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U.S. DEPARTMENT OF ENERGY  
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT  
OFFICE OF QUALITY ASSURANCE

AUDIT REPORT

OF

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT OFFICE

LAS VEGAS, NEVADA

AUDIT YMP-93-15

AUGUST 9 THROUGH 13, 1993

Prepared by: *Richard L. Maudlin* Date: 09-01-93  
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## **1.0 EXECUTIVE SUMMARY**

As a result of Quality Assurance (QA) Audit YMP-93-15, the audit team determined that the Yucca Mountain Site Characterization Project Office (YMPO) is satisfactorily implementing an effective QA Program in accordance with the YMPO Quality Assurance Program Description Document (QAPD) DOE/RW-0215, Revision 3 and implementing procedures for QA Program Elements 3.0, 11.0, 15.0, and 20.0. QA Program Elements 4.0 and 7.0 were found to be unsatisfactory and no implementation of QA Program Element 14.0 could be identified due to lack of activity.

The audit team identified one deficiency during the course of the audit that resulted in the issuance of one Corrective Action Request (CAR). CAR YM-93-086 concerned two areas, the commencement of work activities prior to the implementation of Technical Directives (TDs) (Quality Management Procedure [QMP]-04-03) which establish technical and quality requirements, and the lack of implementation of procedure QMP-04-02 for issuance of interagency agreements. This CAR was determined to be a significant condition adverse to quality. There were two deficiencies identified and corrected during the course of the audit. These conditions are described in Section 5.5.2 of this report. Additionally, there were three recommendations resulting from the audit which are detailed in Section 6.0 of this report.

## **2.0 SCOPE**

The audit was conducted to evaluate compliance to, and the effectiveness of, the YMPO QA Program as described in the QAPD and implementing quality procedures.

The audit specifically examined the areas within Design Control (Configuration Management [CM]) that was identified in the previous audit as marginal for implementation. In addition, follow-up on previously issued CARs relating to the elements audited are described in Section 5.5.3 of this report.

The QA program elements/requirements evaluated during the audit are in accordance with the published audit plan and are as follows:

### **QA PROGRAM ELEMENTS**

- 3.0 Design Control**
- 4.0 Procurement Document Control**
- 7.0 Control of Purchased Items and Services**
- 11.0 Test Control**
- 14.0 Inspection, Test, and Operating Status**
- 15.0 Control of Nonconforming Items**
- 20.0 Scientific Investigation (delineated under Appendix A, QAPD)**

Since QA Program Element 8.0, "Identification and Control of Materials, Parts, Components, and Samples," was included in the Office of Civilian Radioactive Waste Management (OCRWM) QA Audit YMP-93-09 on April 5 through 9, 1993, this QA program element was not evaluated during the audit.

The following QA program elements/requirements were not reviewed during the audit because YMPO has no activities that implement these elements:

- 10.0 Inspection
- 19.0 Computer Software

### TECHNICAL AREAS

The scope of the audit did not include any technical areas.

## **3.0 AUDIT TEAM AND OBSERVERS**

The following is a list of audit team members, their assigned areas of responsibility, and observers:

<u>Individual</u>	<u>QA Program Element/Requirement</u>
Richard L. Maudlin, Audit Team Leader (ATL), Yucca Mountain Quality Assurance Division/ Quality Assurance Technical Support Services (YMQAD/QATSS)	
Kenneth O. Gilkerson, Acting ATL, YMQAD/QATSS	14.0, 15.0, and 20.0
Daniel A. Klimas, Auditor, YMQAD/QATSS	3.0, 11.0, and 20.0
John S. Martin, Auditor, YMQAD/QATSS	4.0 and 7.0
Sandra D. Bates, Auditor, YMQAD/QATSS	4.0 and 7.0
Susan W. Zimmerman, Observer, State of Nevada	

## **4.0 AUDIT MEETINGS**

The preaudit meeting was held at YMPO facilities in Las Vegas, Nevada, on August 9, 1993. A daily debriefing and coordination meeting was held with YMPO management and staff, and daily audit team meetings were held to discuss issues and potential deficiencies. The audit was concluded with a postaudit meeting held at the YMPO facilities in Las Vegas, Nevada, on August 13, 1993. Personnel contacted during the audit are listed in Attachment 1 of this report. This list includes an indication of those who attended the preaudit and postaudit meetings.

## **5.0 SUMMARY OF AUDIT RESULTS**

### **5.1 Program Effectiveness**

The audit team concluded that, in general, the QA program of YMPO is adequate and is being satisfactorily implemented for the scope of this audit, except for QA Program Elements 4.0 and 7.0. Individually, QA Program Elements 3.0, 11.0, 15.0, and 20.0 are satisfactory in implementation. QA Program Elements 4.0 and 7.0 were found to be unsatisfactory and no implementation of QA Program Element 14.0 could be identified due to lack of activity. Configuration Management, which had been determined as marginal in the previous audit of QA Program Element 3.0, has improved and subsequently was found to be satisfactory during this audit.

### **5.2 Stop Work or Immediate Corrective Actions or Additional Actions**

There were no Stop Work Orders, immediate corrective actions or related additional items resulting from this audit.

### **5.3 QA Program Audit Activities**

Details of the QA program audit activities are provided in Attachment 2. A list of objective evidence reviewed during the audit is provided in Attachment 3.

### **5.4 Technical Activities**

No technical activities were included in the scope of this audit.

### **5.5 Summary of Deficiencies**

The audit team identified one deficiency during the audit for which a CAR has been issued. Two additional deficiencies were identified and corrected prior to the postaudit meeting.

A synopsis of the deficiency documented as a CAR and those corrected during the audit is detailed below. An information copy of the CAR is included in Attachment 4.

### 5.5.1 Corrective Action Requests

As a result of the audit, the following CAR was issued:

#### CAR YM-93-086

CAR YM-93-086 is being issued as a significant condition adverse to quality.

