Department of Energy
Office of Civilian Radioactive Waste Management
Yucca Mountain Site Characterization Office
P.O. Box 98608
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NOV 30 1994

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ISSUANCE OF SURVEILLANCE RECORD YMP-SR-95-011 RESULTING FROM YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION (YMQAD) SURVEILLANCE OF REYNOLDS ELECTRICAL & ENGINEERING CO., INC. (REECO) AND KIEWIT/PARSONS BRINKERHOFF (K/PB) (SCPB: N/A)

Enclosed is the record Surveillance YMP-SR-95-011 conducted by the YMQAD at the REECo and K/PB facilities in Las Vegas and Yucca Mountain site, Nevada, October 26 through November 3, 1994.

The purpose of the surveillance was to evaluate the adequacy and effectiveness of the procurement and fabrication of the steel set ground support system.

Corrective Action Requests (CAR) YM-95-008, YM-95-009, and YM-95-010 were issued as a result of this surveillance. Response to these CARs, which were transmitted via separate letter, are due by the date indicated in Block 13 of the CARs.

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. However, the open CARs will continue to be tracked until they are closed to the satisfaction of the quality assurance representative and the Director, YMQAD.

If you have any questions, please contact either Robert B. Constable at 794-7945 or John S. Martin at 794-7881.

R. E. Spence

Richard E. Spence, Director
Yucca Mountain Quality Assurance Division

YMQAD:RBC-969

Enclosure:
YMP-SR-95-011

YMP-5

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WM-11

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Surveillance No. YMP-SR-95-011

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

QUALITY ASSURANCE SURVEILLANCE RECORD

SURVEILLANCE DATA

[1]ORGANIZATION/LOCATION:	[2]SUBJECT:	[3]DATE: 10/26/94 through 11/3/94
Reynolds Electrical and Engineering Company (REECo) and Kiewit/Parsons Brinkerhoff (K/PB), Las Vegas and Yucca Mountain, NV	Procurement of "Q" steel sets	

[4]SURVEILLANCE OBJECTIVE: The objective of the surveillance was to evaluate the adequacy and effectiveness of the procurement and fabrication of the steel set ground support system.

[5]SURVEILLANCE SCOPE:
The scope of the surveillance included REECo and K/PB procurement and/or fabrication activities associated with steel sets.

[6]SURVEILLANCE TEAM:
Team Leader:
John S. Martin
Additional Team Members:
Donald J. Harris

[7]PREPARED BY:		[8]CONCURRENCE:	
John S. Martin	10/25/94	N/A	
Surveillance Team Leader	Date	QA Division Director	Date

SURVEILLANCE RESULTS

[9]BASIS OF EVALUATION/DESCRIPTION OF OBSERVATIONS:
See pages 2, 3, and 4

[10]SURVEILLANCE CONCLUSIONS:
See pages 4 and 5

[11]COMPLETED BY:		[12]APPROVED BY:	
	11/22/94		11·29·94
Surveillance Team Leader	Date	QA Division Director	Date

ENCLOSURE

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

A surveillance was performed of Reynolds Electrical and Engineering Company (REECo) and Kiewit/Parsons Brinkerhoff (K/PB) from October 26, through November 3, 1994. The purpose of the surveillance was to evaluate the procurement and fabrication of the steel set ground support system.

The initial procurement of twenty-one steel sets, which have been designated as quality affecting by the M&O design organization, were designed to be utilized within the Exploratory Studies Facility (ESF) and consists of a multi segmented steel arch type arrangement connected to a precast concrete floor called the invert. The steel set is jacked into place and then shimmed to act as a ground support system.

The surveillance consisted of a review of procurement and supporting fabrication documentation, K/PB procedures and personal interviews. A listing of documentation reviewed and utilized during the course of this surveillance can be found in Attachment I of this report.

