

U.S. DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
OFFICE OF QUALITY ASSURANCE
AUDIT REPORT
FOR LIMITED SCOPE AUDIT OF
REYNOLDS ELECTRICAL AND ENGINEERING COMPANY, INC.
LAS VEGAS AND MERCURY, NEVADA
AUDIT NO. YMP-92-10
FEBRUARY 25 THROUGH 28, 1992

ACTIVITIES EVALUATED:

- 4.0 Procurement Document Control
- 5.0 Instructions, Procedures and Drawings
- 6.0 Document Control
- 7.0 Control of Purchased Items and Services
- 8.0 Identification and Control of Materials,
Parts, and Components
- 12.0 Control of Measuring and Test Equipment
- 13.0 Handling, Storage, and Shipping

Prepared by: Amelia I. Arceo
Amelia I. Arceo
Audit Team Leader
Yucca Mountain Quality Assurance Division

Date: 3/18/92

Approved by: Donald G. Horton
Donald G. Horton
Director
Office of Quality Assurance

Date: 3/19/92

EXECUTIVE SUMMARY

This report contains the results of the U.S. Department of Energy Office of Civilian Radioactive Waste Management (OCRWM) Audit No. YMP-92-10 of Reynolds Electrical and Engineering Company, Inc. (REECo) that was conducted in Las Vegas, and Mercury, Nevada on February 25 through 28, 1992. A team from the Yucca Mountain Quality Assurance Division of the Office of Quality Assurance conducted a limited scope audit to evaluate REECo's implementation of the OCRWM Quality Assurance (QA) Program to determine whether it meets the requirements and commitments imposed by OCRWM. This was done by verifying implementation and effectiveness of the system in place, as well as verifying compliance with requirements.

Overall, REECo is satisfactorily implementing an effective QA Program in accordance with REECo Quality Assurance Program Plan (QAPP), 568-DOC-115, Revision 8, Change Notice No. 91-01 and implementing procedures; however, implementation of Program Elements 4, 7, 8 and 13 could not be determined because there has been insufficient implementation since the last audit. The Program elements 9, 10 and 14 were considered during the planning of the audit, but were not audited, since REECo has no activities to which these elements apply.

The audit team identified 4 deficiencies which were corrected during the audit. Two deficiencies were resolved by issuing Interim Change Notices (ICNs) against 2 Management Control Procedures. One deficiency was resolved by an ICN to the QAPP, which was submitted to the Yucca Mountain Site Characterization Project Office and approved prior to the end of the audit. One deficiency was corrected on the spot by completion of the "Responsible Party" block on the Controlled Distribution List for two submitted records.

The audit team appreciated the cooperative and professional attitude of the REECo personnel during the conduct of this audit. A positive attitude toward correcting deficiencies in a decisive and expedient manner was evident.

It was noted during the course of the audit that the REECo Management, Quality Assurance, Procurement, and Warehousing personnel were very knowledgeable of the procurement process and their responsibilities as required by their QAPP and implementing procedures.

1.0 INTRODUCTION

This report contains the results of the U.S. Department of Energy (DOE) Office of Civilian Radioactive Waste Management (OCRWM) Audit YMP-92-10 of Reynolds Electrical and Engineering Company, Inc. (REECo), conducted at Las Vegas, and Mercury, Nevada on February 25 through 28, 1992. This audit was conducted by an audit team from the Yucca Mountain Quality Assurance Division (YMQAD) of the Office of Quality Assurance (OQA), in accordance with the approved Audit Plan (Reference: Correspondence OQA:JB-1601, Horton to Pritchett, dated 1/15/92).

2.0 AUDIT SCOPE

This audit evaluated selected portions of the REECo Yucca Mountain Site Characterization Project (YMP) Quality Assurance (QA) Program to determine whether it meets the requirements and commitments imposed by OCRWM as reflected in the REECo Yucca Mountain Quality Assurance Program Plan (QAPP) 568-DOC-115, Revision 8, QAPP Change Notice (CN) No. 91-01. This was done by verifying implementation and effectiveness of the system in place, as well as verifying compliance with requirements.