1. Although work activities and delineation of work scope is given to participants through Administrative Procedure (AP)-5.36, "Project Planning, Budgeting, Scheduling and Work Authorization System," work is being implemented prior to review of procurement documents, i.e. TDs, as outlined in QMP-04-03, "Technical Directives."
2. QMP-04-02 was not utilized for preparation, review, approval, or control of procurement documents when processing Interagency Agreement No. DE-A108-92NV11223, U.S. Bureau of Reclamation (USBR).

### 5.5.2 Deficiencies Corrected During the Audit

Deficiencies that are considered isolated in nature and require only remedial action can be corrected during the audit. The following two deficiencies were identified and corrected during the audit.

1. A review of procedure QMP-04-03, Revision 0, Interim Change Notice (ICN) 1, Section 3.2.6 and Section 5.0, Step 3, disclosed two anomalies: QMP-04-03 makes references to a cancelled Administrative Procedure (AP)-5.28Q, and designation of an incorrect department for origination of TD numbers. ICN 2 to QMP-04-03 was issued to correct the deficiencies.
2. QMP-04-03, Revision 0, ICN 1, Section 5.0, Step 13 requires that specified department personnel receive copies of all issued TDs. The YMQAD Director had not received copies of all TDs as required. The deficiency was corrected during the audit, and, it was determined that TD cover letters issued subsequent to April 1, 1993, "cc" the names of required personnel.

### **5.5.3 Follow-up of Previously Identified CARS**

1. CAR YM-93-001 was issued October 8, 1992 for the lack of evidence to show that technical evaluations had been performed for Field Change Requests (FCRs) and closed on January 19, 1993. The review of FCRs during this audit did not identify any similar deficiencies.
2. CAR YM-93-002 was issued on October 8, 1992 identifying that as-built drawings and specifications had been submitted to the Change Control Board (CCB), but were not shown in the technical baseline as being as-builts. Additionally, the CCB did not notify the Architect/Engineer (A/E) of acceptance or if the drawings and specifications were sent to the Local Records Center (LRC). The as-built drawings and specifications reviewed during this audit conformed to program requirements. This CAR was closed on January 21, 1993.
3. CAR YM-93-003 was issued on October 13, 1992 and addressed noncompliance with the requirement that "to be determined data" must have a scheduled resolution date and be tracked in a log associated with the document which contains the data to be verified. Quality Assurance Procedure QAP 3.5 requires revision to include to be verified/to be determined (TBV/TBD) data logs in the OCRWM requirements documents. AP-3.6Q requires revision to delete reference to TBV/TBD logs. The corrective action completion date has been extended to November 13, 1993. During the audit, the Repository Design Requirements Document and the Site Design Technical Requirement Document were verified as having TBD/TBV logs and scheduled resolution.
4. CAR YM-93-073 was issued on July 21, 1993 against drawings associated with Change Directive (CD) 93/405 that did not list all applicable quality affecting design inputs. (Drawing Design Input List was not used.) Additional drawings reviewed during this audit did not disclose similar anomalies. Resolution of this CAR is pending.
5. CAR YM-93-074 was issued on July 21, 1993 in regards of failure to explain the activities marked with an "X" on the Change Impact List for Change Request (CR) 93/405. This is required to identify each activity, documented category or function potentially affected by the proposed change. The

corrective action response is due August 19, 1993. This or similar deficiencies were not identified during this audit. This CAR is also still open pending a corrective action response and resolution.

6. CAR YM-92-07 was issued November 8, 1991 and closed June 9, 1992. It identified that YMPO did not have an approved quality procedure that adequately described the YMPO procurement process. Corrective action for this CAR resulted in the issuance of QMP-04-03 which enhanced and delineated the procurement process. In evaluation of implementation of QMP-04-03, it was found that TDs were not being issued prior to the start of work activities, and subsequently CAR YM-93-086 was issued.
7. CAR YM-93-11 was issued October 27, 1992 to identify that waste isolation impact analyses was not required to be performed for work accomplished within the conceptual controlled area of the repository under AP-5.21Q. The resulting corrective action commitments involved revising both AP-5.21Q and AP-5.32Q to improve the process for job and test planning activities. These procedure revisions have been tied up in dispute resolution and the CAR is still open. Direction by letter from YMPO has been giving corrective action guidance in the interim until these new procedure revisions are issued. No similar anomalies have been identified since the issuance of this CAR.

## 6.0 RECOMMENDATIONS

The following recommendations resulted from the audit and are presented for consideration by YMPO management.

1. Attachment 1, "Field Change Request Form," to AP-3.5Q, "Field Change Control Process," should include identification of the initiator to assure timely processing of the FCRs.
2. In regards to submittal of technical data to the technical data base per procedure AP-5.1Q, consideration should be given to notifying the submitting participant or organization as to the specific data that was put into the data base, or include all of the submitted data into the data base.

3. **AP-1.10Q currently requires by "Note" that participants document qualifications of technical reviewers in accordance with internal procedures prior to conducting a technical review of study plans. There is no requirement in AP-1.10Q for the participant to attest to the qualifications of its assigned reviewers or to furnish documented evidence of reviewer qualifications. Due to the ambiguity as to what qualifications are necessary, consideration should be given to adding guidance in AP-1.10Q, such as: "Qualifications for technical reviewers must include technical experience and education in the assigned portions of the study plan relative to the disciplines involved. A statement of minimum reviewer qualifications should be provided for each study plan."**

## **7.0 List of Attachments**

- Attachment 1: Personnel Contacted During the Audit**
- Attachment 2: Audit Details**
- Attachment 3: List of Objective Evidence Reviewed During the Audit**
- Attachment 4: Information Copy of CAR YM-93-086.**

