U.S. DEPARTMENT OF ENERGY
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
OFFICE OF QUALITY ASSURANCE

AUDIT REPORT

OF THE

CIVILIAN RADIOACTIVE WASTE MANAGEMENT SYSTEM MANAGEMENT AND OPERATING CONTRACTOR

AT

KIEWIT/PARSONS BRINCKERHOFF

LAS VEGAS, NEVADA

K/PB-ARP-97-11

FEBRUARY 24-28, 1997

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ENCLOSURE

1.0 EXECUTIVE SUMMARY

As a result of Performance Based Quality Assurance (QA) Audit K/PB-ARP-97-11, the audit team determined that Kiewit/Parsons Brinckerhoff (K/PB) has satisfactorily implemented adequate process controls for the development, completion, and turnover of K/PB Work Packages (WP) in support of Work Breakdown Structure (WBS) number 1.2.6.4.2, "First Access Topopah Spring Excavation."

WPs are generated by K/PB to plan, direct, track, and verify K/PB work activities. Based on review of completed WPs, process controls are effectively implemented; however, the adequacy of completed WPs could not be determined during the audit, since a thorough evaluation would require a comparison of WP documentation with completed construction. This verification is being planned by the Architect Engineer (A/E) Title III organization as part of WP turnover and acceptance. Therefore, the adequacy of the process for completion of WPs is considered indeterminate until such time that completed work is verified against A/E acceptance criteria, and deemed acceptable.

The K/PB program examined during this audit is in accordance with the U.S. Department of Energy (DOE) Office of Civilian Radioactive Waste Management (OCRWM) Quality Assurance Requirements and Description (QARD), DOE/RW-0333P, Revision 5.

The audit team identified one deficiency during the audit that resulted in the issuance of one Deficiency Report (DR) described in Section 5.5.2. In addition, there were three recommendations resulting from the audit, which are detailed in Section 6.0 of this report.

2.0 SCOPE

This audit was conducted to evaluate the adequacy and effectiveness of K/PB's controls for development, completion, and turnover of WPs supporting the design and construction of the First Access Topopah Spring excavation, including associated operational alcoves. The audit was intended to evaluate the WP process as it was applied to tunnel excavation during fiscal years (FY) 1995 and 1996.

Based on the Work Breakdown Structure (WBS) Dictionary description, the excavation covered by WBS 1.2.6.4.2 extends from the First Access Portal/Collar

and terminates at the intersection with the north end of the Topopah Spring Main Drift. The excavation has been divided into 200 meter segments, also called "stations." The milestone associated with this WBS number was considered complete upon Tunnel Boring Machine advancement to Station 28 + 00 or 2800 meters, which occurred in early FY 1996.

The audit was intended to determine the degree to which the resultant products meet the program requirements, and management commitments and expectations, as well as to determine that K/PB completed the work in accordance with pertinent sections of the QARD.

The process/activities/end-products were evaluated during the audit, in accordance with the approved audit plan.

PROCESS/ACTIVITY/END-PRODUCTS

Activities involving development of WPs were selected for evaluation from WBS element 1.2.6.4.2, "First Access Topopah Springs Excavation." WPs developed and completed under the subsequent WBS numbers used for tunnel excavation; i.e., WBS 1.2.6.6.1.2, "TSL Exploratory Drifts Excavation, U/G Utilities & Equipment;" and WBS 1.2.6.5.2, "Second Access Topopah Spring Excavation," were also evaluated during this audit, to ensure continuity of the WP process.

The performance-based evaluation of process effectiveness and product acceptability was based upon:

1. Satisfactory implementation of the critical process steps;
2. Use of trained and qualified personnel working effectively;
3. Documentation that substantiates the quality of the product;
4. Acceptable results and adequate end-product; and
5. Effectiveness of corrective action.