The following programmatic elements (criteria) were audited:

- 4.0 Procurement Document Control
- 5.0 Instructions, Procedures, Plans, and Drawings
- 6.0 Document Control
- 7.0 Control of Purchased Items and Services
- 8.0 Identification and Control of Materials, Parts, and Components
- 12.0 Control of Measuring and Test Equipment
- 13.0 Handling, Storage and Shipping

The following programmatic elements were considered during the development of the audit scope and determined to be not applicable since REECo currently has no activities for which these elements apply:

- 9.0 Control of Processes
- 10.0 Inspection
- 14.0 Inspection, Test and Operating Status

3.0 AUDIT TEAM PERSONNEL AND OBSERVER

The Audit Team consisted of the following personnel:

<u>Responsibility</u>	<u>Name</u>	<u>Organization & Location</u>	<u>Programmatic Element</u>
Audit Team Leader	Amelia I. Arceo	SAIC ¹ , Las Vegas, NV	
Auditors	Sandra D. Bates	SAIC, Las Vegas, NV	5
	Donald J. Harris	Harza, Las Vegas, NV	4, and 7
	Thomas J. Higgins	SAIC, Las Vegas, NV	8, 12, and 13
	Richard L. Weeks	SAIC, Las Vegas, NV	6
Observer	Dan Valega	SAIC/USGS ² , Golden, CO	

¹ SAIC - Science Applications International Corporation

² USGS - United States Geological Survey

4.0 AUDIT MEETINGS AND PERSONNEL CONTACTED

4.1 Pre-audit Conference

A pre-audit conference with the REECo Technical Project Officer and his staff was conducted at 9:00 a.m. on February 25, 1992. The purpose, scope, and proposed agenda for the audit were presented, and the auditors were introduced. A list of attendees is attached as Enclosure 1.

4.2 Persons Contacted during the Audit

See Enclosure 1 for a list of persons contacted during the audit.

4.3 Post-Audit Conference

The post-audit conference was conducted at 10:00 a. m. on February 28, 1992. A list of attendees is attached as Enclosure 1.

5.0 SUMMARY OF AUDIT RESULTS

5.1 Statement of Program Effectiveness

Overall, REECo is satisfactorily implementing an effective Quality Assurance Program in accordance with their QAPP, 568-DOC-115, Revision 8, CN No. 91-01 and implementing procedures.

Several areas within the REECo QA Program that were considered strengths worthy of note are:

- a. The REECo personnel were very cooperative and corrected all deficiencies in an expedient manner.
- b. The REECo Management, Quality Assurance, Procurement, and Warehousing personnel were very knowledgeable of the procurement process and their responsibilities as required by their QAPP and their implementing procedures.

5.1.1 Effectiveness of Program Elements

- a. 4.0 Procurement Document Control, and
7.0 Control of Purchased Items and Services

Due to lack of quality affecting activities, implementation of Quality Procedures (QP) 4.0, Revision 6, and QP 7.0, Revision 6, was insufficient to determine compliance with requirements.

- b. 5.0 Instructions, Procedures, Plans, and Drawings

Implementation of MC-5.0, Revision 0, and MC-05.1, Revision 0 was found to be satisfactory. Implementation of MC-5.3, Revision 0 was insufficient to determine compliance to requirements. There was no implementation of MC-5.2, Revision 0.

- c. 6.0 Document Control

Implementation of MC-06.1, Revision 0 was found to be satisfactory.

- d. 8.0 Identification and Control of Materials, Parts, and Components, and
13.0 Handling, Storage and Shipping

No implementation of QP 8.0, Revision 5 and QP 13.0, Revision 5 has occurred to determine compliance to requirements. REECo has not acquired any quality-affecting materials, items, parts and components.

e. 12.0 Control of Measuring and Test Equipment

Implementation of QP 12.0, Revision 6 was found to be satisfactory.

5.2 Programmatic Activities

Details of programmatic activities can be found in Enclosures 2 and 3.

5.3 Technical Activities

None

5.4 Summary of Deficiencies

Four deficiencies were found during this audit. All four were isolated in nature and were corrected during the audit. There were no deficiencies found that resulted in the issuance of Corrective Action Requests.

6.0 SYNOPSIS OF CORRECTIVE ACTION REQUEST (CAR) AND DEFICIENCIES CORRECTED DURING THE AUDIT

6.1 Corrective Action Request

There was no CAR issued as a result of this audit.

6.2 Deficiencies Corrected During the Audit

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

- a. MC-05.1, Revision 0, Subsection 6.1.2.6, states in part: "NOTES" may be used to clarify items of importance and items of sequence, but shall not include requirements." Twenty-six procedures were reviewed for compliance with the requirement. Three procedures contained the term "shall" in notes; however, it was determined that only one note on MC-02.4.2 required a change to comply with the requirement. Interim Change Notice (ICN) No. 1 to MC-02.4.2, Revision 0, was issued by REECo on 2/26/92 to resolve this deficiency.
- b. REECo QAPP, Revision 8, CN No. 91-01, Section V, Subsection 2.0, states in part: "If applicable, this review shall consider whether or not the activities are repeatable, have the potential to impact the waste isolation capability of the site, or interfere with other site characterization activities." Management Control Procedures MC-05.0, Revision 0, MC-05.1, Revision 0, and MC-05.2, Revision 0, contain no reference to this requirement. Investigation determined that this requirement came

from the Nevada Nuclear Waste Storage Investigatins Quality Assurance Plan, NNWSI/88-9, which has been superseded by the OCRWM QARD, DOE/RW-0214. Since it is no longer a requirement, CN No. 92-01 to the REECo QAPP, Revision 8, deleting the requirement, was submitted to the YMQAD and was approved by the YMQAD Director on February 26, 1992.

