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

AUDIT REPORT

OF

REYNOLDS ELECTRICAL AND ENGINEERING COMPANY, INC.

LAS VEGAS AND MERCURY, NEVADA

**AUDIT NUMBER YMP-93-12
JUNE 21 THROUGH 25, 1993**

Prepared by: Amelia L. Arceo Date: 7/19/93
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Approved by: Donald G. Horton For Date: 8/3/93
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1.0 EXECUTIVE SUMMARY

As a result of Quality Assurance (QA) Audit YMP-93-12, the audit team determined that overall, the Reynolds Electrical and Engineering Company, Inc. (REECo) is satisfactorily implementing an effective QA program in accordance with the REECo Quality Assurance Program Plan (QAPP) document and implementing procedures for QA Program Elements 7.0, 8.0, 10.0, 12.0, 14.0, and 15.0. However, implementation of QA Program Element 4.0 is considered unsatisfactory, mostly because there was a lack of understanding of commercial-grade item procurements, which created a number of deficiencies.

The audit team identified 11 deficiencies which resulted in the issuance of seven Corrective Action Requests (CAR) to REECo (CARs YM-93-055 through YM-93-061), and four CARs to the Civilian Radioactive Waste and Management System (CRWMS) Management and Operating (M&O) Contractor (CARs YM-93-062 through YM-93-065). CAR-YM-93-055 concerns supplier evaluations not performed prior to procurement of commercial grade materials. CAR-YM-93-056 concerns bolt plates not painted to indicate status. CAR-YM-93-057 concerns instruments used to measure temperatures not identified on the Shotcrete Placement Logs. CAR-YM-93-058 concerns survey activities not performed in accordance with QA procedures. CAR-YM-93-059 concerns test results not traceable to the material tested. CAR-YM-93-060 concerns inaccurate sample identification and batch numbers, missing drawing numbers, and corrections not lined out, initialed and dated on Shotcrete Placement Logs. CAR-YM-93-061 concerns failure of Quality Control (QC) to notify construction to take additional samples when compressive strength tests failed. CAR-YM-93-062 concerns specification sections for Contractor QA/QC, Rock Bolts and Accessories, Welded Steel Lattice Girder Support, and Shotcrete not addressing commercial grade quality affecting procurements, receiving inspection, testing and traceability. CAR-YM-93-063 concerns Nonconformance Reports (NCRs) dispositioned "use-as-is" and closed by the M&O without technical justification. CAR-YM-93-064 concerns the shotcrete specification providing disposition when compressive strength test results do not meet requirements. CAR-YM-93-065 concerns test results with missing information accepted by the M&O.

Additionally, two more deficiencies were identified and corrected during the audit. These conditions are listed in Section 5.5.2 of this report. Six recommendations resulting from the audit are detailed in Section 6.0 of this report.

2.0 SCOPE

This audit evaluated compliance to and the effectiveness of the REECo QA Program as described in the REECo QAPP and implementing procedures.

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

QA PROGRAM ELEMENTS/REQUIREMENTS

- 4.0 Procurement Document Control
- 7.0 Control of Purchased Items and Services
- 8.0 Identification and Control of Items, Samples, and Data
- 10.0 Inspection
- 12.0 Control of Measuring and Test Equipment
- 14.0 Inspection, Test and Operating Status
- 15.0 Control of Nonconforming Item

The following QA program elements/requirements were not reviewed during the audit because REECO has no responsibilities for which these QA program elements apply.

- 3.0 Scientific Investigation Control and Design Control
- 11.0 Test Control

Appendix H, Requirements for Computer Software Used to Support a High-Level Nuclear Waste Repository License Application

TECHNICAL AREAS

The scope of this 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>
Amelia I. Arceo, Audit Team Leader (ATL) Yucca Mountain Quality Assurance Division (YMQAD)	15.0
Donald J. Harris, Auditor, YMQAD	4.0, 7.0
Gerard Heaney, Auditor, YMQAD	10.0, 14.0
Fred H. Lofftus, Auditor, YMQAD	12.0, 14.0
Robert H. Klemens, Auditor, YMQAD	8.0, 14.0

William L. Belke, Observer,
U.S. Nuclear Regulatory Commission (NRC)
Robert D. Brient, Observer, NRC
Susan W. Zimmerman, Observer, State of Nevada
Englebrecht von Tiesenhausen, Observer,
Clark County, Nevada

4.0 AUDIT MEETINGS AND PERSONNEL CONTACTED

The preaudit meeting was held at the REEC Co office at the Bank of America Center (BAC) in Las Vegas, Nevada on June 21, 1993. A daily debriefing and coordination meeting was held with REEC Co management and staff, and daily audit team/observer meetings were held to discuss issues and potential deficiencies. The audit was concluded with a postaudit meeting held at the REEC Co office at the BAC in Las Vegas, Nevada on June 25, 1993. Personnel contacted during the audit are listed in Attachment 1 to this report. The list includes an indication of those who attended the pre- and postaudit meetings.

5.0 SUMMARY OF AUDIT RESULTS

5.1 Program Effectiveness

The audit team concluded that, in general, the REEC Co QA Program was being implemented satisfactorily for the seven QA program elements audited, except for QA Program Element 4.0 which was determined to be unsatisfactory. In addition, six recommendations were presented to the auditee for consideration.

5.2 Stop Work or Immediate Corrective Actions or Additional Actions

There were no Stop Work Orders nor related documents issued.

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 the audit.

5.5 Summary of Deficiencies

The audit team identified 11 deficiencies during the audit for which CARs have been issued. Two additional deficiencies were satisfactorily resolved and corrected prior to the postaudit meeting.

A synopsis of the deficiencies documented as CARs and those corrected during the audit are detailed below. Information copies of the CARs are included in Attachment 4.

5.5.1 Corrective Action Requests

As a result of the audit, the following CARs were issued:

CAR YM-93-055

Supplier evaluations were not performed to qualify the supplier prior to procurement of commercial-grade materials (quality-affecting) and testing not performed on the commercial-grade materials, to verify the validity of Certified Material Test Reports (CMTRs), nor were the CMTRs reviewed for acceptability by REEC Co.

CAR YM-93-056

Bolt plates were not painted to indicate status and QC failed to verify that the status indicators were applied.

CAR YM-93-057

Measuring and Test Equipment (M&TE) used to measure temperatures of shotcrete during placement, were not identified on the Shotcrete Placement Logs.

CAR YM-93-058

Survey activities (quality-affecting) were not performed in accordance with procedures that are part of the REEC Co Yucca Mountain QA Program.

CAR YM-93-059

Documentation of Fibercrete samples tested at seven days, was not traceable to the material tested.

CAR-YM-93-060

Shotcrete Placement Logs have inaccurate sample identification and batch numbers, missing drawing numbers, and corrections were not lined out, initialed and dated.

CAR-YM-93-061

Field QC did not notify construction to take additional samples when two 28-day compressive strength tests failed.

The following deficiencies were found during the audit that require corrective action by the M&O Contractor:

CAR-YM-93-062

Specification sections for Contractor QC/QA, Rock Bolts and Accessories, Welded Steel Lattice Girder Support, and Shotcrete did not properly address commercial-grade quality-affecting procurements, receiving inspection, testing and traceability.

CAR-YM-93-063

NCRs dispositioned "use-as-is" and closed by the M&O without technical justification.

CAR-YM-93-064

Specifications on shotcrete provide disposition when compressive strength test results do not meet requirements.

CAR-YM-93-065

Test results for the proposed mix design for Fibercrete and mix design for grout submitted by REEC Co, were accepted by the M&O, although the test results were not traceable to indicate that the material tested was Fibercrete and that the grout mix has Lithium Bromide.

5.5.2 Deficiencies Corrected During the Audit

Deficiencies which are considered isolated in nature and only requiring remedial action can be corrected during the audit. The following deficiencies were identified and corrected during the audit:

1. Management Control (MC) Procedure MC-09.2, Revision 1, "Training, Qualification and Certification of Inspection and Test Personnel," Paragraph 6.5.1 states, "The qualification of inspection personnel shall be certified in writing by the Project Quality Assurance Manager (PQAM) or his designee. The certification shall include identification of the person being certified, which includes the employee number." Review of certification files indicated that the employee number was not included. The certification files were corrected during the audit.
2. Procedure MC-11.2, Revision 0, "Nonconformance Control," Paragraph 6.2.9 states, "After the disposition has been implemented, the PE shall verify...and sign the 'PE work complete' block." The "PE Verification of Work Complete" block of NCR-93-007 was not signed. This block was corrected and documentation resubmitted to Records Management prior to the postaudit meeting. This was an isolated case.

5.5.3 Follow-up of Previously Identified CARs

Corrective actions to CAR YM-93-033, which was identified during the previous audit (YMP-93-06) regarding calibration performed in accordance with the manufacturer's instructions rather than the REEC Co calibration laboratory procedures, were satisfactorily verified during the audit. REEC Co calibration procedures were revised to correct the deficiency. Implementation of revised calibration procedures was satisfactorily verified during the audit. Closure of CAR YM-93-033 was recommended to the YMQAD Representative and it was subsequently closed.

6.0 RECOMMENDATIONS

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

1. Rock Bolt Activities - Consideration should be given to review current documentation activities with the Architect/Engineer (A/E). Currently, the A/E is required to sign-off hold points for bolt location, drilling approval, and installation approval. These hold points appear to be unnecessary since REEC Co Construction and QC also have these attributes as hold points.

2. MC-07.0, Revision 1, "Work Control," Paragraph 6.8.6 states in part that record packages are transmitted to the Document Records Center for microfilming as required. Recommendation is made to change the word "microfilming" to "processing."
3. Definitions in MC-09.0, Revision 2, "Inspection Program," MC-09.1, Revision 2, "Inspection Planning and Performance," and MC-09.2, Revision 1, "Training, Qualification and Certification of Inspection and Test Personnel," do not match. Recommendation is made to revise definitions to match, as appropriate.
4. MC-09.1, Revision 2, "Inspection Planning and Performance," Paragraph 1.2 states in part that record maintenance and submittal is done in accordance with Reference 3.6 (titled MC-09.0, "Inspection Program"). MC-09.0 does not discuss record maintenance and submittal. Recommendation is made to revise the paragraph to provide the correct reference.
5. MC-09.1, Revision 2, "Inspection Planning and Performance," Paragraph 6.3.8 states in part that the Inspection Checklist (IC) Control Log includes the identification of the requirements documents upon which the IC was based. Recommendation is provided to revise this paragraph, since the Control Log does not identify requirements documents; requirements documents are contained on the ICs themselves.
6. Technical Control (TC) Procedure TC-581-SP-0007, Revision 0, "Starter Tunnel Shotcrete" does not indicate that the Shotcrete Placement Log is a QA record generated as a result of implementation of the procedure. It is recommended that the procedure be revised to include this log as a QA record in Paragraph 7.1 of the procedure as the log is used to document the placement of quality-affecting shotcrete. The log also documents hold and witness point sign-offs by QC and construction.

