



Department of Energy

Washington, DC 20585

QA: L

OCT 30 1997

L. D. Foust, Technical Project Officer
for Yucca Mountain Site
Characterization Project
TRW Environmental Safety Systems, Inc.
1180 Town Center Drive, M/S 423
Las Vegas, NV 89134

VERIFICATION OF CORRECTIVE ACTION OF DEFICIENCY REPORT (DR)
YM-97-D-025 RESULTING FROM OFFICE OF QUALITY ASSURANCE (OQA)
SURVEILLANCE YM-SR-97-002

The OQA staff has verified the corrective action to DR YM-97-D-025 and determined the results to be unsatisfactory because of reasons stated in the enclosed DR.

Your response, indicating the appropriate corrective action completion date, is required to be submitted to this office within ten working days of the date of this letter. Send the original of your response to Deborah G. Sult, OQA/QATSS, P.O. Box 30307, Mail Stop 455, North Las Vegas, Nevada 89036-0307.

If you have any questions, please contact either James Blaylock at (702) 794-1420 or Lawrence W. McGrath at (702) 794-1431.

James Blaylock for
Donald G. Horton, Director
Office of Quality Assurance

OQA:JB-0233

Enclosure:
DR YM-97-D-025

cc w/encl:
T. A. Wood, DOE/HQ (RW-55) FORS
J. O. Thoma, NRC, Washington, DC
S. W. Zimmerman, NWPO, Carson City, NV
B. R. Justice, M&O, Las Vegas, NV
R. A. Morgan, M&O, Las Vegas, NV

cc w/o encl:
W. L. Belke, NRC, Las Vegas, NV
L. W. McGrath, OQA/QATSS, Las Vegas, NV
D. G. Sult, OQA/QATSS, Las Vegas, NV
J. R. Dyer, DOE/YMSCO, Las Vegas, NV
R. W. Clark, DOE/OQA, Las Vegas, NV

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Recip: NMSS/PAHL

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

8 Performance Report
 Deficiency Report
 NO. YM-97-D-025
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PERFORMANCE/DEFICIENCY REPORT

1 Controlling Document:

Quality Assurance Requirements and Description (QARD) DOE/RW/0333P, Revision 5

2 Related Report No.

YM-SR-97-002

3 Responsible Organization:

Civilian Radioactive Waste Management Systems Management and Operations (CRWMS M&O) Test Coordination Office

4 Discussed With:

Ned Elkins

5 Requirement/Measurement Criteria:

The following listed requirements and associated deficiencies were found during the course of Surveillance YM-SR-97-002. Subject surveillance evaluated a limited selection of Measuring and Test Equipment (M&TE) for the single heater test being conducted in Alcove 5. In the evaluation of the deficiencies listed below, other testing activities within the Exploratory Studies Facility (ESF) are required to be evaluated or an evaluation be given as to why other testing activities should be excluded.

(See page 3)

6 Description of Condition:

- 1) Roctest was evaluated and selected to supply calibration of rock mechanics instrumentation for which Roctest manufactures, specifically high temperature BOF-EX measurement modules. Based on this the Supplier Evaluation Report (SER) only identified QA program elements 1.0, 2.0, 5.0, 6.0, 12.0, 13.0, 15.0, 16.0, 17.0 and 18.0 are applicable. However, Roctest procured items (a module to be added to their instrumentation package) and calibration services from a company called RDP which would involve QA program elements 4.0 and 7.0. Roctest has not been evaluated and accepted to apply QA program elements 4.0 and 7.0. As a result, the acceptability of RDP for construction services is in question.

(See page 3)

7 Initiator

John Martin 

Date 1-10-97

9 Is condition an isolated occurrence?

Yes No Unknown; Must be Yes if PR

10 Recommended Action: (Not required for PR)

- * Identify remedial actions necessary to correct the deficiencies noted in Block 6 above.
- * Investigate to determine the extent of like conditions.
- * Identify those actions necessary to correct deficiencies found through investigation.
- * In addition to the above, provide an evaluation as to the validity of data obtained from M&TE which was not calibrated or not calibrated by an approved supplier of calibration services.

(See page 3)

11 QA Review:

QAR 

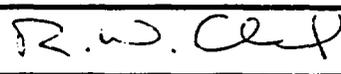
Date 1-10-97

12 Response Due Date

20 working days from issuance

13 Affected Organization QA Manager Issuance Approval: (QAR for PR)

Printed Name Donald G. Horton

Signature 

Date 1/16/97

22 Corrective Action Verified

QAR

Date

23 Closure Approved by: (N/A for PR)

AQQAM

Date

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14 REMEDIAL ACTION Cont.

