



Department of Energy
Yucca Mountain Site Characterization
Project Office
P. O. Box 98608
Las Vegas, NV 89193-8608

WBS 1.2.11
QA: N/A

OCT 01 1993

Robert F. Pritchett
Technical Project Officer
for Yucca Mountain
Site Characterization Project
Reynolds Electrical & Engineering Co., Inc.
P.O. Box 98521
Las Vegas, NV 89193-8521

VERIFICATION OF CORRECTIVE ACTION AND CLOSURE OF CORRECTIVE ACTION REQUEST
(CAR) YM-93-057 AND YM-93-059 RESULTING FROM YUCCA MOUNTAIN QUALITY ASSURANCE
DIVISION (YMQAD) AUDIT YMP-93-12 OF REYNOLDS ELECTRICAL & ENGINEERING CO.,
INC. (SCP: N/A)

The YMQAD staff has verified the corrective action to CARs YM-93-057 and
YM-93-059 and determined the results to be satisfactory. As a result, the
CARs are considered closed.

If you have any questions, please contact either Robert B. Constable at
794-7945 or Gerard Heaney at 794-7826.

Richard E. Spence, Director
Yucca Mountain Quality Assurance Division

YMQAD:RBC-6295

Enclosures:

1. CAR YM-93-057
2. CAR YM-93-059

cc w/encls:

- K. R. Hooks, NRC, Washington, DC
- S. W. Zimmerman, NWPO, Carson City, NV
- W. J. Glasser, REECO, Las Vegas, NV
- J. C. de la Garza, YMP, NV

cc w/o encls:

- J. W. Gilray, NRC, Las Vegas, NV
- N. J. Brogan, YMQAD/QATSS, Las Vegas, NV

Add: K. R. Hooks
NH03-11
WM-11
102.9

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

8 CAR NO.: YM-93-057
DATE: 7/2/93
SHEET: 1 OF 1
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 <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 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 <i>Gerard Heaney</i> Date <u>8-10-93</u>		16 Response Accepted QADD <i>[Signature]</i> Date <u>8/17/93</u>	
17 Amended Response Accepted QAR _____ Date _____		18 Amended Response Accepted QADD _____ Date _____	
19 Corrective Actions Verified QAR <i>Gerard Heaney</i> Date <u>9-29-93</u>		20 Closure Approved by: QADD <i>[Signature]</i> Date <u>10/1/93</u>	

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CORRECTIVE ACTION REQUEST (Continuation Page)

CORRECTIVE ACTION RESPONSE for CAR # YM-93-057

A. Remedial Action:

A Project Nonconformance Report (NCR) will be generated by August 15, 1993, to address the indeterminate accuracy of shotcrete wet mix temperature measurements. The disposition of this NCR will determine the technical bases for acceptance of the placed shotcrete. REECO YMP Quality Control (QC) Section has been given responsibility for taking shotcrete temperature measurements using calibrated thermometers. The temperature of the wet mix and the M&TE Calibration Identification Number is currently recorded on the revised Shotcrete Placement Log.

Responsible Individual: T. M. Leonard
Estimated completion date: August 15, 1993

B. Investigative Action:

Extent of Deficiency: M&TE Identification Numbers were not indicated on Shotcrete Placement Log sheets completed prior to July 2, 1993. Temperature measurements indicated on completed log sheets were taken by the REECO YMP Construction Department (CND) using uncalibrated thermometers. REECO YMP QC has taken shotcrete temperature measurements using calibrated thermometers since July 2, 1993.

Responsible Individual: T. M. Leonard
Estimated completion date: Completed

C. Root Cause Determination:

REECO YMP CND personnel were unaware of the requirements to use calibrated thermometers for measuring shotcrete temperatures.

D. Corrective Action to Preclude Recurrence:

REECO procedure TC-581-SP-0007 has been revised (to Revision 1) with an effective date of July 28, 1993, to reflect the documentation of M&TE Identification Numbers on Shotcrete Placement Log sheets. Personnel are now aware that calibration requirements apply to thermometers used to measure shotcrete wet mix temperatures.

Responsible Individual: T. M. Leonard
Estimated completion date: Completed

Response Approved: RT Pritchett

Date: 8/4/93

Ltr dtd 8/4/93 - 580-01-587

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CORRECTIVE ACTION REQUEST (Continuation Page)

Corrective Action Request (CAR) YM-93-057

The following corrective actions were verified to be completed:

1. REECO initiated NCR No. 93-045 addressing the indeterminate accuracy of shotcrete wet mix temperature measurements. QC is now responsible to verify temperature measurements as required by Items No. 17 and 18 of the Shotcrete Placement Log Instructions contained within REECO procedure TC-581-SP-0007, "Starter Tunnel Shotcrete," Revision 1. Closure of this CAR is not pending closure of the NCR.
2. REECO QC has been observed by OQA staff documenting the shotcrete temperature measurements in the field. Review of recent shotcrete placement logs indicates that the temperatures are being recorded by calibrated instruments. REECO procedure TC-581-SP-0007 has been revised as stated in Item 1 above.

Gerard Heaney
Gerard Heaney

Date: 9-29-93

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WASHINGTON, D.C.**

8 CAR NO.: YM-93-059
DATE: 7/2/93
SHEET: 1 OF 1
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 Heaney Date <u>7-6-93</u>		14 Issuance Approved by: QADD <u>[Signature]</u> Date <u>07-07-93</u>	
15 Response Accepted QAR <u>Gerard Heaney</u> Date <u>8-10-93</u>		16 Response Accepted QADD <u>[Signature]</u> Date <u>8/17/93</u>	
17 Amended Response Accepted QAR <u> </u> Date <u> </u>		18 Amended Response Accepted QADD <u> </u> Date <u> </u>	
19 Corrective Actions Verified QAR <u>Jerry Heaney</u> Date <u>9-29-93</u>		20 Closure Approved by: QADD <u>[Signature]</u> Date <u>10/1/93</u>	

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CORRECTIVE ACTION REQUEST (Continuation Page)

CORRECTIVE ACTION RESPONSE for CAR # YM-93-059

A. Remedial Action:

Although the test results in the original submittal were for the Fibercrete product, additional test results with the placement logs to show traceability to the Fibercrete product were submitted to the Architect/Engineer on July 30, 1993, in Submittal Number 1A-03-191CND.

Responsible Individual: Jon P. Hedlund
Estimated completion date: Completed

Response Approved: RT Pritchett Date: 8/4/93

Ltr dtd 8/4/93 - 580-01-587

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DATE: 9-28-93
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CORRECTIVE ACTION REQUEST (Continuation Page)

The following corrective actions were verified to be completed:

1. REECo sent a new transmittal No: 1A-03-191CND to the M&O. The new package included shotcrete placement logs that were traceable to acceptable fibercrete test results and to purchase orders that are traceable to verify that the product placed and tested was fibercrete.

Jerry Heaney Date: 9-29-93
Jerry Heaney