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 Copies of Corrective Action Requests

ATTACHMENT 1

Personnel Contacted During the Audit

<u>Name</u>	<u>Organization/Title</u>	<u>Preaudit Meeting</u>	<u>Contacted During Audit</u>	<u>Postaudit Meeting</u>
Arceo, A.*	YMQAD/ATL	X		X
Arnold, J.	REECo/Sr. Engineer	X	X	
Belke, W.*	NRC/Sr. QA Engineer/Observer	X		X
Benton, H.*	M&O/Acting MGDS Dir.		X	
Berlien, R.	REECo/QA Dept. Mgr.	X		X
Brient, R.*	NRC/Observer	X		X
Bryant, E.	REECo/QA/QC Sect. Chief	X	X	X
Caldwell, H.	REECo/QE Section Chief	X		
Constable, J.*	REECo/Tech. Insp./QA Spec. II		X	
Erickson, G.	REECo/Calibration Lab Supv.	X	X	X
Faiss, E.	REECo/Prin. Staff Asst.	X		
Fortner, T.	REECo/YMP Const. Mgr.	X		
Gardella, B.	REECo/Control Department Mgr.	X	X	
Gardiner, J.*	DOE/YMP/EDD/General Engineer		X	
Glasser, W.*	REECo/YMP QA Mgr.	X	X	X
Gratza, W.*	REECo/Sr. QA Specialist	X	X	X
Hackbert, D.	REECo/QA/QC Sect. Chief	X	X	X
Hastings, P.*	M&O/Systems/DIE Mgr.		X	
Harris, D.*	YMQAD/Auditor	X		X
Heaney, G.	YMQAD/Auditor	X		X
Hedlund, J.	REECo/Sr. Engineer		X	
Hurtado, P.	REECo/Sr. QC Technician		X	
Justice, R.*	M&O QA/QE Mgr.		X	
Justus, P.	NRC/On-Site Rep.			X
Keifer, J.*	M&O/MK/Staff Mining Engr.		X	
Kellner, D.	REECo/Contract Administrator		X	
Key, C.	REECo/Receiving Inspector		X	
Klemens, R.	YMQAD/Auditor	X		X
Koss, D.	REECo/Asst. Division Mgr.	X		X
Leonard, T.	REECo/CND Mgr.	X	X	
Lofftus, F.	YMQAD/Auditor	X		X
Limon, T.	REECo/IMD Mgr.	X		
Martin, J.*	YMQAD/QAE		X	
Mason, C.	REECo/DRD Mgr.	X	X	
Memmott	REECo/Engineer II, Mining		X	
Mouser, E.	REECo/Sr. QA Specialist		X	

Personnel Contacted During the Audit
(Continuation)

<u>Name</u>	<u>Organization/Title</u>	<u>Preaudit Meeting</u>	<u>Contacted During Audit</u>	<u>Postaudit Meeting</u>
Olson, K.	REEC0/Receiving Insp./Engr. III	X		
Patel, K.	REEC0/Sr. Engineer		X	
Powe, R.	YMQAD/SQAE-Lead			X
Pritchett, R.*	REEC0/YMP Division Mgr.	X		X
Reiter, E.	REEC0/QAO		X	
Rommel, R.	REEC0/Construction Project Engr.		X	
Sorenson, V.	REEC0/Sr. Mat. Control Agent		X	
Spence, R.*	Director, YMQAD		X	
Straub, S.	REEC0/LSD Mgr.	X	X	X
Waggoner, W.	M&O/QA/QC			
Watkins, A	M&O/Engineer		X	
West, J.	REEC0/QC	X		X
Wilhelm, B.*	REEC0/Mat. Control Project Mgr.	X		X
Williams, E.	REEC0/QA Specialist II		X	
Wilson, P.	REEC0/Sr. QA Specialist	X	X	X
Zimmerman, S.*	State of Nevada/Observer	X		X

Legend

* = Attended the June 24, 1993 Meeting regarding commercial-grade procurement

DRD = Drilling Department
 EDD = Engineering and Development Division
 CLD = Control Department
 CND = Construction Department
 DIE = Determination of Importance Evaluation
 IMD = Information Management Department
 LSD = Logistical Support Department
 MGDS = Mined Geologic Disposal System
 MK = Morrison Knudsen
 QAE = Quality Assurance Engineer
 QAO = Quality Assurance Office
 QE = Quality Engineer
 SQAE = Senior Quality Assurance Engineer
 YMP = Yucca Mountain Site Characterization Project

ATTACHMENT 2

Audit Details

The following is a summary of the REECOA QA program activities covered during the audit. A list of objective evidence reviewed, by document identification and title, is given in Attachment 3.

4.0 PROCUREMENT DOCUMENT CONTROL

The evaluation of this QA program element was based on the examination of objective evidence to determine compliance with selected requirements taken from the following MC implementing procedures MC-03.0, MC-03.1, and MC-06.2. The specific requirements selected for evaluation of compliance and effectiveness are listed below:

Procurement (MC-03.0)

- For sole source procurements, a justification letter shall be prepared and signed by the department manager and attached to the Purchase Requisition (PR).
- The Purchase Order (PO) or subcontract file shall contain a copy of the supplier's approved QA program and evidence of the PQAM approval of the supplier.

Purchasing Requisition and Purchase Order Processing (MC-03.1)

- The Requesting Organization (RO) shall enter the quality classification of the requested item(s) on the PR.
- The RO shall have a technically qualified individual review quality-affecting PR for inclusion and adequacy of technical requirements.
- The RO shall develop a Technical Inspection Report (TIR) with minimum inspection requirements which supplement the standard practices.
- The QA office shall review as a minimum all quality-affecting PRs for appropriate quality requirements and verification the TIR was properly initiated.
- The Procurement section shall incorporate the quality-affecting requirements from the PR into the Request for Proposal (RFP).
- The technical and quality aspects of the RFP shall be reviewed by the RO and QA office and approved prior to its release.

- The supplier shall be on the REECO/YMP Approved Suppliers List (ASL) prior to commencement of supplier activities.
- The RO shall perform a technical review of the PO and supporting documents (Specifications and TIRs).
- The QA office shall review the PO and supporting documents for inclusion of the quality requirements and verification the selected supplier was on the ASL prior to approval of the PO.
- The records generated by this procedure shall be processed into the records management program and include PRs and POs including supporting documentation.

Control of Supplier Submittals (MC-06.2)

- The Material Control Section (MCS) shall identify the items or document submittal requirements and the schedule for submittal on the PR.
- The LSD shall transfer the submittal requirements from the PR to the PO or subcontract.
- The MCS shall maintain a submittal log to reflect the current status and distribution of the suppliers submittals.
- The user shall review the submittal for compliance with the technical requirements and the QA office shall review the submittal for compliance with the quality requirements of the procurement documents and Title II drawing and specifications.
- The MCS shall stamp the submittal "Approved," "Approved, except as noted" or "No Resubmission Request."
- The MCS shall transmit the shop drawings, equipment data, material samples or manufacturer's Certificate of Compliance (C of C), and CMTRs to the A/E for review on form YMP-080-R0, titled, "Transmittal of Shop Drawings, Equipment Data, Material Samples or Manufacturers Certificates of Compliance" (SDT).
- The submittals approved by REECO and the A/E shall be submitted to the LSD along with the supplier submittal review forms and reviewed submittals.

- The QA records generated by this procedure shall be included in the applicable records package for the PO of subcontract.

Source Selection and Evaluation (MC-03.2) and Subcontracts (MC-03.4) - There was no verification of activities associated with these procedures. There was minimum activity in this area. The auditor opted to pursue the commercial-grade/quality-affecting procurement issue.

During the course of the evaluation, objective evidence in the form of PRs, POs, TIRs, Specifications, REECO/YMP ASL, Deficiency Notices (DNs), CARs and NCRs were reviewed for compliance to the requirements listed above.

A meeting was held on June 24, 1993 to discuss the deficiencies detected during the audit of procurement, specifically the commercial-grade procurement issue. Guidance was provided to the attendees from the Quality Assurance Requirements and Description QARD DOE/RW-0333P, Interpretation of 1986 Edition of NQA-1 Supplement 7S-1, 10 CFR Part 21, and Regulatory Guide 1.28, Draft Revision 4 on Commercial-grade Items. The personnel who attended the meeting are listed in Attachment 1.

Implementation of QA Program Element 4.0, "Procurement Document Control" was determined to be unsatisfactory, mostly because there was a lack of understanding of commercial-grade item procurements, which created a number of noncompliances. The Specification YMP-025-1-SP09 was unclear in regards to commercial-grade items contained in the approved design output document and there was no program provision for procurement of commercial-items designated "QA-NA" with subsequent dedication to quality-affecting, after receipt for use as a basic component (CAR YM-93-055). There were traceability problems (CAR YM-93-062) and the use of documents, including CMTRs and C of Cs from an unqualified supplier without confirmatory testing to accept material (CAR YM-93-063).

7.0 CONTROL OF PURCHASED ITEMS AND SERVICES

The evaluation of this QA program element was based on the examination of objective evidence to determine compliance with selected requirements taken from the implementing procedures MC-03.2.1, MC-04.0, MC-04.1 and MC-04.2. The specific requirements selected for evaluation of compliance and effectiveness are listed below:

Supplier Quality Approval (MC-03.2.1)

- The QAO shall review and approve the supplier's QA program document as a first step to placing the supplier on the REECO/YMP ASL.

- The results of the QAO review shall be documented on a checklist or other form that specifies the applicable quality criteria and the supplier's conformance or nonconformance.
- The QAO shall conduct a survey of the supplier's facility to evaluate the supplier's ability to implement the applicable portions of its QA program.
- The PQAM shall approve and issue the REECO/YMP ASL prior to January 31 of each year, provided that one or more suppliers have been evaluated and approved.
- The REECO/YMP ASL shall include the following information: Company name and full address, scope of work, restrictions, survey date and company name performing the survey, title and revision of the QA program document, the scheduled audit date, and annual performance due date.
- The REECO/YMP ASL shall be issued as a controlled document.

Material Control (MC-04.0)

- Nonconforming materials shall be tagged and physically segregated in hold areas, pending resolution.
- The MCS shall place the material into interim storage until requested, then MCS delivers the material with any documentation which established traceability.