The critical process steps for WP preparation, completion, and turnover are listed below:

1. WP Planning
2. WP Development
3. WP Review and Approval
4. WP Distribution
5. WP Maintenance
6. WP Implementation/Completion

7. WP Close-out
8. WP Decontrol
9. WP Turnover

In addition, a sample of the applicable QA program requirements and controls as they applied to each process was examined to evaluate the degree of compliance. The following QA program elements selected are directly related to K/PB's WP process. These elements were evaluated for compliance:

2.0 QA Program
6.0 Document Control

3.0 AUDIT TEAM

The following is a list of audit team members, and their assigned areas of responsibility:

Name/Title Organization	QA Program Elements/ Requirements, Technical Areas Processes, Activities or End-products
Kristi A. Hodges, Audit Team Leader, Office of Quality Assurance (OQA)	WP Turnover Process
Wesley C. Pugmire, Auditor, OQA	6.0, WP Completion Process
Franklin (Pete) Smith, Auditor, OQA	2.0, 6.0, WP Development Process

There were no observers present at this audit.

4.0 AUDIT MEETINGS AND PERSONNEL CONTACTED

The pre-audit meeting was held on February 24, 1997, at the Civilian Radioactive Waste Management System Management and Operating Contractor (CRWMS M&O) offices in Las Vegas. Daily debriefing and coordination meetings were held with K/PB management and staff, and daily audit team meetings were held to discuss audit status. The audit concluded with a post-audit meeting held on February 28, 1997, at the CRWMS M&O offices in Las Vegas. Personnel contacted during the audit are listed in Attachment 1. The list includes those who attended the pre-audit and post-audit meetings.

5.0 SUMMARY OF AUDIT RESULTS

5.1 Program Effectiveness

The audit team concluded that, overall, K/PB's process controls are effectively being implemented for the development, completion, and turnover of K/PB Work Packages (WPs) in support of WBS number 1.2.6.4.2, "First Access Topopah Spring Excavation." The WP governing procedure, Management Control Procedure (MCP)-2.0, "Construction Planning and Control" has undergone many changes and refinements, as evidenced by its Revision 20 status. This unusually high revision level can be partially attributed to an evolving design process; of which K/PB, for the most part, has been successful in bringing the WP into compliance with. Based on the audit results, the WP is an effective tool for planning, directing, tracking, and verifying K/PB's work activities.

The adequacy of completed WPs, however, could not be determined during this audit, since such a determination would require a verification of completed construction to ensure that WP documentation adequately reflects the tunnel as built. Therefore, the adequacy of completed WPs is considered indeterminate; although K/PB process controls are considered effective. The A/E Title III review will determine end-product acceptability.

The following is a summary of the evaluation of the critical process steps identified in Section 2.0 of this report.

5.1.1 WP Planning

This process step is determined effective in meeting QARD Section 2.2.5, Work Planning." WPs are developed for all QA and specification activities prior to starting work.WPs are not generated for activities that are deemed by the A/E as "temporary."

5.1.2 WP Development

This process step is determined effective in meeting QARD Section 2.2.5. WPs are prepared and assembled in accordance with K/PB's procedure MCP-2.0. The process provides for identification of work scope, current/former WP content, status of work activities, associated deficiency documents, and applicable requirement and A/E design documents.

5.1.3 WP Review and Approval

This process step is determined effective in meeting QARD Section 2.2.10, "Document Review," for initial WP issuance and subsequent revisions. WPs include evidence of QA and Construction review and approval. Review checklists with specified review criteria are completed and signed by required reviewers. Based on reviewed WPs, there were no mandatory comments to be resolved prior to approval.

5.1.4 WP Distribution

This process step is determined effective in meeting QARD, Section 6.2.5, "Distribution and Use of Documents." WPs are available for use at appropriate work locations; however, it was discovered during the audit that two revision levels of the same design document or a revision level and changes via Engineering Change Request (ECR) or Baseline Change Proposal (BCP), may exist in the field concurrently. Because A/E design documents are issued by the CRWMS M&O prior to K/PB's ability to revise an impacted WP, Specification 01400 was revised to allow 20 days for Constructor implementation. During that 20 day period (or longer if extensions are requested), work may be performed in accordance with the earlier document, which appears to be an obsolete document, if one is depending on the CRWMS M&O date as the effective date. This condition was documented on DR YM-97-D-027, which was issued to CRWMS M&O Engineering.

