 8.3.1.5.2.1 a uniform rejection for these comments was used. When the comment resolution was completed, Headquarters still had questions concerning the level of detail in the document and requested further changes. This indicated a differing of opinion in what the intent of the LODA is, as a requirement, and what is needed for the information included in the study plan.

8.0 RECOMMENDATIONS

1. During review of SCP study plans, the surveillance team observed that the OCRWM reviewers do not verify that changes in study plans, resulting from their comments, have been incorporated into the final version of the study plan, as proposed in the comment resolution meeting. The verification review is completed by the designated "Lead Reviewer," as stated in OCRWM ILP 22.3.1, Paragraph 6.19. In addition, ILP 22.3.1 excludes the reviewer from the proposed comment disposition (concurrence). Therefore, there is no objective evidence that the study plan reviewer agreed with the comment resolution or the content of the comment as incorporated in the study plan.

   Since specific emphasis is placed on reviewers' qualifications and their level of expertise in a field relative to the study plan; the reviewers should be afforded the opportunity to follow their comments through the resolution process (concurrence) and verification of actual disposition as incorporated in the study plan.

2. The study plan screening review, described in AP-1.10Q, is not carried out in a consistent manner. For example, the screening review of Study Plan 8.3.1.16.2.1, "Location of Adequate Water Supply Construction Operation, Closing, Decommissioning of a MGDS at Yucca Mountain," consisted of 16 comments including mandatory comments concerning the LODA and indicated that the study plan was not consistent with applicable NRC agreements/requirements. Study Plan 8.3.1.15.1.8, "In Situ Design Verification," was received in an outline format different from that described in AP-1.10Q. The screening review for this study plan indicated that the document was consistent with the applicable NRC agreements/requirements. In addition, the screening review outline issue was not identified during the review, and comments concerning the LODA were "Non-Mandatory." To ensure the screening is performed in a consistent manner, specific requirements for the screening review should be established and individuals involved in the review should be trained relative to the requirements.

3. The current process for study plans is cumbersome. This is due, in part, to both the Project Office and OCRWM performing technical reviews of study plans using different procedures. The method for review of study plans described by Project Office procedure AP-1.10Q is very different than that described in OCRWM ILP 22.3.1. To ensure consistency in the review process, a singular approach should be used (i.e., one procedure, one system).

9.0 REQUIRED ACTION

Responses to each SDR (delineated in Section 7.0) are due within 20 working days from the date of the SDR transmittal letter. Upon response, and satisfactory verification of all remedial and corrective actions, the SDRs will be closed and the Project Office will be notified (by letter) of the closure.

A written response is required for the observations contained in Enclosure 1 of this report. Responses are due within 20 working days from the date of the transmittal letter of this report.

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YUCCA MOUNTAIN PROJECT OFFICE

N-QA-012
4/89

[1] YMPO OBSERVATION NO. 90-031-01

Completed by Originating Organization

[2] Noted During: YMP-SR-90-031	[3] Identified By: S. Dana	[4] Date: 06/21/90
[5] Organization: YMPO	[6] Person(s) Contacted: T. Grant, D. Dobson	[7] Response Due Date is 20 Days from Date of Transmittal

[8] Discussion:

During a review of AP-1.10Q, Revision 1, the following weaknesses were noted in the procedure:

1. Paragraph 3.1, last sentence, if the SCP is under formal change control (per AP-3.3Q), the document used to initiate a change to the SCP is not an ICN.

2. Paragraph 5.1.1, Part 2, states that the plans should conform to level of

[9] QAE/Lead Auditor	Date	[10] Branch Manager	Date
S Dana	7/2/90	James Blaylock for	7/26/90

Completed by Respondee

[11] Response:

[12] Signature: Date:

Completed by QA Org.

[13] Response Receipt Acceptable ☐

Initiator	Date	QA/Lead Auditor	Date

[14] Remarks:

8 Discussion: (continued)

detail, format, and content specified in the DOE/NRC agreement. This contradicts the statement made in paragraph 1.0, last sentence, which states that the procedure implements the DOE/NRC format and content requirements for SCP Study Plans. In addition, Para. 5.1.1 does not agree with the OCRWM Implementing Line Procedure (ILP) 22.3.1, Para. 6.8, which states, "If a detailed technical review is performed by HQ-OCRWM, the study plan contents shall be reviewed for technical adequacy, defensibility, and completeness relative to the content description given in the DOE/NRC Level-of-Detail agreement (Attachment A), and any other guidance issued by DOE relevant to the content of study plans".