Material Receiving (MC-04.1)

- The piece count of each shipment shall be compared against the quantities on the freight bill/bill of lading. When a difference is identified, the shipping document shall be noted and a Discrepancy Report (DR) initiated.
- Any damage shall be noted on the shipping document and DR.
- The item count, type, identification number shall be compared against the packing slip and purchase document. Any variation shall be noted on a DR.
- The receipt item count shall be entered into the REECO procurement tracking systems automatic receiving program. The receiving report shall be signed, dated, and forwarded to the REECO LSD procurement sections for quality related items.

- Personnel, when performing receipt functions to this procedure for quality-affecting items, shall be qualified and certified in accordance with MC-02.4.2, "Personnel Qualification and Certification."

Receipt Inspection (MC-04.2)

- The LSD shall control further processing or handling of received items until the TIR has been completed.
- The QA Manager shall review and approve the TIR.
- The QA manager shall certify the Technical Inspectors that perform receiving inspections.
- The TIR shall be used to document receipt inspection, when the requesting organization was REEC0/YMP or matrix organization and one of the following applies:
 - Items are quality-affecting or quality-affecting commercial-grade.
 - A QA Grading Report imposes receipt inspection.
 - Requested stock items when Q-listed previously accepted on a YMP TIR.
 - Just-in-time material releases from stock items.
 - At the discretion of REEC0/YMP management or company or federal procurement practices.

Source Verification (MC-03.3) - There was no verification of activities associated with this procedure due to no source verifications performed on or for quality-affecting activities or items.

Based on the verification for compliance to the requirements listed above, implementation of QA Program Element 7.0, "Control of Purchased Items and Services" was determined to be satisfactory.

8.0 IDENTIFICATION AND CONTROL OF ITEMS, SAMPLES, AND DATA

The evaluation of this QA program element was based on the examination of objective evidence to determine compliance with selected requirements taken from the MC implementing procedures MC-04.0 and MC-04.5. The specific requirements selected for evaluation of compliance and effectiveness are listed below:

Material Control (MC-04.0)

- The LSD receives material at the Nevada Test Site (NTS) and performs an initial receiving function (quantity and condition) in accordance with MC-04.1.
- Detailed receiving inspections shall be performed in accordance with MC-04.2.
- The LSD notifies the MCS of material receipt, and the MCS directs the LSD to place the material in interim storage at a Central Receiving Warehouse, or deliver the material to the worksite.
- After receipt of material at the NTS, handling, storage and delivery shall be performed in accordance with MC-04.3.
- Nonconforming material shall be tagged in accordance with MC-11.2, and physically segregated in a designated hold area pending resolution of the nonconformance or return of the material to the supplier.
- The LSD shall place acceptable material in interim storage at a Central Receiving Warehouse.
- Documentation which establishes traceability of the material shall be completed in accordance with MC-04.3 and MC-04.5 and delivered to the MCS.
- The user shall install the material at the location shown on the authorized job package, the relevant Title II drawings and specifications, and other installation documents. The traceability documents are referenced on the installation documents.
- Identification shall remain accessible on the material, subsequent to installation whenever possible. The material shall be identified in accordance with MC-04.5.

Material Identification (MC-04.5)

- The Control Department, MCS, shall initiate purchasing requisitions for items requiring REEC Co YMP identification markings, verifies item identifications and shelf-life prior to delivery to the user, and initiates DNs and NCRs for items suspected or found to be nonconforming.
- The Technical Inspector shall be responsible for receipt inspection and acceptance of the items, required identification and shelf-life, and for initiating NCRs for items found to be nonconforming.
- The Supply/Just-in-Time Section shall be responsible for verifying manufacturer/supplier identification and shelf-life upon receipt, for marking items with any LSD required REEC Co/YMP stock numbering, for verifying item shelf-life prior to release to the MCS or the user, and for initiating DNs and NCRs for items suspected or found to be nonconforming.
- Manufacturer/supplier nameplates, tags, or other product identification markings shall not be removed from items unless specifically required by Yucca Mountain Site Characterization Project Office (YMPO) specifications.
- Tracking or traceability markings that are to be applied by REEC Co/YMP, shall be applied at the time of receipt inspection per MC-04.2, under the direction of the MCS.
- The shelf-life of an item shall be identified by the manufacturer/supplier via markings on the item or the item's container.
- Items found during receipt inspection (MC-04.2) that do not meet the procurement requirements for identification shall be tagged, segregated, and processed on a NCR in accordance with MC-11.2.
- If an item with an identified shelf-life is suspected of having been installed after the shelf-life expiration date, the user shall initiate a DN in accordance with MC-11.1.

During the course of the evaluation, objective evidence in the form of memoranda, Delegations of Authority, Construction Department Submittal Logs, and TIRs were reviewed for compliance. REEC Co identified several deficiencies in material control, and issued REEC Co CAR CA-93-004 prior to the audit. Corrective actions stated in the CAR response are in-process and proceeding as scheduled.

Based on the verification for compliance to the above requirements, implementation of QA Program Element 8.0, "Identification and Control of Items," was determined to be satisfactory.

10.0 INSPECTION

The evaluation of this QA program element was based on the examination of objective evidence to determine compliance with selected requirements taken from the following implementing procedures: MC-07.4, MC-09.0, MC-09.1, and MC-09.2. The specific requirements selected for evaluation of compliance and effectiveness are listed below:

Construction and Inspection Plan (MC-07.4)

- Construction Inspection Plans (CIPs) for shotcrete shall contain details depicted on drawings and in specifications.
- CIPs shall be revised when drawings or specifications are revised.
- Are QA or Project records generated by this procedure?

Inspection Program (MC-09.0)

- How does QC verify implementation of solutions? Should this be criteria on drawings and specifications?

Inspection Planning and Performance (MC-09.1)

- Records are maintained and submitted in accordance with Reference 3.6, MC-9.0.
- Hold points on the ICs are contained on CIPs.
- ICs contain the following items:
 - Identification of each work operation where inspection is necessary to ensure quality and the implementing documents that will be used to perform the inspection
 - Identification of the characteristics to be inspected
 - Identification of inspection of process monitoring methods to be employed

- Inspection and process monitoring shall be conducted when control is inadequate and only one method
 - Provision for the final inspection shall be planned to arrive at a conclusion regarding conformance of the item to specified requirements
 - Identification of the functional qualification level (by discipline) of personnel performing inspections
 - Identification of acceptance criteria
 - Identification of sampling requirements
 - Methods to record inspection results
 - Selection and identification of the measuring of the test equipment to be used to perform the inspections to ensure that the equipment is calibrated and is of the proper type, range, accuracy, and tolerance to accomplish the intended function
- Why does the IC Log need to ID the requirements documents utilized? Aren't these listed on the IC?
 - ICs that are used to perform inspections contain inspection results on the IC.
 - ICs are revised when inspection criteria is revised.
 - Inspections are accomplished per the IC.
 - Items that are modified are reinspected.

Training, Qualification, and Certification of Inspection and Test Personnel (MC-09.2)

- Does this procedure apply to construction workers performing rock bolt testing or the M&TE Laboratory?
- QC inspectors are qualified in accordance with procedural requirements.

During the course of the evaluation, objective evidence in the form of ICs, Inspection Reports, and Personnel Certifications were reviewed for compliance.

Recommendations to revise MC-09.1 to change an incorrect reference, to delete requirements from the IC Control Log and use the IC for identification of requirements, and match definitions with MC-09.0 and MC-09.2 were discussed with REEC Co staff (see Section 6.0, Items 3, 4 and 5 of this report). Furthermore, a deficiency which dealt with employee numbers not identified on the certification files was corrected during the audit (see Section 5.5.2.1 of this report).

Based on the examination of the above requirements, implementation of QA Program Element 10.0, "Inspection" is considered satisfactory.

12.0 CONTROL OF MEASURING AND TEST EQUIPMENT

The evaluation of this QA program element was based on the examination of objective evidence to determine compliance with selected requirements taken from the following implementing procedures MC-10.0 and TC-515-CP-GEN-1. The specific requirements selected for evaluation of compliance and effectiveness are listed below:

Measuring and Test Equipment (MC-10.0)

- Calibration History shall be maintained.
- Calibration Request forms shall be used.
- Calibrations shall be performed to the requirements of the REEC Co Physical Standards Calibration Log (PSCL) calibration procedures.
- Managers appoint in writing the M&TE Coordinators for their organizations.
- Calibration labels shall be fixed to the item.
- Calibration standards shall be traceable to National Institute for Standards Technology or equivalent.
- Calibration standards shall have a greater accuracy than the item calibrated.
- User is advised of calibration due dates a month before the due date becomes effective.
- An M&TE Tracking log shall be used.

- M&TEs with expired calibration due dates shall be taken out of service.

Measuring and Test Equipment - General (TC-515-CP-GEN-1)

- Standards shall be supported by certified test reports.
- Extensions to calibrated intervals shall be justified.
- Calibration Reports shall be signed by the Calibration Technician and the PSCL Senior QA Specialist.
- The PSCL maintains a master inventory of M&TEs indicating traceability, identification, etc.
- The inventory system includes the complete status of each M&TE.
- Calibration Reports shall indicate the environmental conditions in the laboratory at the time of calibration.
- Form RE-06981 is used as Out-of-Tolerance Notification.
- Instruments which indicate system operation only are labeled with a "No Calibration Required" label.

During the course of the evaluation, objective evidence in the form of calibration reports, calibration service requests, calibrated instruments and storage area were reviewed for compliance. The results of the evaluation indicate satisfactory compliance with the procedural requirements and effective control of M&TE.

Corrective actions to CAR YM-93-033, which was identified during the previous audit (YMP-93-06) regarding calibration performed in accordance with the manufacturer's instructions rather than the REECO calibration laboratory procedures, were satisfactorily verified during the audit. REECO calibration procedures were revised to correct the deficiency. Implementation of revised calibration procedures was satisfactorily verified during the audit. Closure of CAR YM-93-033 was recommended to the YMQAD Representative and it was subsequently closed.

Based on the examination of the above requirements, implementation of QA Program Element 12.0 is considered satisfactory.

14.0 INSPECTION, TEST AND OPERATING STATUS

The evaluation of this QA program element was based on the examination of objective evidence to determine compliance with selected requirements taken from the following implementing procedures: MC-07.0, TC-581-SP-0007, TC-581-SP-0011, TC-581-TP-0002, TC-581-WP-0003, TC-586-SP-0001, TC-581-SP-0010, TC-581-SP-0001, TC-581-SP-0009, and Specification YMP-025-1-SP09, Section 03361. The specific requirements selected for evaluation of compliance and effectiveness are listed below:

Requirements for Shotcrete Activities

Work Control (MC-07.0)

- Verbal releases are documented.
- Hold points and witness points are signed off by construction.
- M&TE is specifically identified and is recorded.
- Submittals required by specifications are controlled.