ATTACHMENT 1

PERSONNEL CONTACTED DURING THE AUDIT

Name	Organization/Title	Preaudit Meeting	Contacted During Audit	Postaudit Meeting
Adkins, H.	T&MSS, Staff Advisor	X		
Abhold, H.	M&O, RIB Administrator		X	
Bates, S.	YMQAD, Auditor	X		X
Barton, R.	YMPO, PM Admin Staff	X	X	X
Blanchard, M.	YMPO, Deputy Project Mgr.	X	X	X
Beall, Ken	T&MSS, Asst Project Mgr.	X		
Beckett, J.	EG&G, Tech. Data Base Mgr.		X	
Boak, J.	YMPO, RSED Branch Chief	X		
Crawley, R.	YMPO, RIB	X	X	
Cruz, B.	M&O, CM	X	X	
DeLaGarza, J.	YMPO, EDD Systems Branch	X	X	X
Diaz, M.	YMQAD, Audit Lead	X		
Dixon, W.	YMPO, POCD DD	X		X
Dyer, R.	YMPO, RSED DD	X	X	X
Erza, E.	EG&G, Tech. Data Base		X	
Gertz, C.	YMPO, Project Mgr.			X
Gilkerson, K.	YMQAD, Acting ATL	X		X
Gil, April	YMPO, RSED/RIB	X	X	X
Greene, H.	YMQAD, DM (QATSS)			X
Gardiner, J.	YMPO, EDD	X	X	X
Hans, S.	T&MSS, QA	X		X
Harper, J.	T&MSS, QA Mgr.	X		X
Helms, R.	T&MSS, Sr. Advisor	X	X	X
Horton, D.	OCRWM, OQA Director			X
Houston, C.	M&O, FCCB		X	
Houston, G.	M&O, Document Control		X	
Hutchinson, B.	YMPO, EDD Systems Branch		X	
Iorii, V.	YMPO, PCB Chief		X	
Jiu, R.	M&O, CM Staff		X	X
Johnson, K.	T&MSS, QA			X
Johnson, S.	YMPO, Executive Asst.	X		X
Jones, P.	M&O, Systems Engineering	X		
Klimas, D.	YMQAD, Auditor	X		X
Lewis, R.	M&O, ATDT Administrator		X	
Martin, J.	YMQAD, Auditor	X		X
Maudlin, R.	YMQAD, ATL	X		X
Mikkelson, D.	M&O, FCCB Secretary		X	
McGrath, M.	M&O, CM		X	
Newbury, C.	YMPO, RSED Staff		X	
Quittmeyer, R.	M&O, Technical Assessments		X	
Replogle, J.	YMPO, EDD Chief	X		X
Rehkop, E.	YMPO, Admin. Officer	X		

**PERSONNEL CONTACTED DURING THE AUDIT**  
 (continued)

Name	Organization/Title	Preaudit Meeting	Contacted During Audit	Postaudit Meeting
Riding, R.	T&MSS, Systems/Compliance		X	
Roberts, P.	M&O, Records Mgmt.	X	X	X
Rogers, R.	M&O, Study Plans Coord.	X	X	
Royer, D.	YMPO, EDD Systems Branch	X		
Schrecongost, J.	YMPO, POCD, Contracts		X	X
Shannon, C.	M&O, LRC		X	
Simecka, W.	YMPO, EDD DD			X
Simmons, A.	YMPO, RSED Tech Analysis Br.		X	X
Smith, L.	DOE/NV AD Geologic Disp.	X		
Smith, M.	YMPO, EED Admin. Support	X		X
Spence, R.	YMQAD, Director		X	X
Thompson, M.	M&O, CM		X	
Turtuno, C.	YMPO, Training Records Sup.		X	
Valentine, M.	YMPO, Field Operations	X		
Verna, B.	YMPO, EDD Systems Branch	X	X	X
Warriner, D.	YMPO, Records Manager	X		X
Zimmerman, J.	M&O, PPD Manager	X	X	X
Zimmerman, S.	State of Nevada, QA Manager		X	X

Legend:

AD= Associate Director  
 ATDT= Automated Technical Data Tracking System  
 DD= Division Director  
 DM= Division Manager  
 EDD= Engineering and Development Division  
 FCCB= Field Change Control Board  
 M&O= Management and Operating Contractor  
 OQA= Office of Quality Assurance  
 PCB= Project Control Branch  
 POCD= Project and Operations Control Division  
 PPD= Plans and Procedures Department  
 PM= Project Manager  
 RIB= Regulatory Interactions Branch  
 RSED= Regulatory & Site Evaluation Division  
 T&MSS= Technical and Management Support Services

## **ATTACHMENT 2**

### **AUDIT DETAILS**

The following is a summary of the YMP QA Program activities covered during the audit. The list of objective evidence reviewed and specific procedures audited is provided in Attachment 3.

#### **3.0 DESIGN CONTROL**

The evaluation of QA Program Element 3.0 was based on interviews with YMPO personnel and examination of objective evidence to determine the degree of compliance with selected requirements from procedures QMP-03-09, AP-3.6Q, Branch Technical Procedure (BTP)-EDD-002, AP-3.5Q, AP-5.24Q, AP-5.19Q, and, AP-5.21Q. The specific requirements selected for evaluation of compliance and effectiveness are listed below.

##### **Requirements:**

##### **Project Change Control Board Process (QMP-03-09)**

- The type of change is identified; the CCB Secretary assigns a tracking number and enters the information into the Configuration Information System (CIS).
- The CCB Chairperson determines the desired method for Change Document Evaluation, Impact Analysis requirements and designated review organizations.
- The CCB Secretary prepares a Change Document Package (CDP) and provides a copy to each CCB member for evaluation.
- The Change Evaluation (CE) Summary form is prepared in accordance with instructions after consolidation of the CCB members Change Evaluation forms.
- The CDP is presented to the YMQAD Director and CCB Chairperson for approval.
- The CDP contains supporting documentation (reviews, analyses, studies), CE forms, CE Summary forms, and the CD signed by the YMQAD.
- The CD is dispositioned with change classification as appropriate and sent to affected participants.

- Program CCB issued change documents are processed in accordance with OCRWM Program Change Control procedures.
- The CCB Secretary coordinates condition resolution with responsible participants (for CDs approved with conditions).
- Approved Class 1 and 2 CRs are processed and distributed for change implementation.
- CCB controlled documents and modifications are submitted to Document Control Center (DCC) and the CIS is updated.
- Delegation of authority is on file for all required change actions.