Personal interviews were conducted with REECo and K/PB personnel who were directly involved with the procurement of the steel sets. A synopsis of the procurement of the Steel Set ground support system as determined from these interviews and a review of documentation in place at the time of the surveillance is as follows:

On 6/27/94 Specification titled "Steel Sets and Accessories Subsurface" number BABEAB000-01717-6300-02341, Revision 1, was issued by the M&O to REECo on at risk basis to allow early procurement of the Steel Set ground support system. This was to allow sufficient time for fabrication and to meet the expected need dates in support of Tunnel Boring Machine (TBM) operation within the ESF. In release of this early procurement the final specification accepted by the Department of Energy (DOE) could be different from the version released for early procurement. However, plans were made to have the original procurement specification compared with the final approved "released for construction" version and any differences documented and resolved.

In procurement of the steel sets two fabricators were found capable of manufacture. Of these, one was rejected based on cost and the other, Commercial Pantex Sika (CPS), was selected by REECo and K/PB. REECo performed an evaluation, on June 28, through 30, 1994, of CPS in an effort to qualify them as a supplier of quality items in accordance with the Quality Assurance Requirements and Description document and their internal program. As a result of this evaluation it was found that CPS did not have a program acceptable to REECo for supplying engineered items classified as quality affecting.

Due to time constraints imposed by project schedule K/PB indicated that they would have CPS work entirely under their quality program, similar to staff augmentation. A plan was put together by K/PB, and concurred with by the M&O, stating that they would have CPS fabricate under K/PB's program and that K/PB would be responsible for all inspection and testing of the steel sets.

In review of the purchase order (P. O.) awarded by K/PB to CPS, K/PB imposed their quality Management Control Procedures (MCPs), thereby requiring CPS to perform as staff augmentation to K/PB.

The fabrication of the steel sets involved welding by CPS, and by specification was to be accomplished in accordance with AWS D1.1. CPS had no welders qualified in accordance with AWS D1.1, and it was determined that they would have to be qualified within the process that would be utilized for fabrication. In accomplishing this CPS and K/PB had welders weld coupons, for qualification, under a CPS weld procedure. In review of documentation it was found that K/PB had not reviewed and accepted the procedure under their program as required. Also, after the coupons were made they were tested by Hayes Testing Laboratory (HTL). In discussions with K/PB it was indicated that they had witnessed all welder qualification testing performed by HTL and were satisfied with the test results. However, no documented evidence exists to show that K/PB qualified HTL as a supplier of quality services or performed the qualification themselves as required by their quality program (reference Corrective Action Request (CAR) YM-95-009).

In discussions with REECo and K/PB and in review of documentation it was also found that, contrary to the procurement documents, CPS did not manufacture the steel sets in accordance with the K/PB program; but, manufactured the steel sets utilizing CPS procedures which were not approved or accepted by K/PB (reference CAR YM-95-010). In review of documentation it was found K/PB performed dimensional and visual inspections of the steel sets prior to release from CPS.

During the time of this surveillance Nonconformance Report (NCR) 95-007 was issued to document that the CPS welders who performed welding on the steel sets were not qualified properly and the steel sets were fabricated by a vendor who was neither qualified as a supplier nor working under the K/PB program as required by the P. O..

In accordance with the steel set specification and design drawings the steel sets were to be manufactured as an engineered item where all documentation of acceptability would be provided by a qualified supplier. Since a qualified supplier was not utilized, and K/PB committed to having the steel sets manufactured under their quality program, they became responsible for assuring that the material used in the fabrication met all specification and drawing requirements. In accomplishment of this K/PB arranged to have the material tested and then dedicated for use as a commercial grade item. In review of documentation it was found that the steel sets were fabricated prior to assuring that the material met specification requirements through testing; which while not a program violation, has a potential to impact the final product (see recommendation).

A review of the procurement documents revealed two other deficiencies during the course of this surveillance. One deficiency is that no documented evidence exists to show that a technical review had been completed for the steel set Purchase Order (P.O.). The other deficiency results from a K/PB procedural requirement limiting the amount of a K/PB procurement to $25,000. The P.O. let for the steel sets exceeded $25,000 (reference CAR YN-95-008).