Starter Tunnel Shotcrete (TC-581-SP-0007)

- Water use records shall indicate that water used for shotcrete contains chemical tracer.
- Test panel test results shall meet or exceed specification compressive strength values.
- The shotcrete placement log shall be filled out for all shotcrete applications.
- Test panels were taken for the mix design in the horizontal and vertical positions and test results documentation were submitted to the A/E.
- Hold points are included on CIPs of mixed test design and satisfactory results of mixed test reports for A/E evaluation.
- Nozzlemen certifications conform to the following:
 - The nozzlemen to be certified will prepare separate test panels from horizontal and vertical shooting positions and the panels will be submitted for testing as in Paragraph 6.2. Results of testing will be submitted to the A/E by the Construction Department Project Engineer (CNDPE).

- Nozzlemen certification will be based on results of seven-day tests. If results do not conform to the requirements, the nozzlemen will not be certified and test panels will be shot again.
- Individuals not certified will not be allowed to place shotcrete in the Starter Tunnel.
- Nozzlemen with shotcrete placement experience within the past 12 calendar months may be exempted from the test panel requirement if the following conditions are met:

The shotcrete placed in same mix design as proposed in the Starter Tunnel.

The shotcrete was placed in underground conditions similar to a those expected in the Starter Tunnel.

Shotcrete cores were removed either from a test panel or in-place shotcrete and the average compressive strength of cores are within the requirements.

- Certification Workman Demonstrations are performed per the following:

A workmanship demonstration test will be performed on an approximate 4 foot by 4 foot area and nozzlemen will be observed for the following proper shooting techniques:

- Cleans shooting surface with air and water prior to shooting.
- Applies bonding coat on shooting surface ahead of heavier shotcrete applications.
- Application angle is near perpendicular to shooting surface.
- Shooting distance is adjusted to obtain maximum compaction and minimum rebound (approximately 2 to 5 feet).
- Directs shotcrete application around reinforcement in a manner which prevents buildup on face of reinforcement and allows shotcrete to flow and compact tightly around back and remainder of reinforcement.
- Controls dust, minimizes rebound and maximizes strength by adjusting water content of shotcrete.

- Applies shotcrete from lowest to highest elevation.
- Communicates with shotcrete pot operator to obtain the proper air and material ratio for optimum application.
- Applies shotcrete in layers to prevent sloughing or sagging.
- Achieves minimum desired thickness throughout test area.
- The CIP has hold points for surface preparations.
- Test results for every shift shall be recorded for different positions.
- Why isn't the shotcrete placement log kept as a QA record? It has QC sign-offs on it and identifies hold points.

Shotcrete (Specification YMP-025-1-SP09 Section 03361)

- Material test reports were received for Portland cement, aggregates, admixtures and curing compounds.
- Inspection documentation contains the following attributes:
 - Visual inspection of surface preparation.
 - Visual and dimensional inspection of reinforcement placement.
 - Placement of shotcrete (WITNESS point).
 - Visual and dimensional inspection of surface finish and verification of curing time.
 - Verification of materials traceability documentation and required materials test reports.
 - Verification of storage and identification of materials.
- The following items are contained with REECO procedures:
 - Methods of maintaining the temperature requirements

- Traceability of finished shotcrete and its components
- Control of shotcrete thickness

Results

During the course of the evaluation, objective evidence in the form of CIPs, Implementing Procedures, Shotcrete Placement Logs, Truck and Tank Batch Records, mix designs, test results, and certification records were reviewed for compliance. The results of the evaluation of construction activities are satisfactory; however, the documentation of these activities is unsatisfactory as indicated in the four CARs issued to REECo in this area (CARs YM-93-057, YM-93-059, YM-93-060, and YM-93-061) and two CARs issued to the A/E for their acceptance of REECo's submittals (CAR YM-93-65) and inadequate shotcrete specification (CAR YM-93-064).

Recommendations to revise MC-07.0, Paragraph 6.8.6 to change the word "microfilming" to "processing" and TC-581-SP-007, Paragraph 7.1 to include Shotcrete Placement Log as a QA record, were discussed with REECo staff (see Section 6.0, Items 2 and 6).

Requirements for Rock Bolt Activities

Exploratory Studies Facility Ground Support (TC-581-SP-0011)

- Hole locations are signed off by QC and A/E prior to drilling.
- Irregularities are noted on the logs.
- Dowels are stored separately.
- Heat numbers are on the logs.

Testing of Underground Rock Bolt Ground Support (TC-581-TP-0002)

- Test personnel are considered trained as indicated by their completed reading list.
- Pressure rating for jack equipment and gauges are: 40K for split bolts and 60K for grouted bolts.

- Rock bolts passing the pull test shall have their bolts plates painted green.
- QA records will be authenticated and transmitted to Las Vegas Local Records Center.

Results

Objective evidence in the form of Rock Bolt Installation and Testing Logs, REEC Co DN-93-008, and personnel training records were reviewed for compliance. Recommendation to review hold points with the A/E was discussed with REEC Co staff (see Section 6.0 of this report). Except for CAR YM-93-056, which was generated against construction because bolt plates were not painted to indicate testing status and against QC for not including this parameter for verification in their inspection checklist, rock bolt activities appear to be satisfactory.

Requirements for Drilling and Blasting Activities

Drilling and Blasting for Underground Construction Activities (TC-581-WP-0003)

- REEC Co survey crews are instructed by the Construction Department Operator to survey in a specific number of holes for each round of shots.
- Hold Points are signed off the logs in the Drill and Blast Log.
- Each round of shots are assigned a unique identification number
- The size and location resulting from each round of shots is plotted on a full-size copy of the Raytheon Services Nevada (RSN) drawing (YMP-015-1-Ming-MG-138).
- Precautions will be taken to limit the amount of petroleum products to come in contact with the ground.
- Hold Points are signed off on the Drill and Blast Log and not on the Site Work Instructions.
- All drilling water is accounted for.
- A balance sheet log will be maintained at each powder magazine.
- Blasters are certified for their position.

- Hold Point is signed in the Drill and Blast Log for the muck pile approval and excavation.
- The A/E will approve/verify the following steps:
 - Inspection of blasting materials
 - Inspection of the Powder Magazine
 - Inspection of explosive transport vehicle
- Ranch Control will be notified 24 and one hour before blasting time.
- The Drilling and Blasting Log will be completed for each drill and blast round.
- All changes to the blast rounds will be documented on sheet 3 of the Drill and Blast Log.

Results

Objective evidence in the form of Drill and Blast Log, Water Accountability Report (WAR) Log, Ranch Control Log and drawings were reviewed for compliance. The results of the evaluation indicate satisfactory compliance with procedural requirements.

Requirements for Water Accountability and Tracer Activities

Sampling LiBr Tracer (TC-586-SP-0001)

- QC section personnel shall be responsible for obtaining Lithium Bromide samples as required by YMP-025-1-SP09.
- Two 500 millimeter samples shall be taken from the Lithium Bromide tank, one from the top and one from the bottom; they are mixed together to get one combined sample.
- The sample of Lithium Bromide is forwarded to an approved testing facility to do the Lithium Bromide concentration test. Results are forwarded to the YMP Construction Department for inclusion in the records generated per TC-581-SP-0010.

Operation of Initial Tank Tracer Injection System (TC-581-SP-0010)

- All water used underground for construction, testing or other purposes shall contain a Lithium Bromide tracer. The tracer will be mixed with water per requirements of YMP-025-1-SP09.

- Water from the Baker Tanks fill stand in Forty-Mile Wash, or other approved source, will be loaded into a 4500 gallon water truck and delivered to Batch Tank No. 1.
- After the water is pumped into the tank, the truckdriver will fill out the WAR form in accordance with TC-581-SP-0001.
- The Construction Department Operator will add to Batch Tank No. 1 a pre-measured amount of Lithium Bromide tracer and fill in the Truck Water and Tank Batch Record form.
- At the option of the operator, the water in Batch Tank No. 1 will be recirculated using the tank circulation pump in order to assure complete mixing of the Lithium Bromide with the water.
- After the Lithium Bromide and water have been added to the Batch Tank No. 1, REEC Co YMP QC personnel will sample the water for testing. If the batch is still not within specified tolerances, the bromide ion concentration is adjusted until the test is within tolerances.
- When the bromide concentration in the water in Batch Tank No. 1 is within tolerances, the water will be transferred by pump to Storage Tank No. 2 for underground use.
- The Construction Department Project Engineer (CNDPE) is responsible for the preparation of the Administrative Procedure (AP)-5.26 submittal form, transmittal of shop Drawings, Equipment Data, Material Samples, or Manufacturer's Certificates of Compliance, used to transmit the WAR to the A/E, and the maintenance of the WAR Submittal Log. The CNDPE is also responsible for the maintenance of the Water Control Report.

Water Use, Control and Accountability (TC-581-SP-0001)

- The Construction Department Operations Superintendents (CNDOS) are responsible for the field execution of TC-581-SP-0001. CNDOS shall take required water meter readings, forward WARs to the CNDPE and monitor the Water Control Report each week.
- The CNDPE will prepare, on a monthly basis for the Construction Department Manager, a letter to the Yucca Mountain Site Office (YMSO) Site Manager, listing the total quantity of water used from Well J-13 in support of site characterization activities.

- The CNDPE will maintain the WAR Submittal Log, the WAR files including the original WAR, copies of all submittals, the Submittal Log, and the Water Control Reports.

**Water Use, Control and Accountability for Underground Construction
(TC-581-SP-0009)**

- During construction of the Starter Tunnel, Test Alcove, and possible longer Exploratory Drift, water will be transported to the Exploratory Studies Facility (ESF) North Portal Pad, by water truck from the Baker Tank fill stand or other approved water source. The water will then be pumped from the water truck to a 5,000 gallon - 10,000 gallon batch mix tank, through a water meter.
- Tracer (Lithium Bromide) will be added to the batch mix tank prior to adding the water, as indicated.
- The CNDPE will prepare a Water Usage Log for all water used underground.
- The amount of water used underground will be kept separate from the amount of water used on the surface for various construction activities. The water used on the surface will be documented in accordance with TC-581-SP-0001.
- All water used underground shall be recorded by passing through a water meter and completing the YMP WAR form.
- The CNDPE will maintain the WAR Submittal Log. In addition, the CNDPE will maintain the WAR files, including the original WAR, copies of all submittals, the Submittal Log, and the Water Control Reports.