#### **Configuration Management (AP-3.6Q)**

- Baseline documents identify issuing organization, document identifier, revision identifier, Configuration Item (CI) number as applicable and issue date.
- Technical baseline documents identify like and related requirements (functional, technical, design and product).
- TBD data is tracked in a TBD log contained in the document.
- Data that has not been (1) verified or (2) validated per NUREG 1298 or (3) dependent on software that has not been validated is: identified and tracked in the same manner as TBD data.
- Traceability is established between CI numbers and associated documents.
- Unique control numbers are assigned by the Configuration Management Organization (CMO) to each CR.
- The CMO assembles and displays tracking information about changes and approved CRs.
- YMPO manages change implementation by the Project Change Control Board CD.
- The CIS provides the ability to identify approved Technical Baseline Documentation and changes.
- The CMO provides a monthly report of the status of CRs to the appropriate DDs and Technical Project Officers (TPOs).

- The monthly CR status log contains all required information.

**Criteria for Document Reviews Performed by the Engineering and Development Division (BTP-EDD-002)**

- Acceptance reviews for design output documents contain appropriate YMPO signatures and initials.

**Field Change Control Process (AP-3.5Q)**

- Changes made to Job Package (JP) documents are under the control of the FCCB.
- FCR forms are completed as required indicating specific changes.
- FCR designator for each change is "bar" marked in the JP.
- Changes to the documentation are incorporated by updating the FCR History in the JP.
- Technical evaluations of the change is performed if the change is scientific, design or quality-affecting and documented in Section II of the FCR.
- Minor field changes are authenticated by the FCCB Secretary.
- The DD, TPO or designee signs Section II of the FCR, attaches supporting documentation and transmits originals to the FCCB Secretary.
- The FCCB Secretary assesses change classification, reviews FCR for completeness and assigns an FCR number to the change document.
- The following individuals perform evaluations:
  - Field QA representative evaluates quality-affecting changes;
  - The Yucca Mountain Site Characterization Project (YMP) Engineering, DDs and A/E evaluate field changes to design and design related activities;
  - YMP RSED DD and assigned Principal Investigator (PI) evaluate field changes that affects Scientific Investigations.

- The FCCB Secretary records FCR in tracking log and forwards to Document Records Center for distribution.

#### **Preparation and Submittal of As-Built Drawings and Specifications (AP-5.24Q)**

- As-builts indicating A/E approval are submitted to YMPO EDD for acceptance within 60 days.
- EDD coordinates acceptance of final as-builts, signs and dates as-builts decal and returns documents to the A/E.
- The CCB Secretary modifies the Project Technical Baseline by updating the CR Status Log and the CCB Register for all as-builts submitted.

#### **Interface Control (AP-5.19Q)**

The evaluation of implementation for this procedure was not performed as there have been no physical Interface Memorandums of Understanding (IMOU) initiated to date. Organizational IMOUs were audited in depth during audit YMP-92-24.

#### **Field Work Activation (AP-5.21Q)**

- Number is assigned and logged for JPs and a JP Coordinator is identified.
- JP outline is followed, a JP is completed, comments are resolved and approvals obtained from DD, PCB and Site Manager.
- Notice to proceed is generated by PCB and approved by YMP Manager.
- Completed packages are submitted to records in accordance with AP-1.18Q.

#### **Results:**

The evaluation of these procedures was based upon personnel interviews, review of the procedural requirements, and evaluation of objective evidence. This includes drawings, specifications, CR status log, the CCB register, design output documents, FCRs, JPs and technical evaluations. A recommendation was made relative to the implementation of AP-3.5Q during the audit: Attachment 1, "Field Change Request Form," to AP-3.5Q, "Field Change Control Process," should include identification of the initiator to assure timely processing of the FCRs.

Based on the above, QA Program Element 3.0 was determined to be satisfactory.

4.0 PROCUREMENT DOCUMENT CONTROL  
7.0 CONTROL OF PURCHASED ITEMS AND SERVICES

The evaluation of QA Program Elements 4.0 and 7.0 was based on interviews with YMPO personnel and examination of objective evidence to determine the degree of compliance with selected requirements from procedures AP 4.1Q, QMP-04-02, and QMP-04-03. While most of the procedures relating to element 7.0 are QA responsibilities outside the scope of this audit, there are YMPO responsibilities relating to supplier selection and acceptance of services that are described in these procedures. The specific requirements selected for evaluation of compliance and effectiveness are listed below.

Requirements:

**Procurement (AP-4.1Q)**

Based on this evaluation, the audit team determined that the YMPO has no current activities requiring implementation of this procedure.

**YMPO Procurement Actions (QMP-04-02)**

- Procurement Request Packages are processed for procuring contracts and include Memorandums of Understandings (MOUs), Interagency Agreements, and Management Agreements.
- The documents impose QA and technical requirements, schedules, statements of work and a Procurement Request Authorization form.
- Source evaluation is performed as required; supplier is put on Qualified Suppliers List.
- Procurement documentation is submitted to records.

**Technical Directives (QMP-04-03)**

- TDs are developed to establish or change, as appropriate, procurement quality requirements relating to quality-affecting work that is being or will be performed.
- TDs contain the following:
  - Identification number of the contractual document between U.S. Department of Energy (DOE) and the responsible supplier under which the work is being or will be performed.

- Appropriate Work Breakdown Structure (WBS) number for work addressed followed by "Y" indicator.
- Reference to revision and WBS number on the YMP Q-List or YMP Quality Activities List that includes the work addressed in the TD.
- Identification of the QA program that applies specific QA requirements and controls to the work that is being or will be performed or a schedule included for completing this action; verification that the action was completed prior to performance of activities affecting quality.
- A statement of specific scope of work to be performed by the responsible supplier.
- Technical requirements (hold points and acceptance criteria) for services rendered.
- QA program requirements.
- Right of access by YMPO or YMPO designated/authorized parties for verification activities.
- Identification of YMPO imposed supplier documentation and QA records requirements.

**Results:**

The evaluation of these procedures included interviews and an examination of objective evidence relating to these processes. Although all TDs reviewed contained the required information, TDs are not being reviewed, processed, and issued to participants prior to initiation of work activities. Work activities have often started or been completed prior to the issuance of the TD. QA Program Element 4.0 of the QAPD requires the processing of procurement documents to be performed before work activities are authorized to commence. CAR YM-93-086 was issued for this deficiency.

