



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 04 1993

L. Dale Foust
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

VERIFICATION OF CORRECTIVE ACTION AND CLOSURE OF CORRECTIVE ACTION REQUEST
(CAR) YM-93-065 RESULTING FROM YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION
(YMQAD) AUDIT YMP-93-12 OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT SYSTEM
MANAGEMENT AND OPERATING CONTRACTOR (SCP: N/A)

The YMQAD staff has verified the corrective action to CAR YM-93-065 and
determined the results to be satisfactory. As a result, the CAR is
considered closed.

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

R. E. Spence

Richard E. Spence, Director
Yucca Mountain Quality Assurance Division

YMQAD:RBC-6304

Enclosure:
CAR YM-93-065

cc w/encl:

Trudy Wood, HQ (RW-52) FORS
K. R. Hooks, NRC, Washington, DC
S. W. Zimmerman, NWPO, Carson City, NV
R. A. Morgan, M&O/Duke, Vienna, VA
R. L. Robertson, M&O/TRW, Vienna, VA
J. A. Jackson, M&O/TRW, Las Vegas, NV
Richard Jiu, M&O/TRW, Las Vegas, NV
J. C. de la Garza, YMP, NV

cc w/o encl:

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

9310120341 931004
PDR WASTE
WM-11

PDR



Add: Ken Hooker 11
NH03-11
WM-11
102-7

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

8 CAR NO.: YM-93-065
DATE: 07/02/93
SHEET: 1 OF 1
QA

CORRECTIVE ACTION REQUEST

1 Controlling Document ESF Specifications		2 Related Report No. YMP-93-12	
3 Responsible Organization CRWMS 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: QADD <i>[Signature]</i> for Date <u>7-07-93</u>	
15 Response Accepted QAR <i>Gerard Heaney</i> Date <u>8-10-93</u>		16 Response Accepted QADD <i>A.C. Spence</i> Date <u>8/18/93</u>	
17 Amended Response Accepted QAR _____ Date _____		18 Amended Response Accepted QADD _____ Date _____	
19 Corrective Actions Verified QAR <i>Gerard Heaney</i> Date <u>9-27-93</u>		20 Closure Approved by: QADD <i>A.C. Spence</i> Date <u>10/1/93</u>	

ENCLOSURE

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

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DATE: 8/4/93
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CORRECTIVE ACTION REQUEST (Continuation Page)

1. Corrective Action Response for CAR # YMP-93-065

A) Remedial Action

The total submittal package transmitted by REECo specifically referenced shotcrete (Fibercrete).


While the four (4) test sheets did not specifically state Fibercrete they were not stand alone items but were part of a complete submittal package, in addition, a reviewer with an engineering background would be well aware that shotcrete with those tensile properties as shown on these sheets would have a fiber content. The A/E is of the opinion that this submittal met all the requirements for approval and that no further justification is necessary. However, to clarify matters, REECo will transmit a new submittal to the A/E for approval providing the Fibercrete test results from YMP. A statement that Lithium Bromide is present in the water will be included in the submittal.

While Lithium Bromide tracer was not specifically listed, the mix was accepted by the A/E based on discussion with Tracers Fluids Minerals. See letter dated April 9th from N. Elkins/LANL to L. D. Foust TWS-EES-13-LV-04-93-06.

Lithium Bromide does not actively participate in the chemistry of concrete. The purpose of Lithium Bromide is to act as a tracer. By intent, dry process shotcrete produces a zero slump concrete and does not result in free water escaping (evaporation only). The presence or absence of Lithium Bromide has no measurable effect (detrimental or beneficial) on the material properties of shotcrete.

All submittal packages to the A/E are reviewed in their entirety as a collective package.

2. The person responsible for completion of the above items is Arthur Watkins (295-4068). Anticipated completion date is September 17, 1993.

3. Response Approved:  Responsible Manager

Date: 8-4-93

Slr dtd 8/4/93 - LV. QA. BRJ/93-192

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RADIOACTIVE WASTE MANAGEMENT
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CORRECTIVE ACTION REQUEST (Continuation Page)

Verification of Corrective Actions for CAR YM-93-065

The following corrective actions were verified to be complete:

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. The M&O accepted the transmittal.
2. REECo sent a new transmittal No. 1A-03-197CND to the M&O. The new package contains a fibercrete mix design that includes lithium bromide. Documentation supporting the effects of lithium bromide in construction water on concrete, shotcrete, grouting and mortar quality was included within the submittal package (see letter dated 4/9/93, Elkins to Foust, TWS-EES-13-LV-04-93-06). The M&O accepted the transmittal.

Jerry Heaney
Jerry Heaney

Date: 9-27-93