1 The PI states that Rocktest calibrated the LVDTs after installing the modules from RDP. This provides assurances that the LVDT are adequate as a unit. The PI will document this determination in a scientific notebook. This fact came to light after the surveillance.

2 The thermocouples were checked in an ice bath prior to installation by the PI. This combined with the large number of thermocouples installed in the Single Heater Test provides a level of redundancy adequate to make instrument failures readily apparent. The PI has already documented the ice bath in the scientific notebook and will add a statement regarding the adequacy of data due to redundant systems. A post-calibration cannot be done as the process of removing the grouted in thermocouples will destroy them.

3 The re-calibration due date/interval will be added to the LVDT calibration certificates by the TCO Manager. The implementing document used to perform the calibrations will be identified and added to the calibration certificates.

4 As the thermocouples are grouted into boreholes it is not practical to re-calibrate them. The PI will document the commitment to re-calibrate the LVDT instruments upon completion of the test in the scientific notebook.

5 The PI will evaluate and document the impact these deficiencies have on the data being collected.

15 EXTENT OF CONTITION Cont.

1 This condition applies to all 7 LVDTs procured for the Single Heater Test.

2 This condition applies to 113 thermocouples installed in the Single Heater Test.

3 This condition applies to all 7 LVDTs procured for the Single Heater Test.

4 This condition applies to all 6 LVDTs and 113 thermocouples installed in the Single Heater Test.

5 The TCO manager will examine calibration documentation on the remaining instrumentation installed in the Single Heater Test to determine if additional deficiencies exists with calibration documentation.

17 ACTION TO PRECLUDE RECURRENCE Cont.

1 The TCO Manager will ensure Rocktest's qualification are be modified to allow them to accept other vender's calibrations or that a separate vender will be identified who can complete all tasks in-house.

2 The TCO Manager will ensure all future thermocouple calibration procurements require the units to be calibrated across a range of expected conditions. This is a Q procurement.

3 The TCO Manager will ensure future Q calibration procurements will be processed in accordance with Q procedures to ensure all elements required on calibration documentation are included.

4 The PI will ensure instruments installed in the future will be traceable to calibration documentation that specify calibration due dates/intervals.

5 The Thermal Test Lead, and TCO Manager will be trained/retrained to QAP-7-6 and QAP-12-1. PIs who receive equipment at their locations will be trained to QAP-7-6.

All above actions will be completed by the PIs or TCO Manager by the date in block 18.

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PERFORMANCE/DEFICIENCY REPORT RESPONSE

14 Remedial Actions:

See attached

15 Extent of Condition: (Not required for PR)

See attached.

16 Root Cause Determination: (Not required for PR)

Required Yes No

17 Action to Preclude Recurrence: (Not required for PR)

Required Yes No

See attached.

18 Corrective Action Completion Due Date:

8/30/97

19 Response by:

Initial

Amended

Larry Hayes

2/14/97

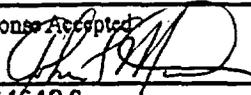
5-5152

Date

Phone

20 Response Accepted

QAR



Date 2/24/97

21 Response Accepted (N/A for PR):

AOQAM

James Blaylock Jr

Date

3/10/97

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5 Requirement/Measurement Criteria: (Continued)

- 1) QARD Section 7.0 Control of Purchased Items and Services paragraph 7.2.2 (A) states "Supplier selection shall be based on an evaluation, performed before the contract is awarded, of the supplier's capacity to provide items or services in accordance with procurement document requirements."
- 2) QARD Section 12.0 Control of Measuring and Test Equipment paragraph 12.2.1 A states in part "Measuring and Test Equipment including equipment that contains software or programmable hardware, shall be calibrated, ...prior to use, ..."
- 3) QARD Section 12.0 paragraph 12.2.7 states "Measuring and test equipment calibration documentation shall include the following information:
 - E. Identification of the date of calibration and the recalibration due date or interval, as appropriate.
 - H. Identification of the implementing document (including revision level) used in performing the calibration.
- 4) QARD Section 12.0 paragraph 12.2.1 E states "Calibrated measuring and test equipment shall be labeled, tagged or otherwise suitably marked or documented to indicate due date or interval of the next calibration."

6 Description of Condition: (Continued)

The evaluation of Roctest has failed to identify the need for Roctest to go outside their company for the acquisition of items and services not directly supplied by them. No evaluation exists at this time to indicate that Roctest has performed an evaluation of RDP to provide these services. As such, the modules calibrated by RDP are in question.