- c. While examining record packages at the REECo Local Records Center (LRC) it was noted that the "Responsible Party" block was left empty, on the Controlled Document Distribution List, for two submitted records. The omission was corrected on the spot. No additional action was necessary since the record had not yet been sent to the Central Records Facility.
- d. QP 12.0, Revision 6, paragraph 6.3.9.2 requires that "M&TE other than that of a mechanical nature (i.e., electronic/electrical) are recalibrated by an approved test lab or manufacturer." Contrary to this requirement, the Physical Standards and Calibration Laboratory (Cal Lab) calibrated thermocouples, a thermoelectric device, using a digital electronic instrument. It was determined that the restriction was administrative and that the Cal Lab personnel has the capability and equipment to do the calibration. This was resolved by deleting the restriction through the issuance of ICN No. 1 to MC-10.0, Revision 0 on 2/28/92. MC-10 replaced QP-12 on 2/28/92.

6.3 Follow-up on Previous CARs

Closed CAR YM-91-031, dated 3/7/91, was checked for adequate implementation of requirements. QP 5.1, Revision 2, and QP 5.3, Revision 1, have been superseded by MC-05.1, Revision 0 and MC-05.3, Revision 0, respectively. The requirement for annual procedure review has been abolished and a new requirement of three year intervals for procedure review has been established. It was determined that no procedures are scheduled for review at present.

7.0 RECOMMENDATIONS

The audit team recommends that the Cal Lab be provided more space. The Cal Lab now utilizes floor space to the maximum. Safety and the ability to meet expanding YMP calibration requirements indicate the need to provide additional storage space. While additional laboratory space would be the preferred approach, a well-designed system of shelves and cabinets may be an adequate solution.

Although the generic Position Descriptions meet the requirements, the audit team recommends the development of Position Descriptions which reflect the specific and highly technical requirements for the Supervisor of the Calibration Laboratory and the Quality Services Section Chief.

8.0 LIST OF ENCLOSURES

- Enclosure 1 Personnel Contacted During the Audit**
- Enclosure 2 Audit Details**
- Enclosure 3 Objective Evidence Reviewed During the Audit**

PERSONNEL ATTENDANCE LIST

<u>NAME</u>	<u>ORGANIZATION</u>	<u>TITLE</u>	<u>PRE- AUDIT</u>	<u>CONTACTED</u>	
				<u>DURING AUDIT</u>	<u>POST- AUDIT</u>
A. I. Arceo	SAIC/YMQAD	Audit Team Leader	X		X
James Arnold	REECO	Sr. Engr.			X
M. C. Barker	REECO	Training Admin.	X	X	X
S. D. Bates	SAIC/YMQAD	Auditor	X		X
B. J. Blichfeldt	REECO	Sr. Staff Asst.	X		
G. A. Erickson	REECO	Sr. QA Specialist	X	X	X
W. J. Glasser	REECO	QA Manager	X	X	X
O. L. Gorby	REECO	Dept. Mgr.	X	X	X
William Gratza	REECO	Sr. QA Specialist	X		X
D. A. Hackbert	REECO	Sr. QA Specialist	X	X	X
D. J. Harris	HARZA/YMQAD	Auditor	X		X
T. J. Higgins	SAIC	QA Engineer	X		X
Paul Hurtado	REECO	QC Technician II		X	
D. J. Johnson	REECO	Section Chief	X		
K. L. Limon	REECO	IMD Manager	X		X
Anna McMullen	REECO	Admin. Rec'ds Coord.		X	
J. P. McGoldrick	REECO	Chief Purchasing Agent		X	
R. A. Miller	REECO	Asst. Mgr. Sup. & Prop.	X		
M. D. Moulder	REECO	Sr. Staff Asst.	X	X	X
W. C. Pugmire	REECO	QSS Sect. Chief	X	X	X
R. F. Pritchett	REECO	YMP Division Manager	X	X	X
E. S. Reiter	REECO	Sr. QA Specialist	X	X	X
R. R. Rommel	REECO	Project Engineer	X		X
S. O. Straub	REECO	Log. Spt. Dept. Mgr.	X	X	X
N. J. Sylvanus	REECO	Chief Clerk		x	
David Warriner	REECO	LRC Manager	X		
J. A. Wilson	REECO	Prop Acct. S/C	X		
P. J. Wilson	REECO	Sr. QA Specialist	X		X
James Walker Jr.	REECO	YMP Coordinator	X		
R. L. Weeks	SAIC/YMQAD	Auditor	X		X
T. M. Zellers	REECO	Mail & Rec'ds Br. Chief	X		X
S. A. Ziehm	REECO	Sr. Staff Asst.	X	X	X

AUDIT DETAILS

The following is a summary of programmatic activities covered during the audit. A list of objective evidence reviewed during this audit is shown in Enclosure 3. The full document identification number, revision status, and title for documents referenced below can be found in Enclosure 3.