5.1.5 WP Maintenance

This process step is determined effective in meeting QARD Sections 6.2.5, "Distribution and Use of Documents" and 6.2.6, "Changes to Documents." WPs are revised, updated, and controlled in accordance with MCP 2.0. Upon revision or change to an A/E design document, K/PB's Quality Control (QC) performs a WP impact evaluation, including a review for impact on procedures included in the WP. However, because the deficient condition described in Section 5.1.4 above, the WP does not always reflect current A/E approved design documents.

5.1.6 WP Implementation/Completion

This process step is determined effective based on reviewed WPs, which contain evidence of K/PB procedure and A/E design document implementation; however, the adequacy of completed WPs is indeterminate at this time. It could not be confirmed during this audit that construction/ inspection documentation included in WPs, adequately reflect completed construction. Adequacy will be determined by the A/E upon its verification of completed construction.

5.1.7 WP Close-Out

This process step is determined effective. Completed WPs are reviewed by QC prior to WP turnover. Based upon the QC review, an Open Item List, identifying Construction Completion List (CCL) and Deficiency Document List items that cannot be resolved before WP closure, is generated and added to the closed WP. CCL lists and WPs are cross-referenced, with appropriate CCL sheets also included in closed WPs. The QC review is considered an informal review, with no proceduralized review criteria. Because there are several QC staff personnel performing WP reviews, it was recommendation during the audit that the QC review be formalized to the extent that there is confidence that personnel are performing consistent reviews. It is noted that K/PB was in agreement with this recommendation and implemented a review instruction during the audit.

5.1.8 WP Decontrol

This process step is determined effective in implementing QARD Section 6.2.5 requirements for disposition of obsolete or superseded documents.

Upon completion of the QC review and resolution of open items, QC notifies the Site Document Analyst to decontrol the document and forward the Master to the Records Manager, who then forwards the document to the CRWMS M&O Records Processing Center (RPC). Decontrolled documents are indicated on an internal tracking log as "turned over," thereby providing a status of turned-over documents.

5.19 WP Turnover

This process step is determined effective. At the time of this audit, of approximately 300 WPs, 85 had been turned over to the RPC. Nine of these packages have been reviewed by the A/E Title III group and determined for preliminary purposes, acceptable. The significance of this A/E review could not be determined during the audit, nor was it confirmed that it was an A/E Title III review for acceptance. However, based upon the initial feedback, the controls that K/PB has implemented appear to be effective in mitigating problems in an A/E turnover review.

5.2 Stop Work or Immediate Corrective Actions Taken

There were no stop work orders, immediate corrective actions, or related additional items resulting from this audit.

5.3 QA Program Audit Activities

A summary table of audit results is provided in Attachment 2. The audit checklists contain the details of the audit evaluation along with identification of the objective evidence reviewed. The checklists are kept and maintained as QA Records.

5.4 Technical Audit Activities

There were no technical activities or technical end-products evaluated during this audit.

5.5 Summary of Deficiencies

The audit team identified one deficiency during the audit for which one DR has been issued.

A synopsis of the deficiency documented as DR is presented below. The DR was transmitted under a separate cover to CRWMS M&O management (OQA:JB:1148) on March 11, 1997.

5.5.1 Corrective Action Requests

None

5.5.2 Deficiency Reports

A/E design documents (drawings and specifications) are not adequately controlled to prevent inadvertent use of obsolete or superseded documents. Because of a 20 day specification allowance for Constructor implementation of distributed A/E design documents, two revision levels of the same design document or a revision level and changes via ECR or BCP, may exist in the field concurrently.

5.5.3 Performance Reports

None

5.5.4 Deficiencies Corrected During the Audit

None

5.5.5 Follow-up of Previously Identified Deficiency Documents

None

6.0 RECOMMENDATIONS

The following recommendations resulted from the audit and is presented for consideration by K/PB management.