The following individuals were contacted during the course of this surveillance:

James Blaylock	Quality Engineer, Yucca Mountain Quality Assurance Division (YMQAD)
J. R. Brown	Procurement, K/PB
Mary Lou Brown	Training Supervisor, K/PB
Howard Cox	Quality Control (QC) Manager,K/PB
Ralph Dresel	Construction Engineering Manager, M&O
James Gardiner	DOE/Engineering and Field Operations
Ken Gilkerson	Senior Quality Assurance (QA) Specialist, YMQAD
William Glasser	Project QA Manager, REECo
William Gratza	Senior QA Specialist,REECo
Hank Greene	Division Manager, YMQAD
Gerald Heaney	QA Compliance Engineer, M&O
Richard Killner	Senior Contract Administrator, REECo
Kevin Krank	Quality Engineering Programs, K/PB
Jerry Nauf	Department Manger - Subsurface, M&O
John Pye	Lead Geotechnical Engineer, M&O
Carol Rixford	Records Manager, K/PB
Steve Schermann	Lead Auditor, K/PB
Thomas Tomac	QC Supervisor/Weld Engineer, K/PB
Albert Williams	General Engineer, YMQAD
Perry Wilson	Senior QA Specialist, REECo
Joe Willis	Quality Engineering Manager, M&O

Block 10 (continued) Surveillance Conclusions:

CARs

The surveillance team identified four deficiencies during the surveillance for which three CARs have been issued.

A synopsis of the deficiencies documented as CARs are detailed below.

<u>CAR YM-95-008</u>

K/PB Management Control Procedure (MCP)- 4.0, Rev. 4 "Procurement Document Control" paragraph 3.3 requires that P.O.s have a technical review performed prior to award of the P.O.. Contrary to this no documented evidence exists that a technical review was performed for K/PB P.O. 1785-0311, issued to CPS for the procurement of the steel sets.

K/PB MCP-7.0, Rev. 4 "Control of Purchase Items and Services", paragraph 1.2 limits procurement by K/PB to $25,000. Contrary to this the procurement of the steel sets exceeded the $25,000 limitation.

<u>CAR YM-95-009</u>

K/PB Special Process Procedure (SPP)-008, Rev. 2, "Welder/Welding Operator Performance Qualification", paragraph 3.0.2 requires welder/welding operators performance qualification tests to be conducted by K/PB or and independent testing agency. Contrary to this K/PB utilized Hayes Testing

Laboratory, Inc. to qualify welders from CPS who performed welding on the steel sets during the fabrication process. Hayes Testing Laboratory was not qualified to perform these services by K/PB as a supplier of quality services.

CAR YM-95-010

DOE/RW-0333P, Revision 1, "U.S. Department of Energy Office of Civilian Radioactive Waste Management Quality Assurance Requirements and Description for the Office of Civilian Radioactive Waste Management" (QARD), Section 4.0, paragraph 4.2.1 C.3 allows the purchaser to permit some or all supplier work to be performed under the purchaser's quality assurance program provided the work is adequately addressed. In letting of the contract for the steel sets K/PB imposed their total quality MCPs on CPS, whereby CPS would work under the K/PB program. In review of documentation and through interviews it was found that CPS did not use the K/PB program for the manufacture of the steel sets.

NCRs

During the course of this surveillance, YMQAD drafted and REECo issued NCR No. YMSCO-95-007. Subject NCR documents that K/PB utilized welders who were not qualified in accordance with the K/PB program (see CAR YM-95-009) and that the steel sets were manufactured by CPS who was not approved as a supplier of quality items (see CAR YM-95-010).

Recommendations

The following recommendation resulted from the surveillance and is presented for consideration by management:

- During the course of this surveillance it was found that fabrication activities were being accomplished by CPS with material whose acceptability had not been determined at the time of manufacture. It is recommended that when commercial grade dedication of material is to be performed, that the testing and results thereof be obtained prior to construction and/or fabrication activities taking place so that unacceptable material can be identified and dispositioned prior to fabrication.