Results

During the course of the evaluation, objective evidence in the form of WAR forms, "Truck Water and Tank Batch Record," WAR Submittal Log, monthly Well J-13 water reporting, and IC cover sheets were reviewed for compliance. The results of the evaluation indicate satisfactory compliance.

Conclusion

Control procedures for survey activities of quality-affecting items is unsatisfactory at this time. REECo is presently using procedures for surveying quality-affecting items, that are not part of the YMP QA Program (CAR YM-93-058).

Based on the results of the evaluation of the above construction activities for QA Program Element 14.0, "Inspection Test and Operating Status," overall implementation is considered satisfactory.

15.0 CONTROL OF NONCONFORMING ITEM

The evaluation of this QA program element was based on the examination of objective evidence to determine compliance with selected requirements taken from the MC-11.2. The specific requirements selected for evaluation of compliance and effectiveness are listed below:

- Item deficiencies which do not conform to project requirements are reported to the YMPO of YMSO.
- Deficiencies not reported in accordance with AP-5.27Q are documented on NCRs, Exhibit 1, or DNs.
- Nonconforming items are identified by marking, tagging or other methods that do not adversely affect the end use of the item; and the identification includes the NCR number.
- NCR numbers are sequentially assigned from the NCR Log.
- The PE provides disposition which shall be one of the following:
 - Use-as-is
 - Repair
 - Reject
 - Rework
 - Scrap
- Technical justification is provided for "use-as-is" or "repair" dispositions by the PE.
- The disposition includes references to approved designed documents, procedures, plans, work orders, etc., that are to be used for the correction of the nonconforming condition.
- The technical details for correction of the nonconforming condition are adequate for the recommended disposition.
- The disposition complies with existing design documents, test plans or procedures, reports, and regulatory requirements.

- If a change to reflect the as-built condition is appropriate, then the disposition addresses action to change the existing design documents, test plans or procedures, reports, etc. Any document change shall also be cross-referenced on the NCRs.
- The disposition identified the people or organization responsible to implement the disposition.
- Verification of corrective action is performed by the QAO.
- Implemented dispositions are verified and the "Verification" block of the NCR signed by the PE and the QAO.
- NCRs are submitted as QA records by the QAO.

During the course of the evaluation, objective evidence in the form of NCRs, NCR logs, Trend Report, and Open Item List were reviewed for compliance with MC-11.2. One of the six closed NCRs reviewed (NCR-93-007) had the "PE Verification of Work Complete" block not completed. This block was completed and documentation resubmitted to Records Management prior to the postaudit meeting (see Section 5.5.2.2 of this report). It was noted during the review of YMPO NCRs processed under AP-5.27Q, "Control of Nonconforming Items," that NCR-93-10 and NCR-93-16 were dispositioned "Use-as-Is" and closed by the M&O without technical justification (see CAR-YM-93-063 issued to the M&O).

Based on the results of the evaluation of the above requirements, implementation of QA Program Element 15.0, "Control of Nonconforming Item," is considered satisfactory.

ATTACHMENT 3

List of Objective Evidence Reviewed During the Audit

Requirement Document:

REECo QAPP, 568-DCO-115, Revision 8, QAPPCN-92-02 through -08

QA PROGRAM ELEMENT 4.0, "PROCUREMENT DOCUMENT CONTROL"

Procedures:

Compliance with the following procedures was reviewed:

MC-03.0, Revision 0, Interim Change Notice (ICN) 1, "Procurement"
MC-03.1, Revision 1, "Purchasing Requisition and Purchase Order Processing"
MC-03.2, Revision 1, "Source Selection and Evaluation"
MC-03.4, Revision 0, "Subcontracts"
MC-06.2, Revision 2, ICN 1, "Control of Supplier Submittals"

Objective Evidence Reviewed:

Purchase Requisitions

PR 01527 CU W-01-2	PR 92-00003-JR
PR 92-00043-VLS	PR 93-00104-JAW
PR 92-00048 VLS	PR 93-0003-JMA
PR 93-00092-JAW	

Purchase Orders

PO 01527 CU W-01-2	PO 00056-YJ
PO 00026-YP	PO 00093-YP
PO 00037-YP	PO 00070-YP
PO 00057-YP	

Technical Inspection Reports

TIR Y 585-93-001	TIR Y 585-93-026
TIR Y 585-93-032	TIR Y 585-93-034

TIR Y 585-93-035
TIR Y 585-93-003
TIR Y 585-93-009

TIR Y 585-93-039
TIR Y 585-93-016

Specifications

YMP-025-1-SP09, Revision 1
Section 1400, Contractor Quality Control/Quality Assurance
Section 03361, Shotcrete
Section 02310, Welded Steel Latice Girder Ground Support System

YMP-025-1-SP10, Revision 0
Section 02165, Rock Bolts and Accessories

Miscellaneous

REECo/YMP ASL, Document 586-ASL-1, Issue 93-1, dated 4/16/93

Supplier Submittal Log

M&O Supplier Document Evaluation Record
YMP-080-R0 "Transmittal of Shop Drawings, Equipment Data, Material Samples, or
Manufacturers Certificate of Compliance (SDT)"

Corrective Action Documents

DN 93-020	CA 93-QN-C-014	NCR 93-010
NCR 93-017	NCR 93-016	

QA PROGRAM ELEMENT 7.0, "CONTROL OF PURCHASED ITEMS AND SERVICES"

Procedures:

Compliance with the following procedures was reviewed:

MC-03.3, Revision 0, ICN 1, "Source Verification"
MC-03.2.1, Revision 0, "Supplier Quality Approval"
MC-04.0, Revision 0, "Material Control"
MC-04.1, Revision 0, "Material Receiving"
MC-04.2, Revision 0, ICN 1, "Receipt Inspection"

Objective Evidence Reviewed:

Technical Inspection Reports

TIR Y 585-93-032
TIR Y 585-93-004
TIR Y 585-93-016
TIR Y 585-93-009

TIR Y 585-93-026
TIR Y 585-93-034
TIR Y 585-93-005
TIR Y 585-93-028

Supplier QA Program Review Results (Fluke), 11/12/92
Supplier QA Audit/Survey Report (Fluke), 11/17/92
REECo/YMP ASL, Document 586-ASL-1, Issue 93-1, dated 4/16/93
REECo Procurement Tracking System Automatic Receiving program
REECo Purchase/Requisition/Tracking System

Inspector Certifications

E. Mauser, 2/22/93

B. Gratza, 4/6/93

Corrective Action Documents

CA-93-004

**QA PROGRAM ELEMENT 8.0, "IDENTIFICATION AND CONTROL OF ITEMS,
SAMPLES, AND DATA"**

Procedures:

Compliance with the following procedures was reviewed:

MC-04.0, Revision 0, "Material Control"
MC-04.5, Revision 0, "Material Identification"

Objective Evidence Reviewed:

Purchase Requisitions

00118 JAW 013

00104 JAW 013

00003 JMA 013

Technical Inspection Reports

Y585-93-055	PO 303-YN-01 3
Y585-93-056	PO 302-YN-01 3
Y585-93-003	PO 37-YP-3

Material Acceptance Tags (3) (Proposed)

Material Status Report (6/15/93)

Delivered Material (Prepared by LSD)

Responses to REEC Co CAR CA-93-004

Memorandum on Material Releases (Action 1, 3rd Bullet) 6/14/93

Material Release Delegation of Authority (Reference: Gardello Memorandum, dated 6/9/93)

Procedures related to quality (Action 3) Memorandum from R. F. Pritchett, 6/9/93

REEC Co job opening for Material Control Agent II (Item 4 -)

QA PROGRAM ELEMENT 10.0, "INSPECTION"

Procedures:

Compliance with the following procedures was reviewed:

MC-07.4, Revision 0, "Construction and Inspection Plan"

MC-09.0, Revision 2, "Inspection Program"

MC-09.1, Revision 2, "Inspection Planning and Performance"

Objective Evidence Reviewed:

IC 0007, Revision 1 for "Cement Grouted Rockbolt Installation and Pull Testing"

IC 0014, Revision 0 for "Resin Grouted Rockbolt Installation per Specification SP-09, Section 02165"

Inspection Reports and "Rock Bolt Installation and Testing Log" for the following grouted rockbolts:

Station 43 Ring 6 No. 3R
Station 56 Ring 9 No. 1R
Station 71 Ring 12 No. 3L

Station 51 Ring 8 No. 2L
Station 71 Ring 12 No. 2R

Inspection Reports and "Rock Bolt Installation and Testing Log" for the following split set rockbolts:

Station 67 Ring 66/67 No. 3L South Slash
Station 67 Ring 66/67 No. 1L South Slash
Station 56 Ring 55/56 No. 3L South Slash
Station 50 Ring 51/52 No. 3R North Slash
Station 40 Ring 40 No. 1R North Slash

MC-09.2, Revision 1, "Training, Qualification and Certification of Inspection and Test Personnel"

Certifications for the following inspection personnel:

J. Geimer, Level II Civil/Structural, Receiving
D. Busick, Level II Civil/Structural, Receiving, Welding
E. Mouser, Level III Civil/Structural, Mechanical/Piping, Electrical,
Welding, Receiving
S. Loftfield, Level II Civil/Structural, Mechanical/Piping, Welding

QA PROGRAM ELEMENT 12, CONTROL OF MEASURING & TEST EQUIPMENT

Compliance with the following procedure was reviewed:

MC-10.0 Revision 0, ICN 1, "Measuring and Test Equipment"

TC-515-CP-GEN-1, Revision 1, "Measuring and Test Equipment"

Objective Evidence Reviewed:

CAR YM-93-033

Calibration history verified for the following instruments:

<u>Instrument ID</u>	<u>Description</u>	<u>Cal. Date</u>	<u>Cal. Exp. Date</u>
PTL Y3027	Pressure Gage	6/12/93	6/12/94
PTL Y881	Densitometer	7/16/92	7/16/93
PTL Y7232	Balance	5/5/93	11/5/93
PTL Y10320	Balance	5/5/93	11/5/93
PTL Y7277	Balance	5/5/93	11/5/93
PTL Y10176	Digital Caliper	1/4/93	7/4/93

Calibration Service Requests verified for the following instruments:

<u>Instrument ID</u>	<u>Date</u>
PTL Y10106	5/13/93
PTL Y10428	5/5/93
PTL Y3194	3/15/93
PTL Y10635	3/8/93
PTL Y10066	1/6/93
PTL Y2172	3/10/93

M&TE Coordinators appointed for each organization in writing:

K. S. Patel - Construction, 1/21/93
D. M. Wonderly - Drilling, 5/6/92
J. R. Joyce - Drilling (Alternate), 5/6/92
E. K. Williams - QA (REECo), 5/3/93

Equipment Tracking Log - No user history recorded to date.

