



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

OCT 25 1995

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

ISSUANCE OF SURVEILLANCE RECORD YMP-SR-95-050 RESULTING FROM YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION'S (YMQAD) SURVEILLANCE OF REYNOLDS ELECTRICAL & ENGINEERING CO., INC. (REECO) AND KIEWIT/PARSONS BRINCKERHOFF (KIEWIT/PB) (SCPB: N/A)

Enclosed is the record of Surveillance YMP-SR-95-050 conducted by the YMQAD at the REECO and Kiewit/PB facilities at the Yucca Mountain Site, Nevada, August 28 through September 15, 1995.

The purpose of the surveillance was to determine and verify that the process for testing and certification of shotcrete nozzlemen is carried out in accordance with programmatic and procedural requirements and applicable specifications.

One Deficiency Report (DR), YMQAD-96-D-007, and one Performance Report (PR), YMQAD-96-P-002, were issued as a result of this surveillance. Responses to the DR, which was transmitted via separate letter, and the PR, which was provided to a responsible individual, are due by the date indicated in Block 10 of the DR and PR.

This surveillance is considered completed and closed as of the date of this letter. A response to this surveillance record and any documented recommendations are not required. However, the open DR will continue to be tracked until closed to the satisfaction of the Quality Assurance Representative.

If you have any questions, please contact either Mario R. Diaz at (702) 794-7974 or Raul A. Hinojosa at (702) 794-7991.

  
Richard E. Spence, Director  
Yucca Mountain Quality Assurance Division

YMQAD:MRD-239

Enclosure:  
Surveillance Record  
YMP-SR-95-050

YMP-5

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PDR WASTE  
WM-11 PDR

102.7  
WM-11  
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OCT 25 1995

cc w/encl:

D. A. Dreyfus, HQ (RW-1) FORS  
R. W. Clark, HQ (RW-3.1) FORS  
T. A. Wood, HQ (RW-14) FORS  
C. J. Henkel, NEI, Washington, DC  
J. G. Spraul, NRC, Washington, DC  
W. L. Belke, NRC, Las Vegas, NV  
R. R. Loux, NWPO, Carson City, NV  
Cyril Schank, Churchill County Commission, Fallon, NV  
D. A. Bechtel, Clark County Comprehensive, Las Vegas, NV  
J. D. Hoffman, Esmeralda County, Goldfield, NV  
Eureka County Board of Commissioners, Eureka, NV  
Lander County Board of Commissioners, Battle Mountain, NV  
Jason Pitts, Lincoln County, Pioche, NV  
V. E. Poe, Mineral County, Hawthorne, NV  
P. A. Niedzielski-Eichner, Nye County, Chantilly, VA  
L. W. Bradshaw, Nye County, Tonopah, NV  
William Offutt, Nye County, Tonopah, NV  
Florindo Mariani, White Pine County, Ely, NV  
B. R. Mettam, County of Inyo, Independence, CA  
Mifflin and Associates, Las Vegas, NV  
S. L. Bolivar, LANL, Los Alamos, NM  
R. E. Monks, LLNL, Livermore, CA  
J. D. Christensen, Kiewit/PB, Las Vegas, NV  
R. R. Richards, SNL, Albuquerque, NM, M/S 1333  
R. P. Ruth, M&O, Las Vegas, NV  
T. H. Chaney, USGS, Denver, CO  
C. K. Van House, YMQAD/QATSS, Las Vegas, NV  
A. W. Rabe, YMQAD/QATSS, Las Vegas, NV

bcc w/encl:

R. A. Hinojosa, YMQAD/QATSS, Las Vegas, NV  
W. E. Barnes, YMSCO, NV

bcc w/o encl:

R. L. Craun, YMSCO, NV  
J. M. Replogle, YMSCO, NV

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 &  
Engineering Company (REECO)  
and Kiewit/Parson Brinkerhoff  
(Kiewit/PB), Area 25, Yucca  
Mountain Site

<sup>2</sup>SUBJECT:  
Kiewit/PB shotcrete nozzlemen certification  
and testing.

<sup>3</sup>DATE:  
August 28 through September 15,  
1995

<sup>4</sup>SURVEILLANCE OBJECTIVE:  
To determine and verify that the process for testing and certification of shotcrete nozzlemen is carried out in accordance with programmatic and procedural requirements and applicable specifications.