Summary

Based upon documentation reviews and personal interviews; the issuance of three CARs, one NCR and one recommendation, the surveillance team has determined that the overall adequacy and effectiveness of implementation of the quality assurance program for the procurement and fabrication of the initial 21 steel sets by K/PB and REECo was inadequately planned and implemented.

ATTACHMENT I

OBJECTIVE EVIDENCE EXAMINED DURING THE SURVEILLANCE

The following documents were reviewed during the course of this surveillance:

Procedures:

Management Control Procedure (MCP) 1.0, Rev. 4, Organization
MCP 1.1, Rev. 2, Stop Work
MCP 2.0, Rev. 6, Construction Planning and Control
MCP 2.1, Rev. 1, Surveillances
MCP 2.4, Rev. 3, Indoctrination Training and Qualification
MCP 4.0, Rev. 5 and 6, Procurement Document Control
MCP 5.0, Rev. 4, Procedure Preparation and Control
MCP 6.0, Rev. 3, Document Control
MCP 7.0, Rev. 4 and 5, Control Purchased Items and Services
MCP 7.1, Rev. 2, Receipt Inspection
MCP 8.0, Rev. 2, Identification and Control of Item
MCP 9.0, Rev. 2, Control of Special Processes
MCP 10.0, Rev. 2, Inspection Planning and Control
MCP 10.1, Rev. 2, Qualification and Certification of Inspection Test Personnel
MCP 13.0, Rev. 2, Handling Storage and Shipping
MCP 15.1, Rev. 4, Discrepancy Control of Nonconforming Items
MCP 16.0, Rev. 2, Corrective Action
MCP 17.0, Rev. 6, Records
MCP 18.0, Rev. 3, Audits
MCP 18.1, Rev. 4, Auditor Qualification Plan

Special Process Procedure (SPP) 003, Rev. 2 Magnetic Particle Testing
SPP 005, Rev. 0, General Weld Standard AWS D1.1-92 Structural Welding Code-Steel With Appendix I and II
SPP 006, Rev. 3, Welding Procedure Specification Manual Welding of Carbon Steel Structural Shapes AWS D1.1-92
SPP 007, Rev. 2, Filler Metal Control
SPP 008, Rev. 2, Welder/Welding Operator Performance Qualification

Quality Control Procedure (QCP) 003, Rev. 0, Visual Inspection (Weldments)
Acceptance Criteria Supplement MT-S-03, Rev. 1, Magnetic Particle Testing Criteria
Acceptance Criteria Supplement VT-S-01, Rev. 2, Visual Acceptance Criteria AWS D1.1-92 Section 9.25
CPS weld Procedure No. 001, Rev. 0, Prequalified Joint Welding Procedure, Procedure Specification

Other Documents:

P.O., No. 1785-0311
Work Package 1.10
Work Package 1.11
Hayes Testing Laboratory, Inc. Welder, Welding Operator or Tack Welder Qualification Test Records for the following welders:

Jimmy Kolle
Daniel Hill
Bill Mahoney
Wendell E. Sipes

Sherman Hart
Bruce Anderson
Mike Age

K/PB Yucca Mountain Project Class Attendance Sheet dated 10/15/94 Lesson Plan W-001-0, training conducted of CPS Welders.
Kiewit Yucca Mountain Project ESF Steel Set Weldments for Assembly: 1A, 1B, 1C, DMI
Kiewit/PB Bolt hole Inspection Form for fabrication of Assembly: 1A, 1B, 1C, and DMI

Specifications:

BABEAB000-01717-6300-02341, Rev. 1
BABEAB000-01717-6300-02341, Rev. 3

Drawings:

BABEAB000-01717-6300-02341-VD-01-1 2/2, Rev. 4
BABEAB000-01717-6300-02341-VD-02-1 2/2, Rev. 5
BABEAB000-01717-6300-02341-VD-03-1 2/2, Rev. 2