REECo CAR CA-93-005 identified one outside caliper Y10698 incorrectly calibrated due to an error in the procedure. Caliper is currently on hold pending recalibration.

Calibration labels or other status labels are affixed to the following M&TEs:

Std. 110, Pressure Controller - status: Do not use
Std. 138, PT Resistance Thermometer 4/7/93 to 4/7/94
Std. 121, Dead Weight Gauge, 10/12/92 to 10/12/93
Std. 130, Hydrothermograph, 5/24/93 to 11/29/93

Accuracy requirements:

1. Psychrometer accurate within .5 Deg, F Std. 117 \pm 1 degree between 0 to 200 degrees
2. Digital Thermometer - Std 66 \pm 0.1%
3. Thermometer/Calibrator \pm .1%, Stds 115 \pm .005mV
4. Laseruler, \pm .000005," Std. 13 - Accuracy Grade 5
5. Gage Blocks, - Std. 7 - Accuracy Grade 5
6. Hoke Block Set - Class 1, Std. 58 - Grade .5; Std. 13 \pm .000005
7. Digital Caliper \pm .0005, Y10698 - Grade .5
8. Pressure Gauge \pm .1%, Std 5 \pm .01%

M&TE due for calibration notification, 6/1/93, issued to George Donaldson listed nine M&TEs scheduled for calibration within 60 days.

Instruments with expired calibration due dates, calibration label affixed and taken out of service: Standards 33, 34, 35.

Report where Primary pressure Std. No. 5 for Dead Weight Tester was extended from 3/24/88 to 3/24/93, to 9/24/93.

All calibration reports signed by the calibration technician and the Senior QA Specialist are listed below:

<u>M&TE No.</u>	<u>Date Signed</u>
PTL 117	7/16/92
PTL 66	2/24/93
PTL 115	5/17/93
PTL 107	6/11/92
PTL 130	1/4/93
PTL 130	1/4/93
PTL 67	4/9/93
PTL 13	1/4/93
PTL 7	9/8/92

PTL 58	4/2/92
Y10698	6/21/93
PTL 36	6/21/93
PTL 34	1/4/93
PTL 5	4/9/93
STD 5A	4/20/92

The above calibration reports contained the environmental conditions in the laboratory at the time of calibration.

Traceability of identification numbers assigned to each instruments based from:

Report of Records by Calibration Status, 6/21/93
Report of M&TE In-process for Work Assignment, 6/21/93
Schedule of Instruments by Department for June 1993, 6/1/93
List of Items on Site, 5/4/93

QA PROGRAM ELEMENT 14.0, INSPECTION, TEST AND OPERATING STATUS

Procedures:

Compliance with the following procedures was reviewed:

MC-07.4, Revision 0, "Construction and Inspection Plan"
MC-07.0, Revision 1, "Work Control"
TC-581-SP-0007, Revision 0, "Starter Tunnel Shotcrete"
TC-581-SP-0011, Revision 0, "Exploratory Studies Facility Ground Support"
TC-581-TP-0002, Revision 0, "Testing of Underground Rock Bolt Ground Support"
TC-581-WP-0003, Revision 0, "Drilling and Blasting for Underground Construction Activities"
TC-581-SP-0001, Revision 1, "Water Use, Control and Accountability"
TC-581-SP-0009, Revision 0, "Water Use, Control and Accountability for Underground Construction"
TC-586-SP-0001, Revision 0, "Sampling LiBr Tracer"
TC-581-SP-0010, Revision 0, ICN 1, "Operation of Initial Tank Tracer Injection System"
TC-581-WP-0003, Revision 0, "Drilling and Blasting for Underground Construction Activities"

NOTE: TC-581-SP-0012 was not verified because the Drainage Channel has not been completed to date.

Objective Evidence Reviewed:

Shotcrete Activities

CIP-93-0006, "Starter Tunnel Construction"

Specification YMP-025-1-SP09, Revision 1, Section 03361, "Shotcrete"

IC - 0010, Revision 0 for Shotcrete

Shotcrete Placement Logs from April and May 1993 and attached Raytheon Services Nevada Materials Testing Laboratory Core Compression strength test results submittal dated 3/1/93 for the compressive strength tests for Fibercrete.

Truck Water and Tank Batch Records and associated inspection records for

4/22/93 5/7/93 5/10/93 5/6/93

WARs for 4/23/93, 5/5/93, and 5/11/93

Shotcrete Nozzlemen Certification Records for John Hastings and Henry DiCamillo.

Rock Bolt Activities

REECo Deficiency Notice DN-93-008

Rock Bolt Installation and Testing Log for the following grouted rockbolts:

Station 43 Ring 6 No. 3R
Station 51 Ring 8 No. 2L
Station 56 Ring 9 No. 1R
Station 71 Ring 12 No. 2R
Station 71 Ring 12 No. 3L

Rock Bolt Installation and Testing Log for the following split set rockbolts:

Station 67 Ring 66/67 No. 3L South Slash
Station 67 Ring 66/67 No. 1L South Slash
Station 56 Ring 55/56 No. 3L South Slash
Station 50 Ring 51/52 No. 3R North Slash
Station 40 Ring 40 No. 1R North Slash

Test personnel training (Reading List for TC-581-TP-0002, Revision 0):

J. J. Keating, 4/4/93
L. P. Atkinson, 4/5/93
J. Hedlund, 4/1/93

Pressure rating of 40k and 60k jack equipment

Rock Bolt Installation and Test Log dated 5/3/93 for split bolts pulled to 8000 pounds without failures:

<u>Hole ID</u>	<u>Location</u>
Center	Station 0+65
L5	Station 0+65
R5	Station 0+65
Center	Station 0+75
L5	Station 0+75
R5	Station 0+75

Duplicate storage of above Rock Bolt record.

FCR-93/255, Document Number YMP-025-1-SP09, Revision 0, Section 02165, Changes to Rock Bolt and Accessory Specification to Incorporate Installation of Pumpable Resin Gouted Bolts, 4/13/93

Drilling and Blasting Activities

Drill and Blast Log for the following dates: 6/21/93, 6/17/93, 6/15/93, 6/6/93, and 6/2/93, drill holes for each round of shot and hold points.

RSN drawing YMP0-015-1-MING-MG-138.

Draft Work Procedure Change Notice No. 2 to TC-581-WP-0003

Idle equipment parked on a sheeted area covered with sand. Equipment being worked in the tunnel is monitored for leakage, if found, the equipment is shut down and repaired or remove from the tunnel for further work. The resulting muck from the tunnel is stored in its own area which has also been sheeted with rubber to prevent the seepage of oil into the ground.

WAR Log for water consumption on 6/14/93, 6/15/93, 6/16/93, 6/17/93.

Explosive Magazine Inventory Log - 4/8/93 to 6/25/93.

Blaster Certification - Surveillance Report YMP-SR-93-025.

Hold Points sign-offs, 4/9/93, in the Drill and Blast Log for the muck pile approval and excavation.

One time approval and sign off (4/8/93, date of inspection and 6/25/93, date of entry) by the A/E for: 1) Inspection of blasting materials, 2) Inspection of the powder magazine, and 3) Inspection of the explosive transport vehicle.

Ranch Control Log - notification prior to blasting time, entry dates: 4/22/93, 4/23/93, 4/26/93, 4/27/93, 4/28/93, 4/28/93

Drill and Blast Log - completed for each drill and blast round, entry dates: 4/2/93, 6/2/93, 6/6/93, 6/15/93, 6/17/93, 6/21/93

Each Drill and Blast Log contained a third sheet where all changes from the previous rounds were recorded describing the condition of the ground, time, location, etc.

Water Accountability and Tracer Activities

Monthly Well J-13 Water Reports, March 1993 and April 1993

WARs (Untraced water - J-13)

North Portal ESF Pad: 5/17/93/ 5/18/93, 5/19/93, 5/20/93, and 5/21/93

NRG 4: 5/18/93 and 5/21/93

ESF Access Road: 5/18/93, 5/19/93, and 5/21/93

Mix Tanks: 5/19/93 and 5/20/93

WARs (with Lithium Bromide)

North Portal Shotcreting Latice: 6/14/93, Bolting 6/15/93

Transfer from Tank 1 to Tank 2: 6/14/93

Transfer 2,500 Gallons from Tank 1 to Tank 2: 6/15/93

WARs (Untraced Water - J-13)

ESF Access Road: 6/1/93 and 6/2/93
NRG 5 Access Road: 6/1/93
ESF Pad: 6/3/93 and 6/4/93
Portal Tanks: 6/3/93 and 6/4/93
NRG 4: 6/4/93

Transmittal of WARs - 6/15/93

Form YMP-080-R0 Transmittal for eight WARs, Item 1-8, ESF North Portal Access Area, dated 6/17/93

Truck Water and Tanks Batch Record - 5/12/93 and 5/14/93

Inspection Checklist Cover Sheet - 5/12/93 and 5/14/93

Materials Testing Laboratory - Lithium Bromide Analysis, 5/7/93 and 5/17/93

Construction Department Submittal Log (AP-5.26)

Survey Activities

Non-QA Procedure TC-581-SP-0002, Revision 0, "Survey Guidelines Manual"

QA PROGRAM ELEMENT 15.0, "CONTROL OF NONCONFORMING ITEM"

Compliance with the following procedure was reviewed:

MC-11.2, Revision 0, "Nonconformance Control"

Objective Evidence Reviewed:

<u>NCR Number</u>	<u>Status</u>	<u>Disposition</u>	<u>Comments</u>
NCR 93-001, R0	Closed	Use-as-is	FCR 93/122
NCR 93-002, R0	Closed	Rework	
NCR 93-003, R0	Closed	Use-as-is	YMPO NCR 93-003, FCR 93/226
NCR 93-004, R0	Closed	Reject	Returned to vendor

NCR 93-005, R0	Open		
NCR 93-006, R0	Closed	Use-as-is	Certified Mill Test Reports
NCR 93-007, R0	Closed	N/A	REEC Co CAR CA-93-004, YMPO NCR 93-020
NCR 93-008, R0	Open		

NCR Log dated 6/11/93

Open Item List dated 6/11/93

1993 First Calendar Quarter Trend Evaluation Report dated 4/1/93

NCR Record Packages:

NCR-93-001, NNA.930315.0372
NCR-93-002, NNA.930427.0113
NCR-93-003, NNA.930519.0022
NCR-93-004, 93-004733, 6/11/93
NCR-93-006, 93-004270, 5/28/93
NCR-93-007, NNA.930528.0062

CRWMS M&O NCR Log, 6/1/93

NCRS initiated by REEC Co personnel under AP-5.27Q:

NCR 93-001	NCR 93-002,	NCR 93-003
NCR 93-004	NCR 93-015	NCR 93-006
NCR 93-010	NCR 96-011	NCR 96-016

ATTACHMENT 4

INFORMATION COPIES

OF

CORRECTIVE ACTION REPORTS

ORIGINAL
THIS IS A RED STAMP

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.		8 CAR NO.: <u>YM-93-055</u> DATE: <u>07/02/93</u> SHEET: <u>1</u> OF <u>2</u> QA
CORRECTIVE ACTION REQUEST		
1 Controlling Document QARD DOE/RW-0333P, Revision 0		2 Related Report No. YMP-93-12
3 Responsible Organization REECO	4 Discussed With W. Glasser/W. Gratz	
5 Requirement: QARD DOE/RW-0333P, Section 7.0, Paragraph 7.2.12, Commercial Grade Items Item B - Supplier evaluation and selection, when determined necessary by the purchaser based on the complexity and importance to safety, shall be in accordance with the requirements of the subsection entitled source evaluation and selection. (Continued on next page)		
6 Adverse Condition: Contrary to the cited requirements: Item B - Supplier evaluation to qualify suppliers were not performed for procurement of commercial-grade materials used in work important to radiological safety or waste isolation for Specification YMP-025-1-SP09, Section 02165, Rock Bolts and Accessories, Section 02310, Welded Steel Lattice Girder Ground Support System, and Section 03361, Shotcrete. D-3 - Testing was not performed on the commercial-grade material to verify the validity of CMTRs furnished by the suppliers (unqualified) of commercial-grade items used in work important to radiological safety or waste isolation for Specification YMP-025-1-SP09, Sections 02165, 02310, and 03361 and tied back to the Technical Inspection Report for traceability. (Continued on next page)		
9 Does a significant condition adverse to quality exist? Yes <u>X</u> No <u> </u> If Yes, Circle One: A B <u>C</u>	10 Does a stop work condition exist? Yes <u> </u> 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. Qualify suppliers of commercial-grade items contained in specifications or drawings. 2. Identify items with confirmatory testing and provide to A&E. 3. Identify those items not tested and provide to A&E.		
7 Initiator <u>Donald J. Harris</u> Donald J. Harris	14 Issuance Approved by: <u>[Signature]</u> QADD <u>[Signature]</u> Date <u>07-07-93</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-93-055
DATE: 07/02/93
SHEET: 2 OF 2
QA

CORRECTIVE ACTION REQUEST (Continuation Page)

5 Requirements (continued)

Item D - After receipt of a commercial-grade item, the purchaser shall ensure that:

3. Inspection or testing is accomplished, to the extent determined by the purchaser to ensure conformance with the manufacturers published requirements.
4. Documentation, as applicable to the item, was received and is acceptable.

6 Adverse Condition (continued)

D-4 - The documentation to the item was not reviewed for acceptance by the purchaser, the documentation was reviewed for accountability and submitted subsequently to the A&E for acceptance on Purchase Orders (POs) 00037YP, 00093, and 01527.

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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.		8 CAR NO.: <u>YM-93-056</u> DATE: <u>07/02/93</u> SHEET: <u>1</u> OF <u>1</u> <div style="text-align: center;">QA</div>
CORRECTIVE ACTION REQUEST		
1 Controlling Document TC-581-TP-0002, Revision 0		2 Related Report No. YMP-93-12
3 Responsible Organization REECe	4 Discussed With Jon Hedlund	
5 Requirement: TC-581-TP-0002, Revision 0, Paragraph 6.5.3, states in part, "If a bolt passes the pull test, paint the bolt plate green. If a bolt fails the pull test, paint the bolt plate red." MC-09.1, Revision 2, Paragraph 6.3 states in part, "Each required verifiable characteristic shall become an attribute to be inspected."		
6 Adverse Condition: CONSTRUCTION: 1) The bolt plates inside the starter tunnel are not being painted to indicate test status. INSPECTION: 2) QC did not verify procedural requirements regarding rock bolts and their test status indicators.		
9 Does a significant condition adverse to quality exist? Yes ___ No <u>X</u> If Yes, Circle One: A B C	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 type="checkbox"/> Extent of Deficiency <input checked="" type="checkbox"/> Preclude Recurrence <input checked="" type="checkbox"/> Root Cause Determination		
13 Recommended Actions: Implement procedural requirements.		
7 Initiator Fred E. Lofftus <i>Fred Lofftus</i> Date <u>6/30/93</u>	14 Issuance Approved by: <i>[Signature]</i> Date <u>6/30/93</u> QADD <i>[Signature]</i>	
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 _____	

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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.		8 CAR NO.: <u>YM-93-057</u> DATE: <u>7/2/93</u> SHEET: <u>1</u> OF <u>1</u> QA
CORRECTIVE ACTION REQUEST		
1 Controlling Document QARD, DOE/RW-0333P, Revision 0		2 Related Report No. YMP-93-12
3 Responsible Organization REECO Construction	4 Discussed With J. Hedlund/T. Leonard	
5 Requirement: QARD DOE/RW-0333P, Section 12.0, "Control of Measuring and Test Equipment," Revision 0, Paragraph 12.2.2 states, "The use of M&TE shall be documented" and Paragraph 12.2.6.A states, "M&TE calibration documentation shall include identification of the M&TE calibrated."		
6 Adverse Condition: Contrary to the above, Shotcrete Placement Logs do not identify M&TE used to measure temperatures of placed shotcrete as required by specifications.		
9 Does a significant condition adverse to quality exist? Yes ___ No <u>X</u> If Yes, Circle One: A B C	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) Revise Shotcrete Placement Logs to require M&TE serial numbers to be annotated when recording required temperature measurements.		
7 Initiator Gerard Heaney <i>Gerard Heaney</i> Date <u>7-6-93</u>	14 Issuance Approved by: QADD <i>[Signature]</i> for Date <u>07-07-93</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	

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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.		8 CAR NO.: <u>YM-93-058</u> DATE: <u>07/02/93</u> SHEET: <u>1</u> OF <u>1</u> <div style="text-align: center;">QA</div>
CORRECTIVE ACTION REQUEST		
1 Controlling Document REECO QAPP, 568-DCO-115, Revision 8		2 Related Report No. YMP-93-12
3 Responsible Organization REECO Construction	4 Discussed With T. Leonard/b. Koss	
5 Requirement: REECO QAPP, Section II, "Quality Assurance Program," Paragraph 1.2 states, "The Quality Assurance Program of REECO consists of the QAPP plus appropriate implementing procedures required to provide and implement control over activities affecting quality."		
6 Adverse Condition: Contrary to the above, survey activities of quality-affecting items are being performed in accordance with procedures that are not part of the REECO Yucca Mountain QA Program.		
9 Does a significant condition adverse to quality exist? Yes <u>X</u> No <u> </u> If Yes, Circle One: A B <u>(C)</u>	10 Does a stop work condition exist? Yes <u> </u> 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) Bring present procedures for survey activities under the REECO QA Program.		
7 Initiator Gerard Reaney <i>Gerard Reaney</i> Date <u>7-1-93</u>	14 Issuance Approved by: <i>[Signature]</i> for Date <u>07-01-93</u> OADD <i>[Signature]</i>	
15 Response Accepted QAR Date	16 Response Accepted OADD Date	
17 Amended Response Accepted QAR Date	18 Amended Response Accepted OADD Date	
19 Corrective Actions Verified QAR Date	20 Closure Approved by: OADD Date	

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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.		8 CAR NO.: <u>YM-93-059</u> DATE: <u>7/2/93</u> SHEET: <u>1</u> OF <u>1</u> QA
CORRECTIVE ACTION REQUEST		
1 Controlling Document TC-581-SP-0007, Revision 0		2 Related Report No. YMP-93-12
3 Responsible Organization REECo Construction	4 Discussed With J. Hedlund	
5 Requirement: REECo procedure TC-581-SP-0007, Revision 0, "Starter Tunnel Shotcrete," Paragraph 6.3.1 states, "Testing of mix design will be done prior to actual placement of shotcrete in the field." Paragraph 6.3.1.2 states, "Results of samples tested at 7 days will be used for acceptance or rejection of mix design by the A/E."		
6 Adverse Condition: The test result documentation of Fibercrete samples tested at 7 days does not provide traceability that the mix design was for Fibercrete.		
9 Does a significant condition adverse to quality exist? Yes <u> </u> No <u>X</u> If Yes, Circle One: A B C	10 Does a stop work condition exist? Yes <u> </u> 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 type="checkbox"/> Extent of Deficiency <input type="checkbox"/> Preclude Recurrence <input type="checkbox"/> Root Cause Determination		
13 Recommended Actions: 1. Provide justification for use of present mix design for "Fibercrete."		
7 Initiator Gerard Kearney <i>Gerard Kearney</i> Date <u>7-6-93</u>	14 Issuance Approved by: QADD <i>[Signature]</i> for Date <u>07-07-93</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	

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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.		8 CAR NO.: <u>YM-93-060</u> DATE: <u>07/02/93</u> SHEET: <u>1</u> OF <u>1</u> QA
CORRECTIVE ACTION REQUEST		
1 Controlling Document REECO QAPP, 568-DCO-115, Revision 8		2 Related Report No. YMP-93-12
3 Responsible Organization REECO Construction	4 Discussed With T. Leonard/J. Bedlund	
5 Requirement: REECO QAPP, Section XVII, "Quality Assurance Records," Paragraph 2.1.1 states in part, "Documents that are designated to become records shall be legible, identifiable, accurate, complete...."		
6 Adverse Condition: Contrary to the above, review of Shotcrete Placement Logs indicated the following for several records: a. Sample identification numbers are not accurate. b. The transfer of batch numbers is not accurate. c. Drawing numbers are not always listed. d. Corrections are not being lined out and initialed and dated.		
9 Does a significant condition adverse to quality exist? Yes <u>No</u> X If Yes, Circle One: A B C	10 Does a stop work condition exist? Yes <u>No</u> X; 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) Provide reinstruction to record management and procedural requirements.		
7 Initiator Gerard <i>Heaney</i> Date <u>7-1-93</u>	14 Issuance Approved by: <i>[Signature]</i> Date <u>07-07-93</u> OADD	
15 Response Accepted OAR Date	16 Response Accepted OADD Date	
17 Amended Response Accepted OAR Date	18 Amended Response Accepted OADD Date	
19 Corrective Actions Verified OAR Date	20 Closure Approved by: OADD Date	