1. Criterion 4 - Procurement Document Control

REECo uses Quality Procedure (QP) 4.0, Revision 6, "Procurement Document Control" to control this activity. The REECo procurement document computer tracking system was reviewed and was verified that there were no quality affecting procurements issued since the last audit conducted on February 24- 28, 1991. Two commercial grade Purchase Requisitions (PR), PR 24YP01 and PR 26YP01 were reviewed for completeness and proper signatures. Both PRs were traced to the buyers, purchasing, and warehouse receiving area. PR 24YP01 (gages) were traced to Tom Johnson (Requisitioner). Mr. Johnson stated that the gages were used for the Lang Drill Rig. Neither PR specified any special handling, receiving or calibration requirements.

The procurement records tracking system indicated that there has been no QA documents generated during the procurement operations; therefore no quality documents have been submitted by Procurement to the LRC.

It was noted during the course of the audit that the REECo Management, Quality Assurance, Procurement, and Warehousing personnel were very knowledgeable of the procurement process and their responsibilities as required by their QAPP and their implementing procedures.

2. Criterion 7 - Control of Purchased Material, Equipment and Services

It was verified that REECo did not procure any quality affecting items or services that would require the qualification of a supplier. Only procurements of commercial grade material were initiated by REECo since the last audit. The Purchase Requisitions 26YP01 and 24YP01 contained the proper nomenclature, and catalog numbers, and were reviewed by the requester and QA. It was noted that QP 7.0, Revision 6, "Control of Purchased Material, Equipment and Services" adequately met the QAPP requirements for Criterion 7.

3. Criterion 5 - Instructions, Procedures, Plans, and Drawing

REECo is currently converting their implementing procedures to Management Control (MC) procedures. REECo uses the following MC procedures to control this activity:

MC-05.0, Revision 1, "Instruction, Procedures and Drawings"
MC-05.1, Revision 0, "Preparation, Review and Approval of Management Control Procedures"
MC-05.2, Revision 0, "Preparation, Review and Approval of Technical Control Procedures"
MC-05.3, Revision 0, "Preparation, Review and Approval of Work Procedures"

The MC procedures (listed in Enclosure 3) that were issued at the time of the audit were traced through development, review, approval, and issuance. It was verified that MC-05.1 was effectively implemented. One deficiency was identified regarding a "Note" section which specified a requirement. This was corrected during the audit by issuing an ICN to MC-02.4.2 replacing the "Note" section with a paragraph stating the requirement.

There was only one Technical Procedure issued at the time of the audit. Technical Control procedure, TC-515-CP-GEN-1, Revision 0 was verified to be in compliance with all applicable MC-05.2, Revision 0, requirements.

There were no Work Procedures issued; hence, MC-05.3, Revision 0, Effective Date of February 14, 1992, had not been implemented.

Criterion 5 requirements of the REECo Quality Assurance Program Plan (QAPP) have been incorporated into MC procedures with one exception. This deficiency was corrected during the audit. See Paragraph 6.2 b of the report for details.

A review of MC procedures for inclusion of quantitative and qualitative acceptance criteria requirements disclosed that, where applicable, this requirement is being met.

4. Criterion 6 - Document Control

The implementation of MC-06.1, Revision 0, "Document Control" was verified using the objective evidence in Enclosure 3. Documents were examined at the REECo office at the Valley Bank Building and the LRC on 4460 South Arville. Cognizant REECo personnel were interviewed and found to be very knowledgeable of the document control process that they were implementing. REECo personnel provided logs and indexes from which specific documents were chosen for detailed examination. Attributes of logs and indexes were examined for completeness. Controlled Document Center (CDC), controls of controlled documents were verified by examination of completed record packages.

Currently, REECo is in the process of converting to a centralized system for document control. As new controlled documents are created and old controlled documents are revised, responsibility for their maintenance is transferred to the CDC. Unrevised controlled documents remain under the the control of the old system (specific department) until changes are made. The CDC maintains a Master List of all REECo YMP controlled documents.

