Department of Energy
Office of Civilian Radioactive Waste Management
Yucca Mountain Site Characterization Office
P.O. Box 98608
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NOV 28 1994

Daniel L. Koss
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ISSUANCE OF SURVEILLANCE RECORD YMP-SR-95-009 RESULTING FROM YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION (YMQAD) SURVEILLANCE OF REYNOLDS ELECTRICAL & ENGINEERING CO., INC. (REECO)

Enclosed is the record of Surveillance YMP-SR-95-009 conducted by the YMQAD at the REECo facilities in Las Vegas and the Yucca Mountain Site, Nevada, November 1-9, 1994.

The purpose of the surveillance was to verify that adequate quality assurance controls addressing REECo and Kiewit/Parsons Brinkerhoff interfaces and pertinent quality issues, were in place for the Tunnel Boring Machine. No Corrective Action Requests were issued as a result of this surveillance.

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.

If you have any questions, please contact either Robert B. Constable at 794-7945 or Kenneth T. McFall at 794-7280.

R. C. Spence

Richard E. Spence, Director
Yucca Mountain Quality Assurance Division

YMQAD:RBC-937

Enclosure:
Surveillance YMP-SR-95-009

YMP-5

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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: 11/1-9/94
Reynolds Electrical and Engineering Company, Inc. (REECo)	Tunnel Boring Machine (TBM) Controls and Interfaces	

[4]SURVEILLANCE OBJECTIVE:
Verify that adequate Quality Assurance (QA) controls are in place for the TBM.

[5]SURVEILLANCE SCOPE:	[6]SURVEILLANCE TEAM:
Verify that line and grade and tracers fluids and materials are controlled. Evaluate TBM controls.	Team Leader: K. T. McFall Additional Team Members: J. R. Doyle

[7]PREPARED BY:		[8]CONCURRENCE:	
Kenneth T. McFall	10/18/94	N/A	N/A
Surveillance Team Leader	Date	QA Division Director	Date

SURVEILLANCE RESULTS

[9]BASIS OF EVALUATION/DESCRIPTION OF OBSERVATIONS:

See Page(s) 2 & 3

[10]SURVEILLANCE CONCLUSIONS:

See Page(s) 3 & 4

[11]COMPLETED BY:		[12]APPROVED BY:	
Kenneth T. McFall	11/16/94	Robert P. Cantlon for	11-22-94
Surveillance Team Leader	Date	QA Division Director	Date

(Block 9 Continued) BASIS OF EVALUATION/DESCRIPTION OF OBSERVATIONS:

During the time from November 1-9, 1994, a surveillance was conducted of the REECo and Peter Kiewit/Parsons Brinkerhoff (K/PB) interfaces involving the TBM. In addition, provisions for maintenance of line and grade during TBM operation and fluid spill abatement provisions were examined. Interviews with REECo and K/PB personnel were conducted and documentation reviewed to ensure that the appropriate methods and vehicles of communication were in place. There were no Corrective Action Requests issued during the course of this surveillance. One recommendation was generated as a result of this of this surveillance which is presented in Block 10.

REECo personnel were contacted in Las Vegas, Nevada first to obtain background information and get a general feel for the way that REECo and K/PB communicate as well as to get the names of the knowledgeable people at the Yucca Mountain Site to interview concerning line and grade and spill mitigation issues. It was found that K/PB is a subcontractor to REECo but REECo retains ultimate responsibility for the QA and Quality Control (QC) activities. K/PB has its own QA/QC department and performs inspections and surveillances of its assigned activities. REECo QC at the site performs surveillances of K/PB primarily on performance based activities with programmatic functions examined to a considerably lesser degree.

It is anticipated that the TBM will be run for approximately 2 1/2 shifts per day. Swing and Graveyard shifts will be full-time operations shifts for the TBM with Days being split between operations and maintenance. REECo will be assigning two individuals from their QC organization to each operational TBM shift, one to look at K/PB and one to perform surveillances such as examination of the Lithium Bromide tests.