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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.		8 CAR NO.: <u>YM-93-061</u> DATE: <u>07/02/93</u> SHEET: <u>1</u> OF <u>1</u> QA
CORRECTIVE ACTION REQUEST		
1 Controlling Document Specification YMP-025-1-SP09		2 Related Report No. YMP-93-12
3 Responsible Organization REECO QC	4 Discussed With P. Bryant	
5 Requirement: Specification YMP-025-1-SP09, Section 03361, "Shotcrete," Revision 1, Paragraph 3.10.B.3.d states in part, "When shotcrete does not meet the specified requirements and was taken from a test panel, additional samples shall be taken from the area of work in place represented by the test panel and tested for conformance to the specifications."		
6 Adverse Condition: Contrary to the above, Field Quality Control did not notify construction to take additional samples when two test panel 28-day compressive strength tests failed. Refer to test results for shotcrete placed on 4/23/93 and on 5/10/93.		
9 Does a significant condition adverse to quality exist? Yes <u>No</u> No <u>X</u> If Yes, Circle One: A B C	10 Does a stop work condition exist? Yes <u>No</u> 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 type="checkbox"/> Extent of Deficiency <input checked="" type="checkbox"/> Preclude Recurrence <input checked="" type="checkbox"/> Root Cause Determination		
13 Recommended Actions: 1) Ensure the two failed test results are appropriately documented.		
7 Initiator Gerard Kearney <i>Gerard Kearney</i> Date <u>7-1-93</u>	14 Issuance Approved by: <i>[Signature]</i> Date <u>07-01-93</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	

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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.		8 CAR NO.: <u>YM-93-062</u> DATE: <u>07/02/93</u> SHEET: <u>1</u> OF <u>2</u> QA
CORRECTIVE ACTION REQUEST		
1 Controlling Document QARD DOE/RW-0333P, Revision 0		2 Related Report No. YMP-93-12
3 Responsible Organization CRMS M&O-Nevada	4 Discussed With R. Justice/P. Hastings/E. Benton	
5 Requirement: 1) QARD DOE/RW-0333P, Section 3.0, Design Control Paragraph 3.2.2, Design Process Item 1- Drawings, specifications, and other design output documents shall contain appropriate inspection and testing acceptance. 2) QARD DOE/RW-0333P, Section 8.0, Identification and Control of Items Paragraph 8.2.3, traceability (Continued on next page)		
6 Adverse Condition: Contrary to the cited requirements: 1) Specification YMP-025-1-SP09, Section 1400 and Item Specifications 02165, 02310, and 03361 are unclear on the definition of commercial-grade for quality-affecting procurements, receiving inspection, including testing. There is no program in place for commercial-grade procurements, and the subsequent upgrade and dedication for use in a quality-affecting application. 2) a. The Specification YMP-025-1-SP09, Sections 1400, 02165, 02310, and 03361 currently do not address traceability. (Continued on next page)		
9 Does a significant condition adverse to quality exist? Yes <u>X</u> No <u> </u> If Yes, Circle One: A B <u>C</u>	10 Does a stop work condition exist? Yes <u> </u> 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. Clarify Specification YMP-025-1-SP09 quality requirement. 2. Develop a commercial-grade upgrade and dedication program. 3. Meet traceability requirements.		
7 Initiator <u>Donald J. Harris</u> Donald J. Harris Date <u>7-1-93</u>	14 Issuance Approved by <u>[Signature]</u> QADD <u>[Signature]</u> for <u>[Signature]</u> Date <u>07-01-93</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-93-062
DATE: 07/02/93
SHEET: 2 OF 2
QA

CORRECTIVE ACTION REQUEST (Continuation Page)

5 Requirements (continued)

- A. Item identification methods shall ensure that traceability is established and maintained in a manner that allows an item to be traced to applicable design or other specifying documents.
- B. Item traceability documentation shall ensure that the item can be traced at all times from its source through installation or end use.

6 Adverse Condition (continued)

- b. FCR 93/321 against Specification Section 02165, removed the traceability requirements for (commercial-grade) important to radiological safety or waste escalation due to production delays. This precludes traceability from source through installation or end use.

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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.		8 CAR NO.: <u>YM-93-063</u> DATE: <u>07/02/93</u> SHEET: <u>1</u> OF <u>2</u> <div style="text-align: right;">QA</div>
CORRECTIVE ACTION REQUEST		
1 Controlling Document QARD DOE/RW-0333P, Revision 0		2 Related Report No. YMP-93-12
3 Responsible Organization CRMS M&O-Nevada	4 Discussed With R. Justice/P. Hastings/H. Benton	
5 Requirement: 1) QARD DOE/RW-0333P, Revision 0, Section 15, Nonconformances Paragraph 15.2.4, Disposition of Nonconforming Items Item B The Technical Justification for the acceptability of a nonconforming item that has been dispositioned "repair" or "use-as-is," shall be documented. (Continued on next page)		
6 Adverse Condition: 1) Nonconformance Reports (NCRs) 93-010, 93-016, and 93-017 were dispositioned "use-as-is" and subsequently closed without a Technical Justification for the acceptability of the nonconforming items dispositioned as "use-as-is." 2) NCRs were dispositioned "use-as-is" based on Certified Mill Test Reports (CMTRs), welder records, shop drawings and Certificate of Conformances (NCR 93-010 and 93-017) and CMTR (NCR 93-016). These supplier submittals were (Continued on next page)		
9 Does a significant condition adverse to quality exist? Yes <u>X</u> No <u> </u> If Yes, Circle One: A B <u>(C)</u>	10 Does a stop work condition exist? Yes <u> </u> 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) Review the bases for the "use-as-is" disposition. 2) Determine extent of deficiency, determine action to preclude recurrence, and determine the root cause.		
7 Initiator <u>Donald J. Harris</u> Donald J. Harris <div style="text-align: right;">Date <u>7-1-93</u></div>	14 Issuance Approved by: <u>[Signature]</u> QADD <u>[Signature]</u> Date <u>07-07-93</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	

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WASHINGTON, D.C.

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SHEET: 2 OF 2
QA

CORRECTIVE ACTION REQUEST (Continuation Page)

5 Requirements (continued)

- 2) QARD DOE/RW-0333P, Revision 0, Section 4.0, Procurement Document Control
Paragraph 7.2.7, Certificate of Conformance

Item F Measures shall be identified to verify the validity of the suppliers' certificates and the effectiveness of the certification process (such as by audit of the supplier or by an independent inspection or test of the item) verification shall be conducted by the purchaser at intervals commensurate with the past quality performance of the supplier.

6 Adverse Condition (continued)

received from unqualified suppliers and were used as the bases of the "use-as-is" disposition, without testing to verify the validity of the suppliers' certification process for traceability back to the Purchase Order and Technical Inspection Reports.

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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.		* CAR NO.: <u>YM-93-064</u> DATE: <u>07/02/93</u> SHEET: <u>1</u> OF <u>1</u> <div style="text-align: right;">QA</div>
CORRECTIVE ACTION REQUEST		
1 Controlling Document QARD DOE/RW-0333P, Revision 0		2 Related Report No. YMP-93-12
3 Responsible Organization CRWMS M&O-Nevada	4 Discussed With A. Watkins	
5 Requirement: QARD DOE/RW-0333P, Section 15.0, "Nonconformances" Revision 0, Paragraph 15.2.1.A, states, "Nonconformance documentation shall clearly identify and describe the characteristics that do not conform to specified criteria."		
6 Adverse Condition: Contrary to the above, Specification YMP-025-1-SP09, Revision 1, Section 03361, Paragraph 3.10.B.3.D, "Shotcrete" does not require an NCR to be generated when shotcrete test results do not meet specification compressive strength requirements. The specification currently states, "When shotcrete does not meet the specified requirements and was taken from a test panel, additional samples shall be taken from the area of work in place represented by the test panel and tested for conformance to the specifications. Shotcrete not meeting the specified requirements shall be removed and replaced with new shotcrete."		
9 Does a significant condition adverse to quality exist? Yes <u>X</u> No <u> </u> If Yes, Circle One: A B <u>C</u>	10 Does a stop work condition exist? Yes <u> </u> 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) Revise specification requirements to meet QARD DOE/RW-0333P requirements. 2) Disposition failing test results on a case-by-case basis.		
7 Initiator Gerard Healey <i>Gerard Healey</i> Date <u>7-1-93</u>	14 Issuance Approved By: QADD <i>[Signature]</i> Date <u>7-1-93</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 _____	

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OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT U.S. DEPARTMENT OF ENERGY WASHINGTON, D.C.		8 CAR NO.: <u>YM-93-065</u> DATE: <u>07/02/93</u> SHEET: <u>1</u> OF <u>1</u> QA
CORRECTIVE ACTION REQUEST		
1 Controlling Document ESF Specifications		2 Related Report No. YMP-93-12
3 Responsible Organization CRMS M&O-Nevada	4 Discussed With A. Watkins	
5 Requirement: A) Specification YMP-025-1-SP09, Section 03361, "Shotcrete," Revision 1, Paragraph 2.02 requires the contractor to submit test results for a proposed mix design for shotcrete which will be approved by the A/E. B) Specification YMP-025-1-SP09, Section 02165, "Rock Bolts and Accessories," Revision 1, Paragraph 2.01.D requires the contractor to submit grout material mix designs and test results to the A/E.		
6 Adverse Condition: A) The test results for the proposed mix design for Fibercrete submitted by REECo was accepted by the A/E although the test results were not traceable to indicate that the material tested was Fibercrete. B) The mix design for grout used for cement grouted rockbolts was submitted by REECo and accepted by the A/E although Lithium Bromide was not listed on the design mix. Lithium Bromide is required to be used in all water used underground as a tracer material.		
9 Does a significant condition adverse to quality exist? Yes ___ No <u>X</u> If Yes, Circle One: A B C	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 type="checkbox"/> Extent of Deficiency <input type="checkbox"/> Preclude Recurrence <input type="checkbox"/> Root Cause Determination		
13 Recommended Actions: 1) Revise grout mix designs to include Lithium Bromide. 2) Provide justification for present mix design for Fibercrete.		
7 Initiator Gerard Heaney <i>Gerard Heaney</i> Date <u>7-1-93</u>	14 Issuance Approved by: <i>[Signature]</i> for <i>[Signature]</i> Date <u>7-07-93</u> QADD	
15 Response Accepted QAR Date	16 Response Accepted QADD Date	
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