1. Although DR YM-97-D-027 was issued to CRWMS M&O Engineering, K/PB will have a significant role in its resolution. It is imperative that K/PB assist the CRWMS M&O Engineering organizations in establishment of A/E design document effective dates that coincide with K/PB's ability to implement, as well as assist in any effort to reconcile effective dates with implementation dates.

2. To preclude confusion regarding the status and applicability of change documents, attention should be given to ensuring that ECR and BCP numbers are listed in the "Notice of Open Change Document" block on affected documents. An instance was noted where the document number was not posted, although the change document was attached to the affected document. An instance was also noted of a duplicate posting with different dates. OQA will follow up this recommendation with a surveillance of change document posting.

3. Increased coordination between A/E, CRWMS M&O Records Management, and K/PB organizations is needed to ensure an organized turnover of WPs. The WP turnover process would be expedited by a unified A/E and records management review, which would preclude multiple reviews in differing locations, requiring separate WP submittals by K/PB. This recommendation is intended for CRWMS M&O management.

7.0 LIST OF ATTACHMENTS

Attachment 1: Personnel Contacted During the Audit
Attachment 2: Summary Table of Audit Results

ATTACHMENT 1

Personnel Contacted During the Audit

Name	Organization/Title	Pre-Audit Meeting	Contacted During Audit	Post-Audit Meeting
Bob Armstrong	K/PB QA Manager			X
Mary Lou Brown	K/PB Training Supervisor	X		X
James Blaylock	DOE Engineer	X		
Howard Cox	K/PB QC Manager		X	X
Bill Glasser	M&O Field QA		X	X
Hank Greene	QATSS Verification Mgr.	X		X
Jerry Heaney	M&O Title III Design		X	
William Hunt	M&O Quality Engineer			X
Kevin Krank	K/PB Quality Control		X	
Tina Limon	K/PB Deputy Manager	X		X
Carol Rixford	K/PB Records Manager	X	X	X
Geoffrey Robinson	Title III Record Reviewer		X	
Fred Ruth	K/PB Quality Control			X
Steve Schuerman	K/PB QE Manager	X	X	X
Alden Segrest	M&O MGDS Manager		X	
Karen Spence	K/PB Document Analyst		X	
E.K. Williams	K/PB Quality Control		X	

LEGEND:
QC Quality Control
QE Quality Engineering

ATTACHMENT 2
Summary Table of Audit Results For Process/Product Evaluations

ACTIVITY	PROCESS STEPS	DETAILS (Checklist)	DEFICIENCIES	RECOMMENDATIONS	PROCESS EFFECTIVENESS	PRODUCT ADEQUACY	OVERALL
K/PB Work Package Process WBS 1.2.6.4.2	WP Planning	Pgs. 1,2	N		SAT	SAT	SAT
	WP Development	Pgs. 3-6	N		SAT	SAT	
	WP Review & Approval	Pgs. 7-10	N		SAT	SAT	
	WP Distribution	Pg. 11	YM-97-D-027*	REC #1	SAT	SAT	
	WP Maintenance	Pgs. 12,13	YM-97-D-027*	REC #1,2	SAT	SAT	
	WP Implementation/ Completion	Pgs. 14-18	N		SAT	INDET	
	WP Close-Out	Pgs. 19-22	N		SAT	SAT	
	WP Decontrol	Pgs. 23,24	N		SAT	SAT	
	WP Turnover	Pgs. 25-27	N	REC #3	SAT	SAT	

*This DR was issued to CRWMS M&O Engineering.

ATTACHMENT 2
Summary Table of Audit Results
For Procedural Compliance Evaluations

ACTIVITY	PROCESS STEPS	DETAILS (Checklist)	DEFICIENCIES	RECOMMENDATIONS	PROCESS EFFECTIVENESS	PRODUCT ADEQUACY	OVERALL
2	MCP-2.0, Rev. 19	Pgs. 3,4,7,8	N	N	SAT	SAT	SAT
6	MCP-2.0, Rev. 19 MCP-6.0, Rev. 10	Pgs. 9-11	N	N	SAT	SAT	SAT

TOTAL	**Pages = Programmatic/ Process: 27**	**1**	**3**	**SATISFACTORY**	