



**Department of Energy**  
Office of Civilian Radioactive Waste Management  
Yucca Mountain Site Characterization Office  
P.O. Box 98608  
Las Vegas, NV 89193-8608

SEP 20 1995

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Technical Project Officer  
for Yucca Mountain  
Site Characterization Project  
TRW Environmental Safety Systems, Inc.  
Bank of America Center, Suite P-110  
101 Convention Center Drive  
Las Vegas, NV 89109

ISSUANCE OF SURVEILLANCE RECORD YMP-SR-95-052 RESULTING FROM  
YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION'S (YMQAD) SURVEILLANCE  
OF REYNOLDS ELECTRICAL & ENGINEERING CO., INC. (REECO)  
(SCP: N/A)

Enclosed is the record of Surveillance YMP-SR-95-052 conducted  
by the YMQAD at the REECO facilities in Mercury, Nevada,  
August 30 through September 6, 1995.

The purpose of the surveillance was to verify that the Physical  
Standards and Calibration Laboratory's calibration activities  
were performed in compliance with approved procedures.

This surveillance is considered completed and closed as of the  
date of this letter. A response to this surveillance record  
and any documented recommendations is not required.

If you have any questions, please contact either Mario R. Diaz  
at 794-7974 or Fred H. Lofftus at 794-7190.

Richard E. Spence, Director  
Yucca Mountain Quality Assurance Division

YMQAD:MRD-4582

Enclosure:  
Surveillance Record  
YMP-SR-95-052

YMP-5

9509250290 950920  
PDR WASTE  
WM-11 PDR

102.7  
WM-11  
MHO3

SEP 20 1995

Daniel L. Koss

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cc w/encl:

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Cyril Schank, Churchill County Commission, Fallon, NV  
D. A. Bechtel, Clark County Comprehensive, Las Vegas, NV  
J. D. Hoffman, Esmeralda County, Goldfield, NV  
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W. J. Glasser, REECO, Las Vegas, NV  
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OFFICE OF  
 RADIOACTIVE WASTE MANAGEMENT  
 U.S. DEPARTMENT OF ENERGY  
 WASHINGTON, D.C.

QUALITY ASSURANCE SURVEILLANCE RECORD

SURVEILLANCE DATA

<sup>1</sup>ORGANIZATION/LOCATION:  
 Reynolds Electrical and  
 Engineering Company, Inc.,  
 (REECo) Physical Standards  
 and Calibration Laboratory  
 (PSCL), Mercury, NV

<sup>2</sup>SUBJECT:  
 Calibration and control of Measuring and  
 Test Equipment (M&TE) and associated  
 records

<sup>3</sup>DATE: 8/30 - 9/6/95

<sup>4</sup>SURVEILLANCE OBJECTIVE: The objective of this surveillance was to verify the PSCL calibration activities were performed in compliance with approved procedures

<sup>5</sup>SURVEILLANCE SCOPE: To verify that recently completed calibrations of Yucca Mountain Project (YMP) M&TEs were performed and documented in accordance with the REECo Procedure, Management Control Procedure (MC) 10.0, Revision 2, "Measuring and Test Equipment."

<sup>6</sup>SURVEILLANCE TEAM:  
 Team Leader:  
Fred H. Lofftus  
 Additional Team Members:  
Patout H. Cotter

<sup>7</sup>PREPARED BY:  
Fred H. Lofftus  
 Surveillance Team Leader  
8/29/95  
 Date

<sup>8</sup>CONCURRENCE:  
N/A  
 QA Division Director  
 Date

SURVEILLANCE RESULTS

<sup>9</sup>BASIS OF EVALUATION/DESCRIPTION OF OBSERVATIONS:  
 See pages 2 - 5

<sup>10</sup>SURVEILLANCE CONCLUSIONS:  
 See page 5

<sup>11</sup>COMPLETED BY:  
Fred H. Lofftus  
 Surveillance Team Leader  
9/13/95  
 Date

<sup>12</sup>APPROVED BY:  
Patout H. Cotter  
 for QA Division Director  
9-19-95  
 Date

**Block 9 (continued) Basis of Evaluation/Description of Observations:**

This surveillance was performed August 30 through September 6, 1995 on the REECo, PSCL in Mercury, Nevada. Records were reviewed for compliance to the procedural requirements of MC-10.0, Revision 2 for the M&TEs listed below. Note: The REECo Standards and Calibration Facility is scheduled to move under the control of the Edgerton, Germeshausen and Grier, Inc (EG&G) procedural requirements on October 2, 1995. Also, EG&G is currently on the Qualified Suppliers List as a supplier.