<sup>5</sup>SURVEILLANCE SCOPE:  
The scope of the surveillance was to determine, evaluate and verify that the testing and certification of shotcrete nozzlemen is being performed in accordance with Specifications BABEAB000-01717-6300-3362, Rev. 01, "Dry Process Shotcrete," and Specification BABEAB000-01717-6300-03363, Rev. 01, "Wet Process Shotcrete," including the referenced American Concrete Institute (ACI) and American Society for Testing and Materials (ASTM) Standards.

<sup>6</sup>SURVEILLANCE TEAM:  
Team Leader:  
Raul A. Hinojosa  
Additional Team Members:  
Robert L. Holliday

<sup>7</sup>PREPARED BY:  
Raul A. Hinojosa 8/28/95  
Surveillance Team Leader Date

<sup>8</sup>CONCURRENCE:  
\_\_\_\_\_  
QA Division Director Date

SURVEILLANCE RESULTS

<sup>9</sup>BASIS OF EVALUATION/DESCRIPTION OF OBSERVATIONS:  
See Page(s) 2-4

<sup>10</sup>SURVEILLANCE CONCLUSIONS:  
See Page(s) 5-6

<sup>11</sup>COMPLETED BY:  
Raul A. Hinojosa 10/12/95  
Surveillance Team Leader Date

<sup>12</sup>APPROVED BY:  
Jr. Davis 10-24-95  
QA Division Director Date

**BLOCK NO. 9 (continued)****BASIS OF EVALUATION/DESCRIPTION OF OPERATION:**

This surveillance was conducted at the Yucca Mountain Site during the period 8/28/95 through 9/15/95, to evaluate the certification of shotcrete nozzle men and the taking of shotcrete test panels for certification by Kiewit/PB. Another related activity performed was the evaluation of applicable specifications, plans and procedures, and related documents.

The surveillance consisted of observing the performance testing of potential shotcrete nozzle men at the batch plant, the review of applicable procedures, and core lists (Kiewit/PB required training, assigned reading and indoctrination) for shotcrete nozzle men. The training class attendance for shotcrete nozzle men was verified for the following listed Kiewit personnel:

Patrick Donnan  
James Poulsen  
Joseph Dubois  
Ron Schutt  
Ronnie Johnson  
Darwin Ward  
Michael Hawkins  
Wallace Llewelyn  
Dale Sullivan  
Henry DiCamillo  
Phillip Weisenger

Shooting of test panels by the following Kiewit personnel was observed as part of the surveillance:

Patrick Donnan  
Joseph DuBois  
James Poulsen  
Ronnie Johnson  
Michael Hawkins  
Dan Stoddard

Completion of the Core List for the following Kiewit personnel was verified:

Phillip Weisenberger  
Ron Schutt  
Dan Stoddard  
Wallace Llewelyn  
Ronnie Johnson  
James Poulsen

The applicable documents reviewed and evaluated during the surveillance are listed below:

Specification BABEAB000-01717-6300-03362, Revision 01,  
"Dry Process Shotcrete."

Specification BABEAB000-01717-6300-03363, Revision 01,  
"Wet Process Shotcrete."  
(The qualification requirements for shotcrete nozzlemen, both specifications.)

ACI Publication No. ACI 506.3R-91 (ACI 506.3R)  
"Guide to Certification of Shotcrete Nozzlemen."  
(Specific items for qualification out of Chapter 2 and Appendix A.)

ASTM STANDARD C94 - 94 (C 94)  
"Standard Specification for Ready-Mixed Concrete."  
(The requirements for mixing water out of Section 4.1.3.1.)

ASTM Standard No. C 1140 - 89 (C 1140)  
"Standard Practice for Preparing and Testing Specimens from Shotcrete Test Panels." (The requirements for shotcrete test panel or area size, Section 5 Test Panels.)

Kiewit/PB Special Process Procedure No. SPP-009, Revision 1,  
"Certification of Subsurface Shotcrete Nozzle Operators."  
(The training, written test requirements, and workmanship test, and certification process)

Kiewit/PB Core List For Shotcrete Nozzlemen.

(The Core List is the Kiewit/PB required training.