A review of QMP-04-03 for document adequacy and program implementation disclosed two additional problems: (1) A review of TD cover letter carbon copy lists and a subsequent search for objective evidence disclosed that some TDs had not been transmitted to the YMQAD Director as required by the procedure. This deficiency was remedied prior to the close of the audit and it was ascertained that controls are now in place to preclude the omission in the future and (2) A review of Procedure QMP-04-03 disclosed references to a cancelled procedure, AP-5.28Q, and designation

of an incorrect department for origination of TD numbers. ICN 2 to QMP-04-03 was issued prior to the close of the audit to correct these deficiencies and details are documented in Section 5.5.2, Item 1 of this report.

Based on the above, QA Program Elements 4.0 and 7.0 were determined to be unsatisfactory.

#### **14.0 INSPECTION, TEST, AND OPERATING STATUS**

This QA program element was evaluated in conjunction with QA Program Element 15.0, "Control of Nonconformances." No activities associated with YMPO responsibilities could be determined in regard to this QA program element.

#### **15.0 CONTROL OF NONCONFORMING ITEMS**

The evaluation of QA Program Element 15.0 was based on interviews with YMPO personnel and examination of objective evidence to determine the degree of compliance with selected requirements from procedure AP-5.27Q. The specific requirements selected for evaluation of compliance and effectiveness are listed below.

##### **Requirements:**

##### **Control of Nonconforming Items (AP-5.27Q)**

- Item deficiencies that are detected by YMPO personnel at the Yucca Mountain Site are reported.
- A list of qualified dispositioners is maintained.
- Deficient items are reported on a Nonconformance Report (NCR) and routed to the specified organization for validation and disposition.
- NCR logs are maintained and Hold Tags are applied as required.
- Repair and use-as-is dispositions require FCRs to be generated unless impact to cost and schedule is insignificant.
- Dispositions meet established criteria (Paragraph 6.1, items a-k); e.g., use-as-is dispositions are justified.

Results:

The evaluation of this procedure was based upon interviews, review of the procedural requirements, and examination of NCRs generated by YMPO personnel in accordance with this procedure.

Based on the above, implementation of QA Program Element 15.0 is satisfactory.

**11.0 TEST CONTROL**

**20.0 SCIENTIFIC INVESTIGATION (Delineated under Appendix A, QAPD)**

The evaluation of QA Program Elements 11.0 and 20.0 was based on interviews with YMPO personnel and examination of objective evidence to determine the degree of compliance with selected requirements from procedures BTP-RSE-001, AP-1.10Q, AP-5.32Q, QMP-02-08, AP-5.1Q, AP-5.2Q, and AP-5.3Q. The specific requirements selected for evaluation of compliance and effectiveness are listed below.

Requirements:

**Evaluation of Ongoing Activities (BTP-RSE-001)**

- Selection and establishing of evaluation criteria and instructions for activity to be evaluated.
- Technically qualified evaluators are selected who are not responsible for the work.
- Evaluation results were received in a timely manner.
- Evaluation package was reviewed and accepted.

**Preparation, Review, Approval, and Revision of Site Characterization Plan Study Plans (AP-1.10Q)**

- Assigned PI and reviewers are qualified.
- Mandatory comments are documented on Study Plan Review Checklists and Study Plan Comment Resolution Forms and resolved by PI.
- Study plans comply with procedural format.

**Test Planning and Implementation Requirements (AP-5.32Q)**

- Tests to be conducted are consistent with planning priorities and are developed based on Test Planning Package (TPP) Requests.
- A Project Engineer (PE) is assigned for each test and logs are maintained.
- PE issues a JP or requests planning information from project participants.
- TPP meets outline requirements and incorporates test scope, controls and instructions which are approved by RSED, applicable DDs and YMQAD.
- Readiness Reviews are conducted as necessary.
- Design requirement development is coordinated with TPP as well as environmental requirements impacted by testing activities.
- TPP authorized for release to project participants and/or field activities by RSED.
- TPP changes initiated by RSED or Project Participants are coordinated by PE and submitted to applicable DD for evaluation. Changes are annotated in accordance with procedural requirements.
- TPPs are submitted to Records per AP-1.18Q.

#### **Technical Assessment (QMP-02-08)**

- A Technical Assessment (TA) is planned, scoped and assigned to a participant designating a TA Chairperson.
- Minimum technical requirements are established for TA team members and a qualified team is provided by the Participant Manager
- Meetings and reviews are conducted and documented. Documentation is prepared and maintained by a TA Secretary.
- Comments are consolidated and resolved; the evaluation along with commitments or recommendations are identified in the Review Record which is submitted to the initiating DD.

#### **Control and Transfer of Technical Data on the Yucca Mountain Site Characterization Project (AP-5.1Q)**

- Submitted technical data is compiled in data package segments and accompanied by Technical Data Information Forms (TDIFs).

- Requests or notifications of a nonparticipant request for technical data is transmitted using a TDIF and entered into the ATDT.
- Requests for approval of schedules for technical data submitted is approved by the YMP Technical Data Manager orally or in writing.
- Data Record Packages and associated TDIFs submitted to the Central Records Facility are reviewed, and assigned an accession number which is cross referenced in the ATDT.
- The Technical Data Catalogue is prepared and issued quarterly by the ATDT manager.
- A data tracking number format is used to identify the activity and controlled by the participant.

**Technical Information Flow To and From the Yucca Mountain Site  
Characterization Project Technical Database (AP-5.2Q)**

- The YMP TDB Administrator reviews the data transmittal package for inclusion into the TDB and updates the ATDT.

**Information Flow Into the Project Reference Information Base (AP-5.3Q)**

There has not been information flow into the RIB since May 29, 1992. The RIB is in the process of being restructured and reorganized; therefore, the implementation of this procedure was not evaluated.