Traceability of controlled copies of procedures to specific document holders was verified.

Record packages, which were submitted to the LRC, were examined for completeness.

The REECO document control system is considered to be effectively implemented.

5. Criterion 8 - Identification and Control of Materials, Parts, and Components

REECO has no responsibilities related to sample taking or data at this time. The audit team also determined through its interviews that no quality-affecting material, items, parts, or components that require the specific identification and controls specified under Criterion 8 have been acquired for REECO use in its capacity as Project Participant. This information was verified through a computer report of YMP requisitions that was supplied by J. P. McGoldrick.

6. Criterion 12 - Control of Measuring and Test Equipment (M&TE)

REECO uses QP 12.0, Revision 6, "Control of Measuring and Test Equipment" and MQA-IP CP-GEN-1, Revision 3, "Calibration-General" to implement Criterion 12 requirements.

REECO calibrates and uses M&TE in two capacities; (1) as a Project Participant who uses instrumentation (M&TE) in performing Project work and who also maintains and operates a Calibration Laboratory for the calibration of that instrumentation, and (2) as a calibration service supplier to other YMP Participants.

All requirements of the REECO QAPP apply to all of REECO's activities, including the calibration of other YMP Participants' instruments. However, those requirements of REECO's Program which are specified as User responsibilities do not apply to the non-REECO User. In this case, the User is bound by their corresponding QAPP.

The majority of YMP M&TE calibrated by the REECO Physical Standards and Calibration Laboratory (Cal Lab) is in the custody of users who are not REECO organizations and therefore are not subject to the requirements of the REECO Quality Assurance Program. Of the 53 YMP instruments calibrated and tracked by the Cal Lab, the ownership is as follows: USGS - 31, SAIC - 3, EG&G/EM - 17, and REECO - 2.

The audit team determined that it was not productive to travel to the drilling site where only two instruments were assigned. For this reason, all questions related to user care and use of M&TE, and to possible nonconformances of this equipment and/or data arising from its use, are restricted to the Cal Lab itself.

A. Standards

A sample of 7 (Enclosure 3, List A) of the 131 Laboratory Standards was selected to evaluate compliance with the requirement that standards utilized for calibration shall be traceable to the National Institute of Science and Technology (NIST). All 7 had NIST-traceable calibration records that were readily available for reference in the Cal Lab. Six of the standards were within their calibration period and the seventh was at the NIST for recalibration.

The requirement that the standards used in calibration have equal or greater accuracy than the instrument under calibration was verified. Both technicians, P. Hurtado and G. Erickson stated that a 10:1 accuracy ratio is their normal goal for calibration. For some instruments, it is 4:1 ratio. These statements are corroborated by a comparison of Calibration Reports (List C) and the corresponding calibration procedure (List E) referenced in the Report.

B. Tracking System

Prior to placing M&TE into service, the Cal Lab enters the M&TE into a tracking system. A computer-based tracking system is used by the Cal Lab. This system provides appropriate identification of the instrument, User, calibration history, recalibration due date, etc. The source of information to update the tracking system is the Calibration Services Request. This form is submitted to the Cal Lab by the User and is found in Exhibit 1 of MQA-IP CP-GEN-1, Rev. 3, which controls the activity of the Cal Lab. The audit team examined the Requests (List B) and compared them against the tracking system report titled "Report of Records by Calibration Status". These were found to be in agreement. In addition, one complete instrument record (PTL 3220) was also viewed directly from the database. It was found to be complete.

C. Calibration Frequency and Status

The calibration frequency of M&TE is rightfully determined by the User who is knowledgeable of the required performance of the instrument. However, the Calibration Lab will notify the User according to the timetable for frequent use as specified in the calibration procedure for that instrument unless the User has specified otherwise. Once this has been communicated to the Cal Lab, recall notices follow the User's schedule.

There are currently 53 instruments that are maintained in the calibration tracking system by the Cal Lab. A review of "Report of Records by Calibration Status" indicates that all active status instruments (51) are within their calibration period. The 2 inactive status instruments are Soil Temperature Thermometers in the control of EG&G/EM and have exceeded their period of calibration. The longest recalibration period listed for any instrument is one year.

D. Storage and Environment

The Cal Lab has controlled access and employs an airlock for normal access. A positive pressure differential provides dust control. The Cal Lab is monitored for both temperature and humidity. Temperature excursions are alarmed. The main portion of the Lab is maintained at 23 ± 2 degrees centigrade and $< 50\%$ relative humidity. The separate two rooms containing the Lab Standards are maintained at 20 ± 1 degree centigrade and relative humidity between 15 and 50%. Vibration pads are used as needed to discriminate against unwanted vibration. Currently, acoustic and electrical noise are not a normal problem.