Modules supplied by RDP are identified by serial numbers 138, 139, 140, 141, 142, 143, 144,

- 2) Two thermocouple probes designated TMA-TC-2A and TMA-TC-2B located in single heater test borehole designated ESF-TMA-TC-2 were installed prior to being calibrated or checked throughout the expected range of use.
- 3) The calibration certificate supplied by Roctest for seven high temperature BOF-EX measurement modules dated 96/07/10 does not contain:

- 1 Recalibration due date or interval.
- 2 Identification of the implementing document used in performing the calibration.

The serial numbers for the seven high temperature BOF-EX measurement modules are 055D-9622, 055D-9623, 055D-9624, 055D-9625, 055-9626, 055D-9627 and 055D-9628.

- 4) The following instruments have not been labeled, tagged, marked, or indicated on documents as to the due date or interval of the next calibration:
 - * High Temperature BOF-EX measurement modules 055D-9622 through 055D-9628
 - * Thermocouple probes TMA-TC-2A and TMA-TC-2B

10 Recommended Action: (Not required for PR) (Continued)

- * Determine those actions necessary to preclude recurrence.

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VERIFICATION OF CORRECTIVE ACTION FOR DEFICIENCY REPORT (DR) YM-97-D-025

A Surveillance, K/PB-SR-97-066, was performed by OQA from October 1, 1997 through October 10, 1997 to verify and validate the effectiveness of the accepted Corrective Action Response Dated August 29, 1997. As a result of this surveillance it was determined that the corrective actions delineated in the response were incomplete and ineffective as outlined below.

In Block 14 REMEDIAL ACTION: Item 1, The statement that the instruments were calibrated by Rocktest could not be verified, and the calibration status of the LVDTs is inconclusive.

Discussion: The copies of the calibration certifications provided by SNL in their report, Dated April 1, 1997, are not traceable to Rocktest. There is no company name or facility location (address) on any of the certifications provided. In addition there is no objective evidence that Rocktest was a qualified supplier in accordance with the QARD at any location. There is a conflict in statements between the SNL response Dated April 1, 1997 and their report Dated May 16, 1997. The April 1, 1997 report, last page, states "...As Rocktest calibrated the LVDTs... the calibration certificate from the qualified vendor encompasses the entire LVDT." The May 16, 1997 report, first page, states "...it was noted that some instruments (including thermocouples and LVDTs)and used in the SHT prior to being properly calibrated by an approved vendor." These errors need to be corrected.

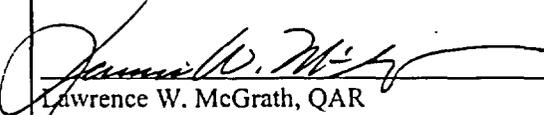
In Block 15 EXTENT OF CONDITION: Item 5, there is a commitment for the TCO Manager to examine the calibration documentation for the remaining instrumentation being used in the SHT to determine the extent of the condition. There is no objective evidence that this examination has been accomplished or the results documented.

In Block 17 ACTION TO PRECLUDE RECURRENCE: Item 4, there is a commitment for the PI to ensure instruments installed in the future will be traceable to the calibration documentation. No objective evidence was presented that describes the method to be used by the PI to preclude recurrence. Item 5, there is a commitment to train/re-train the Thermal Test Lead, TCO Manager, and PI. No objective evidence was presented that training/re-training had been completed.

The SNL report Dated May 16, 1997 indicates in the Conclusion statements for the Thermocouple calibration issue and the LVDT issues that the SNL analysis finds that the instruments meet the intended needs for the SHT as described in "Test Design, Plans and Layout Report BAB000000-01717-4600-00025, Rev 1." It was brought to the attention of the OQA surveillance team that this report is only a periodic update of activities relative to the SHT and not an engineering report.

There is no reference to any Nonconformance Reports (NCRs) resulting from the discovery of thermocouple issues or the LVDT issues described in the SNL reports, and the Conclusions in the SNL report Dated May 16, 1997 states "meets intended needs" (USE AS IS) as a disposition of the instrument calibrations. These "Conclusions" need to be documented as part of the NCR process to assure compliance with YAP-15.1Q Control of Nonconformances and the QARD Section 15. One of the "Recommendations" included in the DR stated..."Identify those actions necessary to correct deficiencies found through investigation". No reference to any NCRs was provided.

The SNL May 16, 1997 analysis indicates that a post test calibration of the LVDTs is to be conducted. No objective evidence could be located on how or where this added calibration step will be included in what test procedures, or who is responsible. This requires item requires additional information.


Lawrence W. McGrath, QAR

10/21/97
Date