**Results:**

The evaluation of these procedures was based upon personnel interviews, review of the procedural requirements, and reviews of objective evidence. This included reviews of documentation, study plans, test planning documents, TAs, technical data, ATDT, and data transmittal packages.

Procedural Revisions 5 and 6 of AP-1.10Q, used to determine acceptable study plan formats based on the dates that study plans, were received by the YMPO for review. (Only Study Plans received after June 30, 1993 were subject to Revision 6 of AP-1.10Q.) A recommendation was also made with regards to this procedure. There is no requirement for the participant to attest to the qualifications of its assigned reviewers. Due to the ambiguity as to what qualifications are necessary, consideration should be given to adding guidance for qualification requirements in this procedure. (Reference Section 6.0 of this report.)

**An additional recommendation was made with respect to the implementation of procedure AP-5.1Q. In regards to submittal of technical data to the technical data base, consideration should be given to notifying the submitting participant or organization as to the specific data that was put into the data base, or include all of the submitted data into the data base. (Reference to Section 6.0 of this report.)**

**Based on the above, implementation of QA Program Elements 11.0 and 20.0 are satisfactory.**

**ATTACHMENT 3**

**List of Objective Evidence Reviewed During the Audit**

**QA PROGRAM ELEMENT 3, DESIGN CONTROL**

**Procedures Evaluated During Audit:**

Compliance with the following procedures was reviewed:

QMP-03-09, Revision 3, ICN 3 "Project Change Control Board Process"

AP-3.6Q, Revision 0, ICN 3, "Configuration Management"

BTP-EDD-002, Revision 1, "Criteria for Document Reviews performed by the Engineering and Development Division"

AP-3.5Q, Revision 2, "Field Change Control Process"

AP-5.24Q, Revision 1, ICN 2, "Preparation and Submittal of As-Built Drawings and Specifications"

AP-5.19 Q, Revision 2, ICN 2, "Interface Control"

AP-5.21Q, Revision 3, ICN 2, "Field Work Activation"

**Objective Evidence Examined:**

**QMP-03-09**

Document Change Proposals DCPs 062, 063, 067

CRs 93/433, 93/433M1, 93/079, 93/079M1, 93/329, 93/432, 92/100, 91/058, 91/103

CR Status Log dated 8/9/93

CDs 92/100, 92/006

CCB Register dated 8/11/93

Signature Authority for FCCB Secretaries, dated 11/12/92

Controlled Document Issuance Authority (YMP/CM0021)

Signature Authority for CCB, dated 1/7/92

**Specifications:**

6S1-FA-PD01A, Revision 2

6S1-SRD-FAPD01A, Revision 2

YMP-025-1-SP01, Revision 4

Drawing Raytheon Services Nevada (RSN) YMP-025-1-CIVLPR125, Revision 0

**AP-3.6Q**

**Specifications:**

6S1-FA-PD01A, Revision 2  
6S1-SRD-FAPD01A, Revision 2  
YMP-025-1-SP01, Revision 4

**Drawings:**

RSN YMP-025-1-CIVL-PR-125, Revision 0  
Exploratory Studies Facility (ESF) YMP/CM0019, Revision 7/2/92  
YMP-025-1-STRU-ST108, Revision 0

TBD Log  
CI Register Report  
CR Status Log dated 8/11/93  
CRs 93/432, 93/329  
CCB Register dated 8/11/93

**BTP-EDD-002**

**Drawings:**

RSN YMP-025-1-CIVL-PR-125, Revision 0  
YMP-025-1-STRU-ST108, Revision 0  
YMP-025-1-STRU-ST106, Revision 0  
YMP-025-1-STRU-ST107, Revision 0  
RSN YMP-025-1-CIVLPL-137, Revision 0

Specification 6S1-BSF-FA-SG01A, Revision 2

**AP-3.5Q**

FCRs 93/301, 93/349, 93/398, 93/071, 93/072, 93/077, 93/078, 93/081, 93/083,  
93/435, 93/415, 93/230, 93/232  
Technical Evaluations for FCRs listed above  
JP 92-20 ESF North Portal Pad, dated 10/29/92

**AP-5.24Q**

As-built drawings: JS-025-CST-T1.1, Revision 1 and HN-025-MVT-T1.1, Revision 1  
CR Status Log dated 8/11/93  
CCB Register dated 8/9/93

**AP-5.19Q**

May, 1993 IMOU Status Log Report

**AP-5.21Q**

Completed JPs 92-3, 92-17, and 92-21  
Record Packages NNA.920810.0001, NNA.920810.0015, DRCs -009, -004, and -020  
Notice to Proceed Letter (PCB:JM-3540)  
TPP/JP Consolidated Status Report (log), dated 8/5/93

**QA PROGRAM ELEMENTS 4, PROCUREMENT DOCUMENT CONTROL, AND 7,  
CONTROL OF PURCHASED ITEMS AND SERVICES**

Procedures Evaluated During Audit:

Compliance with the following procedures was reviewed:

AP-4.1Q, Revision 0, ICN 3, "Procurement"  
QMP-04-02, Revision 0, "Yucca Mountain Project Office Procurement Actions"  
QMP-04-03, Revision 0, ICN 1, "Technical Directives"

Objective Evidence Examined:

**AP-4.1Q**

No activity since the last audit to evaluate per these requirements.