3. Paragraph 5.1.4, should address that a revision to the "Technical Planning Basis: SCP (YMP/CC-0005)" should also be requested. In addition, see comment No. 1 for changes to the SCP.

4. Paragraph 5.1.5, is misleading in stating that the participant approves a study plan.

5. Paragraph 5.2, ICN #2 states, in part, "Major changes are changes to the objectives, testing strategy, and test methods contained in the CCB controlled document YMP/CC-0005 "Technical Planning Basis: Site Characterization Plan..." However, the original review discussed in paragraph 5.2 does not take into account review of the study plan to the objectives, testing strategy, and test methods described in the Technical Planning Basis.

6. Paragraph 5.2.6, does not address what documentation is required to substantiate that a reviewer is qualified, and that qualification documentation is required of all reviewers.

7. Paragraph 5.3.2, states that, "The final disposition is based on the Directors judgment..." However, use of the word judgment implies that the decision process may be subjective (i.e., based on opinion).

8. Paragraph 5.3.5, this paragraph should be revised to reflect the wording in QMP 06-04, Rev. 0, Page 10, first paragraph, for dispute resolution.

9. Paragraph 5.5.2, does not agree with ILP 22.3.1, paragraph 6.15.

10. Paragraph 5.5.3, does not agree with ILP 22.3.1, paragraph 6.18

11. Paragraph 5.5.5, does not agree with ILP 22.3.1, paragraph 6.19.

12. Paragraph 5.6.1, does not agree with ILP 22.3.1, paragraph 6.22.

13. Paragraph 5.6.2, does not agree with ILP 22.3.1, paragraph 6.23.

14. Paragraph 5.6.3, does not agree with ILP 22.3.1, paragraph 6.24.

15. Paragraph 5.7, if study plans changes are to be implemented per

8 Discussion: (continued)

AP-3.3Q and AP-3.6Q, then the temporary method to revise study plans described in paragraph 5.7.2 is incorrect.

16. Exhibit 4 (Study Plan Review Checklist). During the surveillance it was not clear in all cases which version of the study plan the reviewer verified for incorporation of comments. The form (Section 3) should be revised to include a line where the reviewer could note the version of the study plan that was verified for incorporation of comments.

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[1] YMPO OBSERVATION NO. 90-031-02

Completed by Originating Organization

[2] Noted During: YMP-SR-90-031	[3] Identified By: S. Dana	[4] Date: 06/21/90
[5] Organization: YMPO	[6] Person(s) Contacted: T. Grant, D. Dobson	[7] Response Due Date is 20 Days from Date of Transmittal

[8] Discussion:

During review of SCP Study Plan 8.3.1.8.5.1, the surveillance team noted several OCRWM "Document Review Records" (DRRs) that stated in Block 14, "Actual Disposition", that a change to the SCP was required. AP-1.10Q does not describe a tracking mechanism to assure changes to SCP sections referenced in the OCRWM DRRs or the Project "Comment Resolution Forms" (CRFs) will be addressed in the SCP or the Technical Planning Basis (YMP/CC-0005) if they are placed under formal change control per AP-3.3Q.

[9] QAE/Lead Auditor	Date	[10] Branch Manager	Date
S Dana	6/27/90	Cathleen Hampton	7/27/90

Completed by Respondee

[11] Response:

[12] Signature: Date:

Completed by QA Org.

[13] Response Receipt Acceptable ☐	
Initiator Date	QA/Lead Auditor Date

[14] Remarks:

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[1] YMPO OBSERVATION NO. 90-031-03

Completed by Originating Organization

[2] Noted During: YMP-SR-90-031	[3] Identified By: M. Mitchell	[4] Date: 06/21/90
[5] Organization: SNL	[6] Person(s) Contacted: W. Sublette	[7] Response Due Date is 20 Days from Date of Transmittal

[8] Discussion:

Study Plan 8.3.1.15.1.3, "Laboratory Determination of the Mechanical Properties of Intact Rock" references only Technical Procedures (TPs) from the authoring organization which is SNL. TPs are the lower level of technical implementing procedures and are used under and controlled by upper level technical implementing procedures called Experimental Procedures (EPs). It is the EPs which establish the majority of the quality requirements for the data collection activities carried out using the TPs. In order to evaluate the quality assurance controls proposed for a study,

[9] QAE/Lead Auditor	Date	[10] Branch Manager	Date
S Dave	7/24/90	Cathy Humphrey	7-24-90

Completed by Respondee

[11] Response:

[12] Signature: Date:

Completed by QA Org.