The Quality Assurance Requirements and Description document, Revision 4, Section 2.0, Paragraph 2.2.11, C, states: "Ensure personnel are indoctrinated and trained as needed, to achieve initial proficiency..."

Paragraph 2.2.11.H, states: "Ensure the required indoctrination and training for a specified task is completed prior to performing the task."

Personnel are trained to each calibration procedure. Training records exist as both hard file copies and in the computer database. It was noted that as a safeguard, the computer will not print out a calibration report if, a) the calibration is performed by personnel needing training; b) the calibration procedure is of the wrong revision or obsolete; or c) the wrong or out of date standard is used too perform the calibration. This system was demonstrated several times by taking pre-existing calibration reports and plugging in an erroneous standard or obsolete procedure. Examples of training records examined are:

- M. L. Reynold, Technical Control Procedure (TC)-515-Calibration Procedure (CP)-Mass-0, Revision 0, 8/2/94, Verified 11/8/94
- C. S. Edeleblute, Procedure TC-515-CP-Press-1, 10/21/94, Verified 12/13/94

**MC-10.0, Revision 2**

Paragraph 4.3 and 4.4. Reference and working standards shall be traceable to recognized agencies such as National Institute of Standards and Technology (NIST).

Traceability of both reference and working standards were verified by examination of calibration reports and tracing the standards back to the recognized agency or NIST. For example, a pressure gauge Physical Test Laboratory (PTL) Number-Y11736 was calibrated against a Laboratory Standard (Lab. Std.)-110 (Pressure Controller/Calibration, Calibration Date-3/13/95, Due Date-9/13/95). The Lab. Std.-110 was calibrated against the Lab. Std. 144 (Pneumatic Dead Weight Tester, Calibration Date-1/1/94, Due Date-1/1/97). The Dead Weight Gauge Piston was calibrated by Ruska on 10/12/93, Due Date 1/1/97, through a crossfloat comparison with Deadweight Gauge Piston, Serial Number V-936B, with reported values traceable to the NIST piston assembly PG-28.

Other Calibration Reports examined for traceability are:

- PTL - Y10669 (Balance), Standards 1, 2, 16, 119
- PTL - Y11749 (Pressure Gauge), Standard 110
- PTL - Y11737 (Pressure Gauge), Standard 110
- PTL - Y11761 (Dial Caliper), Standards 58, 120
- PTL - Y10664 (Pressure Gauge), Standard 34
- PTL - Y11736 (Pressure Gauge), Standards 110, 144

Paragraph 5.1 - The PSCL is responsible for assuring that the calibration standards have a greater accuracy than the item being calibrated.

a) Bullet 2, Assurances that the standards had a greater accuracy than the items calibrated. This was verified by comparing the above listed M&TEs' tolerance as stated on the calibration reports to the tolerance of the standard used in the calibration.

b) The PSCL assigns PTL numbers and establishes calibration intervals and maintains calibration history of the M&TEs.

Paragraph 4.5 - The PTL number of calibrated YMP M&TEs and associated documentation shall be identified with "Y" in the prefix for identification purposes.

As indicated above the prefix "Y" appears in the identification number of all equipment assigned to the YMP; whereas "W" is the prefix for equipment assigned to the Weapons side of the Test Site.

Paragraph 6.4.1.3 - Calibration performed by PSCL personnel shall be in accordance with approved procedures

Although no actual calibrations were observed during the course of this surveillance, it was noted that each type of M&TE had its own calibration procedure. The following is a verified list of 10 out of 23 individually approved TC procedures:

- TC-556-CP-GEN-1, Revision 0 - Measuring and Test Equipment - General
- TC-515-CP-DIM-1, Revision 0 - Depth Micrometers
- TC-515-CP-DIM-9, Revision 0 - Dial Indicators
- TC-515-CP-DIM-28, Revision 0 - Outside Micrometers
- TC-515-CP-FOR-2, Revision 0 - Force Gauge
- TC-515-CP-FOR-3, Revision 0 - Valve Spring Tester
- TC-515-CP-PRES-1, Revision 0 - Pressure Gauges 1-1000 Per Square Inch (PSI)

TC-515-CP-TORE-1, Revision 0 - Torque Wrenches and Screwdrivers  
TC-515-CP-DIM-0, Revision 0 - Gauge Blocks  
TC-515-CP-DIM-16, Revision 1 - Calipers

Paragraph 6.4.3 - Calibration label shall be affixed to the item calibrated and shall contain as a minimum the PTL number and the next calibration due date.