**QMP-04-02**

Interagency Agreement DE-A108-92NV11223 - U.S. Bureau of Reclamation  
Interagency Agreement DE-A108-92NV10874 - U.S. Geological Survey (USGS),  
Water Resource Division  
Interagency Agreement DE-A108-92NV10874 - Modification A001 - USGS, Water  
Resource Division  
Interagency Agreement DE-A108-92NV10963 - Environmental Protection  
Agency (EPA)  
Interagency Agreement DE-A108-92NV10963, Modification A001 - EPA

**QMP-04-03**

Hand out for pre-audit conference YMP-93-15 containing status of TDs, dated 8/9/93  
YMPO TD Letter Log, dated 8/11/93  
YMPO TD Identification Number Log, dated 8/11/93  
Sandia National Laboratories (SNL) and the USGS Transition Plan for  
WBS 1.2.3.2.6.2, Soil and Rock Properties of Potential Locations of  
Surface Facilities, dated 3/25/93; and cover letter dated 4/5/93, Shephard  
to Gertz, number LES:6302:fs  
Document Transmittal for Approval to initiate ICN 2 to QMP-04-03, Revision 0,  
ICN 1, signature approval date 8/13/93, effective date 8/26/93

TDs reviewed for incorporation of procedural requirements:

**TD Number and Approval Date**

LANL-93-008, R0, 3/5/93	USGS-93-012, R0, 7/30/93
USGS-93-008, R0, 7/30/93	TRW-93-013, R0, 3/30/93
SNL-93-013, R0, 7/27/93	PNL-93-002, R0, 3/29/93
TRW-93-003, R0, 3/25/93	REEC0-93-008, R0, 7/27/93
LBL-93-005, R0, 3/25/93	LBL-92-005, R0, 8/27/92
EG&G-93-005, R0, 7/28/93	LLNL-93-015, R0, 7/20/93
PNL-92-006, R0, 9/17/92	PNL-92-006, R1, 12/22/92
PNL-92-007, R0, 9/17/92	

Pending TDs reviewed for compliance with issuance requirements:

**TD Number**

SNL-93-009	TRW-93-014
LLNL-93-011	LLNL-93-012
USGS-93-010	

Letters:

<u>Letter ID</u>	<u>Date</u>	<u>TD Referenced</u>
RSED:DRW-2893	3/8/93	LANL-93-008, R0
RSED:AMS-3359	8/2/93	USGS-93-012, R0
RSED:SBJ-2941	3/31/93	TRW-93-013, R0
RSED:AMS-3363	7/28/93	SNL-93-013, R0
RSED:DRW-2874	3/30/93	PNL-93-002, R0
PCB:VFI-2950	3/26/93	TRW-93-003, R0
EDD:DCR-3081	7/28/93	REECO-93-008, R0

<u>Letter ID</u>	<u>Date</u>	<u>TD Referenced</u>
RSED:DRW-2885	3/30/93	LBL-93-005, R0
RSED:AMS-2966	9/3/92	LBL-92-005,R0/LBL-92-008, R0
RSED:AMS-3360	7/29/93	EG&G-93-005, R0
RSED:AMS-3364	7/21/93	LLNL-93-015, R0

### **QA PROGRAM ELEMENT 15, "CONTROL OF NONCONFORMING ITEMS"**

#### Procedures Evaluated During Audit:

Compliance with the following procedure was reviewed:

AP-5.27Q, Revision 2, "Control of Nonconforming Items"

#### Objective Evidence Examined:

NCR YM-93-001

NCR YM 93-002

Letter RSED:JTS-3401 from J. Russell Dyer to W. Arch Girdley  
identifying approved dispositioners

Letter dated 5/7/93 from T. H. Chaney QA Manager, USGS to J. Russell Dyer, RSED  
Division Director, DOE regarding invalidation of NCR YM-93-002.

NCR Log maintained by YMQAD.

### **QA PROGRAM ELEMENT 11, "TEST CONTROL" AND QA PROGRAM ELEMENT 20, "SCIENTIFIC INVESTIGATION"**

#### Procedures Evaluated During Audit:

Compliance with the following procedures was reviewed:

BTP-RSE-001, Revision 0, "Evaluation of Ongoing Activities"

AP-1.10Q, Revisions 5 and 6, "Preparation, Review, Approval, and Revision of Site  
Characterization Plan Study Plans"

AP-5.32Q, Revision 3, "Test Planning and Implementation Requirements"

QMP-02-08, Revision 1, "Technical Assessment"

AP-5.1Q, Revision 3, "Control and Transfer of Technical Data on the Yucca  
Mountain Site Characterization Project"

AP-5.2Q, Revision 4, "Technical Information Flow To and From the Yucca Mountain  
Site Characterization Project Technical Database"

AP-5.3Q Revision 1, "Information Flow Into the Project Reference Information Base"

Objective Evidence Examined:

**BTP-RSE-001**

**SNL Report SAND 92-2448**

**Letter - J. Russel Dyer, RSED Division Director to Dwight Hoxie, USGS Hydrologist dated 5/7/93 directing an evaluation of SAND92-2448.**

**Letter - Dwight Hoxie, USGS Hydrologist to Claudia Newbury, RSED dated 5/26/93 providing results of the evaluation**

**AP-1.10Q**

**Study Plan 8.3.1.2.2.7, Revision 1, "Hydrochemical Characterization of the Unsaturated Zone"**

**Letter - Dwight E. Shelor, Associate Director, OCRWM, to Joseph J. Holonich, Director, Repository Licensing and Quality Assurance, U.S. Nuclear Regulatory Commission, dated 6/1/93 identifying study plans to be written to new format (AP-1.10Q, Revision 6) and study plans to be written to old format (Revision 5)**

**Study Plan Review Checklists for SP 8.3.1.2.2.7 revision 1**

**Study Plan Comment Resolution Forms for SP 8.3.1.2.2.7 revision 1**

**AP-5.32Q**

**YMPO Annual Plan for Fiscal Year 1993 (October 1992-Present)**

**TPP/JP Consolidated Status Report (TPP/JP log), dated 8/5/93**

**TPPs 92-1 (Revisions 1-6), 92-15, and 92-16**

**Readiness Review for TPP 92-2 dated 1/14/92**

**Records Transmittals for TPP 92-16 dated 4/16/93 submitted by H. Lohn**

**Records Packages NNA920810.0001 and DRC-016**

**QMP-02-08**

**Memo to file from C. T. Statton - Reference technical disciplines, team and qualifications for TA of SAND88-1203, dated 2/6/93**

**SNL document SAND88-1203, "Exploratory Shaft Seismic Design Basis Working Group"**

**Letter - J. Russell Dyer, RSED Division Director, to Participants (RSED:JTS-1288 dated 6/3/92) requesting TA**

**TA Notice dated 6/28/92 for "Seismic Design Basis for the Exploratory Studies Facility" with Attachments (Purpose, Scope, Schedule)**