[13] Response Receipt Acceptable ☐			
Initiator	Date	QA/Lead Auditor	Date

[14] Remarks:

8 Discussion: (continued)

the EP level procedures should be referenced and their status given in the study plans. The EPs referencing this study plan reference additional TPs not referenced in the study plan.

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[1] YMPO OBSERVATION NO. 90-031-04

Completed by Originating Organization

[2] Noted During: YMP-SR-90-031	[3] Identified By: M. Mitchell	[4] Date: 06/21/90
[5] Organization: YMPO	[6] Person(s) Contacted: T. Grant	[7] Response Due Date is 20 Days from Date of Transmittal

[8] Discussion:

There is no specific requirement for the study plan screening review to be made part of the QA records package. This review can result in comments made to the document and resolved during the Project Office review cycle. The remainder of the reviewers are not made aware of these previously identified comments. The criteria used in the screening review are concerned with the level of detail. It appears that the screening review is clearly a quality affecting activity and is no different from the other reviews and should be

[9] QAE/Lead Auditor	Date	[10] Branch Manager	Date
S Dam	7/24/90	[signature]	7-24-90

Completed by Respondee

[11] Response:

[12] Signature: Date:

Completed by QA Org.

[13] Response Receipt Acceptable ☐	
Initiator Date	QA/Lead Auditor Date

[14] Remarks:

8 Discussion: (continued)

documented as such and included clearly in the records package.

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N-QA-012
4/89

[1] YMPO OBSERVATION NO. 90-031-05

Completed by Originating Organization

[2] Noted During: YMP-SR-90-031	[3] Identified By: M. Mitchell	[4] Date: 06/21/90
[5] Organization: YMPO	[6] Person(s) Contacted: T. Grant	[7] Response Due Date is 20 Days from Date of Transmittal

[8] Discussion:

It is difficult to determine if the record package for the Study Plan review represents the actions taken during the review process. This is due to the following conditions associated with the review process. (1) There is often no specific identifier, such as date, associated with a specific version of the study plan text. All versions are identified as Revision 0. The review comments are identified as belonging to Rev. 0 when more than one version with this identification exists. An example of this is the review for Study Plan 8.3.1.5.2.1. In this case, a limited technical review was started

[9] QAE/Lead Auditor	Date	[10] Branch Manager	Date
S. Dawn	7/24/90	Cathy Haughey	7-24-90

Completed by Respondee

[11] Response:

[12] Signature: Date:

Completed by QA Org.

[13] Response Receipt Acceptable ☐			
Initiator	Date	QA/Lead Auditor	Date

[14] Remarks:

8 Discussion: (continued)

before a technical review was initiated on a more complete version of the document. (2) There is no indication of the process that took place during comment resolution when the original comment and the agreed to change are not connected well logically. (3) It is difficult to determine from the agreed to resolution and the final text containing the revision where the change is in the text for a specific comment. This is impacted by the often extensive editorial or quazitechnical changes made to the revised document. Change bars are not added to the draft document that included the comment resolution changes. Comments as to the point were the changes are to be found are not added to the comment resolution sheets.

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N-QA-012
4/89

[1]YMPO OBSERVATION NO. 90-031-06

Completed by Originating Organization

[2]Noted During: YMP-SR-90-031	[3]Identified By: M. Mitchell	[4]Date: 06/21/90
[5]Organization: YMPO	[6]Person(s) Contacted: T. Grant	[7]Response Due Date is 20 Days from Date of Transmittal

[8]Discussion:

Quality Assurance reviews for some study plans have included comments that indicate that the information from the Level of Detail Agreement have not been met. As an example, in Study Plan 8.3.1.5.2.1 a uniform rejection for these comments was used. When the comment resolution was completed, Headquarters still had questions concerning the level of detail in the document and requested further changes. This indicates a differing of opinion in what the intent of Level of Detail Agreement is, as a requirement,

[9]QAE/Lead Auditor	Date	[10]Branch Manager	Date
S Dana	7/24/90	[signature]	7-24-90

Completed by Respondee

[11]Response:

[12]Signature: Date:

Completed by QA Org.

[13]Response Receipt Acceptable ☐			
Initiator	Date	QA/Lead Auditor	Date

[14]Remarks:

8 Discussion: (continued)

and what is needed for the information included in the study plan.