All the instruments in the Cal Lab receive appropriate care. As REECO has only 2 instruments outside of the Cal Lab, the audit team did not elect to travel to the field during this audit.

E. Calibration Reports

The audit team examined the Calibration Reports for a selection of instruments. Enclosure 3, List C contains those recovered from the Central Records Facility. The second set of Reports (List D) was obtained from the USGS, a User with instruments assigned to the Hydrologic Research Facility located on the NTS. Both sets were judged as meeting the requirements that a certified calibration report be submitted with the recalibrated piece of M&TE which shows the procedure and standards used, calibration process, results, calibration date, As-Found condition, any anomalies and individual performing the calibration.

F. M&TE other than that of a Mechanical Nature

QP 12.0, Revision 6, paragraph 6.3.9.2 requires that "M&TE other than that of a mechanical nature (i.e. electronic/electrical) are recalibrated by an approved test lab or manufacturer." Contrary to this requirement, the Cal Lab calibrated thermocouples, a thermoelectric device, using a digital electronic instrument. This is documented in the Calibration Report designated PTL No. 10079 and dated 2-24-92.

Upon investigation, the audit team learned that this restriction is based on an administrative decision rather than the actual capability of the Laboratory or its personnel. Following consultation with the Section Chief, PQAM, and Lab supervisor, it was determined that the subject calibration was not in question, rather the issue was activity not in compliance with a procedural restriction. Consequently, corrective action to prevent future procedural noncompliance was determined to be the only necessary action. REECO issued a change to the MC-10.0, Revision 0, to remove this prohibition. (MC-10.0 with effective date of 2/28/92 replaced QP 12.0.) As this corrective action was completed during the audit, no corrective action request was issued.

G. Calibration Procedures

MQA-IP CP-GEN-1, Rev.1, paragraph 6.10 requires that the procedure specify the tolerance permitted for the instrument under calibration.

The audit team examined a selection of the procedures used by the Cal Lab in providing calibration services. This selection is found in Enclosure 3, List E. All stated the permitted tolerance and specified the disposition of discrepant instruments

H. Personnel Qualification and Certification Records

The audit team examined the personnel qualifications and certification records for three individuals who most influence the continued satisfactory operation of the Cal Lab. These were W. C. Pugmire, Section Chief Quality Services Section, G. A. Erickson, Lab supervisor, and P. Hurtado, Technician. All three met requirements and were found to be well qualified for the positions they held.

The team noted that the Position Descriptions for the Lab supervisor and for the Section Chief were generic descriptions that contained no requirements of a specific technical or metrologic nature. The audit team believes that more specific Position Descriptions are appropriate for these sensitive positions.

7. Criterion 13 - Handling, Storage and Shipping

The audit team determined that REECO has no items, material, components, or parts requiring the protection and safekeeping of the controls specified under Criterion 13 at this time.

The team learned from O. Gorby, Supply and Property Management Manager, that preparation for full implementation of this criterion is in progress and, based on current schedules, will be complete prior to the arrival of objects requiring its controls.

The following progress has been made. Three procedures have been written and are in the review process. Fifty plus individuals have been certified in fork-lift operation and a certified instructor is now available. Warehouse 160 provides basic storage capability and includes a secured area. A computerized tracking and control system is now on-line. Separate controlled environment is provided in Warehouse R that is also secured. Both of these facilities are in the Mercury complex on the NTS.

OBJECTIVE EVIDENCE REVIEWED REVIEWED DURING THE AUDIT

CRITERION 4 - PROCUREMENT DOCUMENT CONTROL AND
CRITERION 7 - CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

Plans:

REECo Quality Assurance Program Plan (QAPP), 568-DOC-115, Revision 8,
Change Notice Number 91-01

Quality Procedures:

QP 4.0, Revision 5 - Procurement Document Control
QP 7.0, Revision 6 - Control of Purchased Item Material, Equipment
and Services

Purchase Requisitions (PRs):

PR 24YP01 PR 26TP01

CRITERION 5 - INSTRUCTIONS, PROCEDURES, PLANS, AND DRAWINGS

Plans:

REECo Quality Assurance Program Plan, 568-DOC-115, Revision 8, Change
Notice Number 91-01

Quality Procedures:

DOCUMENT	REV	TITLE
MC-01.0	0	Organization
MC-01.1	0	Stop Work Authority
MC-02.0	0	Quality Assurance Program
MC-02.4	0	Training and Qualification
MC-02.4.1	0	YMP Indoctrination and Training
MC-02.4.2	0	Personnel Qualification and Certification
MC-04.0	0	Material Control
MC-05.0	1	Instruction, Procedures and Drawings
MC-05.1	0	Preparation, Review and Approval of Management Control Procedures
MC-05.2	0	Preparation, Review and Approval of Technical Control Procedures
MC-05.3	0	Preparation, Review and Approval of Work Procedures