**Letter - M&O No. LV.SC.RCQ.3/93-068 Reference TA team meeting**

**"Draft" Review Record report of TA evaluation of SAND88-1203 by TA team, dated 7/23/93**

**AP-5.1Q**

Data package segments associated with TDIFs:

LA 00000000014.02	LA 00000000031.001
GS 920408312314.009	GS 921208315122.001
TM 00012561BB.003	TM 00012561BB.004
LA 00000000045.001	LA 00000000046.001

TDIF GS 930208312293.001 and records package NNA.930226.0080

TDIF GS 930108312293.001 and records package NNA.930323.0211

Technical Data Catalog dated 12/31/92 and Quarterly Supplements 3/31/92 and 6/30/93

Work request for data transfer to the State of Nevada, dated 8/9/93

Request for approval of data submittal schedule for USGS dated 7/14/93

Acceptance of schedule from YMP Technical Data Manager dated 8/3/93

**AP-5.2Q**

ATDT

Data Transmittal Packages for TDIFs:

GS 910508312.005	GS 910508312.006
TM 0001256TIBB.003	TM 0001256TIBB.004
LA 00000000046.001	LA 00000000045.001

**AP-5.3Q**

No objective evidence reviewed due to lack of implementation.

**ATTACHMENT 4**

**INFORMATION COPIES**

**OF**

**CORRECTIVE ACTION REQUESTS**

<b>OFFICE OF CIVILIAN          RADIOACTIVE WASTE MANAGEMENT          U.S. DEPARTMENT OF ENERGY          WASHINGTON, D.C.</b>		8 CAR NO. <u>YM-93-086</u> DATE: <u>8/16/93</u> SHEET: <u>1</u> OF <u>2</u> QA
<b>CORRECTIVE ACTION REQUEST</b>		
1 Controlling Document QARD (DOE/RW-0214, Revision 4, ICN 4.1)		2 Related Report No. YMP-93-15
3 Responsible Organization YMPO	4 Discussed With R. Barton/M. Blanchard	
5 Requirement: <p>1) QARD (DOE/RW-0214, Revision 4, ICN 4.1, Section 4.0, Paragraph 4.0, states in part: "The provisions of NQA-1 Basic Requirement 4 and Supplement 4S-1 shall apply...."</p> <p>NQA-1 Criterion 4, Supplement 4S-1, Section 4.0, Paragraph 2 states in part: "Procurement documents issued at all tiers shall include provisions for the following as deemed necessary by the Purchaser...Scope of Work, Technical Requirements, Quality Assurance Program Requirements, Rights of Access, Documentation Requirements and Nonconformance Reporting."</p> <p>Paragraph 3, "Procurement Document Review" states in part: "A review of procurement documents and changes thereto shall be made to assure that documents transmitted to the prospective Supplier(s) include appropriate provisions to assure that items or services will meet the specified"</p>		
6 Adverse Condition: <p>1) Contrary to requirements listed in 1 above, reviews to assure that procurement documents contain the appropriate provisions noted above and as outlined in QMP-04-03, "Technical Directives" are not being performed prior to issuance of work authorization.</p> <p>In discussions with cognizant YMPO personnel, it was ascertained that work activities and the delineation of the work scope is given to participants through AP-5.36. As such, work is being implemented prior to review of procurement documents (i.e. TDs) to assure that the scope, technical requirements, and quality requirements are appropriately incorporated.</p> <p>Examples include pending TDs: SNL-93-009, TRW-93-014, LANL-93-011, LLNL-93-012, and USGS-93-010 for which work is ongoing.</p> <p>2) Contrary to the requirements listed in 2 above, YMPO did not utilize QMP-04-02 for the processing of interagency agreement (a procurement</p>		
9 Does a significant condition adverse to quality exist? Yes <u>X</u> No ___ If Yes, Circle One: A B <u>C</u>	10 Does a stop work condition exist? Yes ___ No <u>X</u> ; If Yes - Attach copy of SWO If Yes, Circle One: A B C D	11 Response Due Date: 20 Working Days from Issuance
12 Required Actions: <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Extent of Deficiency <input checked="" type="checkbox"/> Preclude Recurrence <input checked="" type="checkbox"/> Root Cause Determination		
13 Recommended Actions: 1) Correct deficiencies noted in Block 6. 2) Investigate to determine the extent of the deficiencies. 3) Determine impact to on-going work activities.		
7 Initiator John S. Martin <i>JSM</i> Date <u>8/16/93</u>	14 Issuance Approved by: QADD <i>[Signature]</i> Date <u>8/23/93</u>	
15 Response Accepted QAR _____ Date _____	16 Response Accepted QADD _____ Date _____	
17 Amended Response Accepted QAR _____ Date _____	18 Amended Response Accepted QADD _____ Date _____	
19 Corrective Actions Verified QAR _____ Date _____	20 Closure Approved by: QADD _____ Date _____	

OFFICE OF CIVILIAN  
RADIOACTIVE WASTE MANAGEMENT  
U.S. DEPARTMENT OF ENERGY  
WASHINGTON, D.C.

8 CAR NO.: YM-93-086  
DATE: 8/16/93  
SHEET: 2 OF 2  
QA

**CORRECTIVE ACTION REQUEST (Continuation Page)**

**5 Requirements (continued)**

requirements. Reviews shall be performed and documented prior to contract award."

In addition, Paragraph 4 states: "Procurement document changes shall be subject to the same controls as the ones utilized in preparation of the original documents."

- 2) QMP-04-02, Revision 0, ICM 1, Paragraph 1.1 states in part: "This procedure establishes the methods and responsibilities for preparing, reviewing, approving and controlling procurement documents...."

Paragraph 2.0 states in part: "Project Office procurements are limited to procuring services.... Procurements are conducted for the following types of activities:... Interagency agreement...."

**6 Adverse Condition (continued)**

document) No. EE-A108-92NV11223, U.S. Bureau of Reclamation.

**13 Recommended Action(s) (continued)**

- 4) Correct the deficiencies identified during the investigation.  
5) Determine the root cause of the condition and take measures to preclude recurrence.