K/PB is still in the early stages of its QC program in that the TBM is actually being operated only minimumly at this point. As activities increase K/PB anticipates a minimum of five K/PB QC personnel on each shift. The breakdown of K/PB personnel per shift is as follows:

1 Construction Inspector
2 Tunnel Inspectors
1 Data Recorder
1 Document Analyst

Line and Grade in the North Ramp and beyond will be maintained by the use of a construction laser guidance system built into the TBM. A K/PB procedure, Technical Control Procedure (TCP)-2.3, Revision 2, titled "Installation and Use of the Construction Laser For TBM Guidance" with an effective date of September 28, 1994, has been developed. The position of the TBM will be monitored throughout its use. Civilian Radioactive Waste Management System/Management and Operating Contractor Specification number BAB000000-01717-6300-01501, Revision 02, "Subsurface General Construction" requires that alignment and grade are maintained to within one-half tunnel diameter of the established line and grade as shown on the approved Architect/Engineer (A/E) Drawings. The

(Block 9 Continued) BASIS OF EVALUATION/DESCRIPTION OF OBSERVATIONS:

specification also calls for the construction tolerance for TBM excavation to not exceed a maximum departure of 300 mm from established line and grade as shown on the approved A/E Drawings. The QA Surveyor of Record will provide primary survey control monuments for use by the constructor. These survey monuments, taken from an established monument outside the tunnel will be used to monitor the line and grade of the TBM as controlled by the laser guidance system. If a discrepancy is encountered, appropriate correction will be made after evaluation.

The specification also calls for the development of a Spill Mitigation Plan. K/PB developed "Spill Response Plan," Revision A, effective date October 24, 1994, BAB000000-01717-6300-01501-CD-28-1 in response to this requirement. The plan addresses spills/releases of those fluids and powders or similar materials controlled in accordance with the Tracers, Fluids, and Materials (TFM) Management Plan (YMP/91-23). The actual control of TFMs and the preventative measures will be in accordance with the limitations and controls established by Yucca Mountain Project Office and listed in the approved TFMs list. The specification set the upper limits on the amount of water that can be used in the tunnel per specified linear distance or area.

PERSONNEL CONTACTED DURING THE SURVEILLANCE:

T. Ciaffoni,	KP/B	Project Construction Engineer
H. Cox	KP/B	QC Manager
W. Gratza	REECo	QA Section Chief
J. Morris	K/PB	Construction Manager
W. Pugmire	REECo	QC Manager

(Block 10 Continued) SURVEILLANCE CONCLUSIONS:

This surveillance examined the interfaces between REECo and K/PB for adequacy and use. It was found that adequate lines of communication are present and that they are open and being used. The surveillance also looked at the provisions for maintaining line and grade during tunnel construction and the provisions in place for spill mitigation. With the issuance of the TBM alignment procedure, TCP-2.3, September 1994, and the Spill Response Plan, October 1994, it is felt that adequate controls are in place in these areas at this time.

RECOMMENDATIONS:

The following recommendation resulting from a perceived potential weakness identified during the surveillance is presented for the consideration of the managements of the organizations involved in the development and use of Specification BAB000000-01717-6300-01501, Revision 2, "Subsurface General Construction:"

(Block 10 Continued) SURVEILLANCE CONCLUSIONS:

Section 3.01, Subsections "P" and "Q" set the upper limits of construction water lost in the North Ramp and associated alcoves and the construction water used in the Starter Tunnel and North Ramp Testing Alcove No.1. These amounts are 22 cubic meters averaged over 3 linear meters and five cubic meters per square meter of floor excavation. The water amounts these figures represent are approximately 179 gallons per linear foot (or 7.196 gallons per linear foot averaged over the 25 foot tunnel diameter) and 123 gallons per square foot respectively. These amounts of water seem very high. The specification provides no specific indication of the time frame during which these amounts could be consumed. It is recommended that the specification be changed or revised to clearly emphasize that the above referenced gallon amounts are for the life of the tunnel and alcoves (assuming that this is the case) and cannot be interpreted to mean shorter periods of time.