The identification labels on the following instruments located in the storage area within the facility that were awaiting calibration or were calibrated and waiting return to the user were examined for the required information: No deficiencies were noted.

PTL Y10664	Pressure Gauge	0-400 BAR
PTL Y10669	Triple Beam Balance	0-2610 grams
PTL Y11761	Calipers	0-12 inch
PTL Y531	Ram/Gauge	0-12,000 lbs force
PTL Y11745	Pressure Gauge	0-30 PSI
PTL Y11749	Pressure Gauge	0-30 PSI
PTL Y11748	Pressure Gauge	0-30 PSI
PTL Y11737	Pressure Gauge	0-60 PSI
PTL Y11736	Pressure Gauge	0-60 PSI

Paragraph 6.6.2 - Calibration Report, as a minimum shall include the following information.

- a) PTL number of the item calibrated
- b) Traceability to calibration standard used
- c) Calibration data
- d) Identification of person performing the calibration
- e) Date of calibration and re-calibration due date
- f) Calibration results and statement of acceptability
- g) Action taken in connection with out-of-tolerance condition
- h) Identification of implementing document
- i) Approval of Calibration Laboratory Supervisor

All Calibration Reports listed in the foregoing report contained the required information in a through i above. No deficiencies were noted.

MC-10.0, Revision 2 and TC-556-CP-GEN-1, Revision 0

The control, identification, calibration, calibration history, and calibration schedules are governed by the REECo Procedures MC-10.0, Revision 2, and TC-556-CP-GEN-1. Calibration history was verified to exist as hard copy files as well as being incorporated into a computer database. This database is not a procedural requirement, but was established to enhance the efficiency and accuracy of the laboratory records. Types of correspondence

examined included: a) Memorandums where the user was notified that M&TEs in his possession were due for calibration; b) Memorandums notifying the user that the as received condition of M&TE sent in for calibration was found to be out of tolerance; and c) Other correspondence including requests from the user that new equipment be assigned identification numbers in addition to calibration. Examples of said memorandums as part of the history files are as follows:

Memo, M. M. Azhikakath to Distribution, dtd. 8/7/95, "Measuring and Test Equipment (M&TE) Due for Calibration."

Transmittal, J.D. Murphy to R.Schuette/G. Erickson, dtd. 7/24/95, Calibration of Equipment for Use at YMP-Exploratory Studies Facility.

**Out of Tolerance Notifications from the PSCL to the Users**

PTL - Y10674	Temperature Gauge	8/1/94
PTL - Y11090	Pressure Gauge	9/12/94
PTL - Y11232	Pressure Gauge	5/24/95
PTL - Y10674	Temperature Gauge	8/1/94
PTL - Y11362	Pressure Gauge	11/21/94

The following personnel were contacted during this surveillance:

W. J. Glasser, REECo, Quality Assurance Manager  
G. Erickson, REECo, Calibration Laboratory Supervisor  
M. L. Reynold, REECo, Quality Control (QC) Technician II  
C. S. Edeleblute, REECo, Senior QC Technician  
M. J. Peck, REECo, Office Assistance

**Block 10 (continued) Surveillance Conclusions:**

No deficiencies were noted during the course of this surveillance. Compliance to procedural requirements with regard to calibration and associated records appear to be efficiently and effectively implemented. The records, hard copies, and computer database, were in excellent shape and immediately available on request. In addition, the laboratory was clean and environmentally controlled. Cooperation on the part of all persons contacted was excellent and much appreciated.

**Recommendation:**

It is recommended that a follow-up surveillance be performed in those cases where the users have been notified the M&TEs submitted for calibration were found to be out-of-tolerance. The objective would be to determine if a follow-up investigation has been initiated and documented to determine what, if any, the effects were on previous work.