MC-06.0	0	Document Control
MC-06.1	0	Control and Distribution of Controlled Documents
MC-06.1	ICN 1	Interim Change Notice to MC-06.1, Rev. 0
MC-07.2	0	Initiation of Changes to Source Documents
MC-08.0	0	Special Processes
MC-10.0	0	Measuring and Test Equipment
MC-11.0	0	Problem Identification and Control
MC-11.1	0	Deficiency Notices
MC-11.3	0	Corrective Action
MC-11.4	0	Trending
MC-12.0	0	Records Management Program
MC-12.1	0	Records Management for Records Sources
MC-12.2	0	Records Management for Records Administrators
MC-12.3	0	Records Management for the Local Records Center
MC-13.0	1	Audits
MC-13.1	0	Auditor Qualifications
MC-13.2	0	Surveillances
TC-515-		
CP-GEN-1	0	Calibration-General (Effective Date 2/28/92)

Miscellaneous:

Document Transmittal Controlled Copy No. 42
 Document Review Records
 Procedure Drafts, as applicable
 Interim Change Notice Log
 Document Submittal Form
 Master List of Controlled Documents, Revision 10, Dated 01-30-92
 Personnel Qualification and Certification Records of Procedure Reviewers:

<u>Name</u>	<u>Title</u>	<u>Procedures</u>
J. M. Arnold	Senior Engineer	MC-02.4.2, MC-06.1, MC-08.1, MC-10.0
G. A. Erickson	Sr. QA Specialist	MC-10.0
W. J. Glasser	QA Manager	MC-02.0, MC-06.1, MC-08.1, MC-10.0
D. A. Hackbert	Sr. QA Specialist	MC-02.4.2,
J. R. Joyce	Senior Engineer	MC-02.0
K. L. Limon	IMD Manager	MC-02.4.2, MC-06.1, MC-08.1, MC-10.0

<u>Name</u>	<u>Title</u>	<u>Procedures</u>
C. J. Mason	Drilling Dept. Mgr.	MC-02-4.2, MC-08.1, MC-10.0
R. R. Rommel	Project Engineer	MC-02.0, MC-02.4.2, MC-06.1, MC-08.1, MC-10.0
S. O. Straub	Logistical Support Department Manager	MC-02.0, MC-02-4.2, MC-06.1, MC-08.1, MC-10.0
David Warriner	IMD Archivist	MC-2.4.2, MC-06.1, MC-08.1, MC-10.0,

CRITERION 6 - DOCUMENT CONTROL

Plans:

REECO Quality Assurance Program Plan, 568-DOC-115, Revision 8, Change
 Notice Number 91-01

Quality Procedures:

MC-01.0, R0	MC-06.1, R0
MC-01.1, R0	MC-08.0, R0
MC-01.2, R0	MC-10.0, R0
MC-02.0, R0	MC-11.0, R0
MC-02.4, R0	MC-11.1, R0
MC-02.4.1, R0	MC-11.3, R0
MC-02.4.2, R0	MC-11.4, R0
MC-02.4.3, R0	MC-12.0, R0
MC-02.4.4, R0	MC-12.1, R0
MC-02.4.5, R0	MC-13.1, R0
MC-05.0, R0	QPCN-91-15
MC-05.1, R0	QPCN-91-16
MC-05.2, R0	QPCN-91-17
MC-06.0, R0	QPCN-91-18

Document Holders and Document Controlled Numbers:

CDC	MC manual #3
"	TC manual #3
W. J. Glasser	MC manual #15
"	QP manual #15
"	TC manual #15
D. Hackbert	MC manual #42
"	QP manual #42

Document Holders and Document Controlled Numbers:

T. M. Leonard	MC manual #25
"	QP manual #25
R. F. Pritchett	MC manual #36
"	QP manual #36
"	TC manual #36
"	QAPP manual #36

Record packages reviewed at the LRC:

MC-01.0, R0	MC-11.4, R0
MC-02.0, R0	MC-12.0, R0
MC-05.0, R0	MC-12.1, R0
MC-05.1, R0	MC-13.0, R0
MC-05.2, R0	MC-13.1, R0
MC-06.0, R0	MC-13.2, R0
MC-06.1, R0	QPCN-91-15
MC-11.0, R0	QPCN-91-16
MC-11.1, R0	QPCN-91-17
MC-11.3, R0	QPCN-91-18

Master Index, Revision 12, Dated 2/19/92

CRITERION 12 - CONTROL OF MEASURING AND TEST EQUIPMENT

Plans:

REECO Quality Assurance Program Plan, 568-DOC-115, Revision 8, Change Notice Number 91-01

Quality Procedures:

QP 12.0, Revision 6, "Control of Measuring and Test Equipment"
MQA-IP CP-GEN, Revision 3, "Calibration-General"

LIST A - STANDARDS - NIST TRACEABILITY

<u>STANDARD</u>	<u>PTL NO.</u>	<u>ITEM</u>	<u>CALIBRATION DUE</u>
2	2.99	Mass Standards	At NIST
19	19.99	Weights	5-07-92
22b	22.97	Torque load cell	6-06-92
31	31.99	Pressure transducer	3-18-92
60	60.07	Micrometer OD set	3-11-92
66	66.99	Digital thermometer	7-29-92
102	102.99	Scanning thermometer	2-10-93

LIST B - TRACKING SYSTEM

<u>PTL</u>	<u>USER</u>	<u>TYPE OF EQUIPMENT</u>	<u>PTL</u>	<u>USER</u>	<u>TYPE OF EQUIPMENT</u>
2528	USGS	Muffle Furnace	7233	USGS	Balance
3086	"	Balance	7277	"	"
1296	"	"	1293	"	"
10066	SAIC	Setra model m370	10065	SAIC	Setra model m370
3121	USGS	Pressure gauge	553	USGS	Pressure gauge
545	"	" "	3027	"	" "
6970	"	" "	3220	"	" "
552	"	" "	4798	"	" "
10079	"	Thermocouple assy.	2529	"	Thermometer
2530	"	Thermometer	2540	"	"
2541	"	"	3194	REECO	Chart recorder
10067	SAIC	Barometer/altimeter	3196	"	Flow meter
646	USGS	Balance	3197	"	" "
7232	"	"	5630	USGS	Balance
3060	"	"			

LIST C - CALIBRATION REPORTS

Obtained from the central records facility on microfilm reel no. 9096700:

<u>PTL NO.</u>	<u>INSTRUMENT</u>	<u>TEST DATE</u>	<u>FRAME NO.</u>
Std 2	Mass Standards	3-04-88	3149
Std 3	Mass Standards	3-09-88	3151
Std 4	Field standards (weights)	4-11-91	3193
Std 5	Dead weight tester	3-24-88	3200
Std 5a	Piston gage mass elements	3-24-88	3273
Std 7	Set of gage blocks	5-17-90	3278
Std 9	Long gage block set	3-15-91	3310
Std 10	Optical flat	3-08-88	3318
Std 12	Load cell	5-31-90	3332
Std 15	Metric weights (10 mg to 100 gm)	3-26-91	3369
Std 16	Weights (brass, 1 gm to 2kg)	5-20-91	3379
1890	Temperature gauge	6-03-91	2228
4206	Scale	6-04-91	2231

LIST D - CALIBRATION REPORTS

The following records were obtained from the USGS. These had been transmitted with the calibrated instrument when it was returned to the user by the cal lab.

<u>PTL NO.</u>	<u>INSTRUMENT</u>	<u>TEST DATE</u>
2530	Thermometer	12-07-91
2541	Thermometer	12-07-91
2528	Furnace	12-06-92
1293	Balance	11-07-91
7277	Balance	11-07-91
10079	Thermocouple	2-12-92

LIST E - PROCEDURES

<u>Procedure Number</u>	<u>Title</u>
MQA-IP CP-DIM-2 2	Calibration of Micrometer, Bench or Supermicrometer
MQA-IP CP-DIM-5 2	Calibration of Inside Micrometers, One-inch (Caliper Jaw Type)
MQA-IP CP-DIM-6 2	Calibration of Dial Caliper, Vernier, Dial or Combustion Scale
MQA-IP CP-DIM-10 2	Calibration of Inside Micrometer
MQA-IP CP-DIM-11 2	Calibration of Standard Measuring Machine
MQA-IP CP-VAC-1 2	Calibration of Vacuum Gauge
MQA-IP CP-MASS-1 2	Calibration of Mechanical Scale
MQA-IP CP-PRES-1 2	Calibration of Pressure Gauges 0 to 1000 psi (low pressure)
MQA-IP CP-TEMP-1 2	Calibration of Liquid-In-Glass Thermometer (all ranges)
MQA-IP CP-TEMP-2 2	Calibration of Dial-Type Temperature Gauge or Thermometer (all ranges)
MQA-IP CP-TEMP-4 2	Calibration of Thermocouple (Electronic Temperature Probe)

LIST F - PERSONNEL QUALIFICATION AND CERTIFICATION RECORDS

Paul Hurtado
W. C. Pugmire
G. A. Erickson