Note: Kiewit/PB does not have a position description for shotcrete nozzlemen. It is considered a Craft Position and does not require a Position Description.)

Kiewit/PB Quality Control Procedure No. QCP-007, Revision 1, "Tunnel and Alcove Shotcrete Inspection."

(The verification process by Quality Control for shotcrete inspection.)

Kiewit/PB Technical Control Procedure No. TCP-2.25, Revision 0, "Shotcrete Placement." (This procedure was given a limited review for compliance with the specifications.)

Kiewit/PB Plan-003, Revision 0, "Plan for the Placement of Shotcrete." (This plan was given a limited review for compliance with the specifications [Specs. 03362 and 03363].)

Kiewit/PB Management Control Procedure No. MCP-10.1, Revision 5, "Qualification and Certification of Inspection and Test Personnel." (This procedure was reviewed to verify that it is applicable to the certification of shotcrete nozzlemen.)

Personnel contacted during the surveillance:

Jon Christensen	Kiewit/PB Quality Assurance Manager
Carey Johnson	Kiewit/PB Construction Manager
Howard Cox	Kiewit/PB Quality Control Manager
Jon Hedlund	Kiewit/PB Tunnel Engineer
Wes Pugmire	REECo Quality Control Supervisor
William Glasser	REECo Quality Assurance
O.J. Gilstrap	M&O DE&S Quality Engineering Manager
Joe Willis	M&O Quality Assurance
Mary Lou Brown	Kiewit/PB

**Block 10 SURVEILLANCE CONCLUSIONS:**

The results of the surveillance show that the procedures and program are in place and the implementation has been adequate. However, the following items are mentioned as areas which Kiewit/PB at the start of the surveillance had not addressed or actions were incomplete:

- The Core List had not been approved at the start of the surveillance even though training was in process for shotcrete nozzlemen.
- The Core List for the shotcrete nozzlemen did not list Kiewit/PB Procedure TCP-2.25, which is the procedure for shotcrete placement. It should be noted that the personnel in training for shotcrete nozzlemen had read the procedure and this was verified by the surveillance team. This condition was corrected during the surveillance.
- An area where the Kiewit/PB procedure and plan for shotcrete placement failed to address the specification and ACI requirements was in the extreme ambient temperature ranges, i.e., high temperatures and low temperatures. This was corrected during the surveillance by submittals to the Management and Operating Contractor (M&O) Architect and Engineer (A/E) stating that Kiewit/PB would not place shotcrete whenever the ambient temperature was below the ACI low temperature limit above or the ACI high temperature limit. The submittal numbers are BABEAB000-01717-6300-03362-CD-03-0 and BABEAB000-01717-6300-03363-CD-04-0.
- Another area is the fact that Kiewit/PB was utilizing a REECo employee as the certifying agent for shotcrete nozzlemen without formally designating him as such, (see recommendation at the end of this paragraph).
- One deficiency found was in Kiewit/PB Quality Control procedure No. QCP-007, Rev. 1. The specifications for shotcrete were revised to delete the requirement for a Certificate of Compliance for the mixing water. However, the QCP still retains this requirement, (see Performance Report No. YMQAD-96-P002).

- An area where the specifications are not in accordance with ACI-506.3R is the size of the test panel for testing and certifying shotcrete nozzlelemen. ACI-506.3R states that the minimum size for a test panel for certification is two (2) feet square. The M&O A/E issued an Engineering Change Request Level III, No. E95-0001 in which the size of the test panel for qualification is reduced to 18" by 18" minimum referencing the ASTM Standard No. C 1140. This is in contradiction to ACI 506.3R, which calls out for a minimum test panel size of 24" by 24," and which does not reference ASTM C 1140, (see Deficiency Report No. YMQAD-96-D007).

**Recommendation:**

Kiewit/PB Procedure MCP-10.1, Revision 5, does not address the certification of shotcrete nozzlelemen by external certifying agents, i.e., a REECO certifying agent. In actuality, a REECO employee has been designated by Kiewit/PB as a certifying agent for Kiewit/PB shotcrete nozzlelemen. It is recommended that the procedure be revised to allow a qualified person who is not a Kiewit/PB employee to be designated as certifying agent for the discipline or specialty in which he or she is qualified as enumerated in MCP-10.1.