

DOE-ROCKWELL JOINT AUDIT 8702

of

Kaiser Engineers, Inc. and

Parsons, Brinckerhoff, Quade, and Douglas, Inc.

(KE/PB)

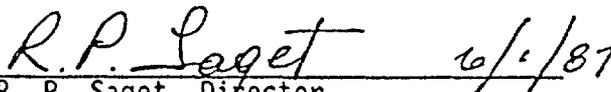
KE/PB AUDIT REPORT
April 7-10, 1987

Prepared by:


6.1.87

T. K. Subramanian
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Approved by:


6/1/87

R. P. Saget, Director
Quality Systems Division

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AUDIT)

DOE-ROCKWELL JOINT AUDIT NO. 8702

(April 7-10, 1987)

1.0 INTRODUCTION

The Department of Energy (DOE) - Richland's Assistant Manager for Commercial Nuclear Waste (AMC) Quality Systems Division (QSD) conducted an audit of the Basalt Waste Isolation Project (BWIP) activities completed or currently in progress at the joint venture of Kaiser Engineers, Inc., and Parsons, Brinkerhoff, Quade, and Douglas, Inc. (KE/PB).

The purpose of the audit was to assess the effectiveness of the KE/PB QA Program and to verify their response and corrective action for possible closure of findings from the Rockwell audit (BWIP-EA-8702).

AUDIT TEAM

The audit team was led by T. K. Subramanian of DOE-RL's BWIP Quality Systems Division (QSD). The remainder of the team consisted of H. Litz, DOE-RL; D. Brown, Office of Geologic Repositories (OGR-HQ); R. Viens (Rockwell), and D. Becker, technical advisor (Rockwell). Individual audit responsibilities for team members are shown in Attachment 2.

2.0 BACKGROUND

KE/PB is the designated architect/engineer for the Basalt Waste Isolation Project. As such, they have prime responsibility for current activities listed in this section. However, the project is structured upon an "integrating contractor" concept, so that Rockwell Hanford Operations as BWIP Integrating Contractor (IC) has had the responsibility of overseeing KE/PB's tasks, providing certain technical direction, etc. KE/PB's QA plan and QA administrative procedures require DOE-RL approval, after Rockwell has reviewed them and recommended approval.

KE/PB's current BWIP tasks are listed below (also see Attachment 2).

ITEM 2 - Task V, Study 10, Site Characterization Plan - Conceptual Design Report.

SCP Conceptual Design Report (CDR), is a prelude to Advanced Conceptual Design for the Repository. CDR addresses the design for a repository consisting of underground facilities, shafts, surface facilities and waste handling processes. The report identifies design issues and data needs that require resolution prior to or during the Advanced Conceptual Design. Cost issues are treated in a comparative and qualitative manner; detailed quantitative cost estimates, specific design of the container in which the waste will be sealed before emplacement and design of transportation outside the repository

boundary are the subjects of other studies and are beyond the scope of this report.

The design criteria for this report are taken from the Conceptual Design Criteria documents issued at different times by Rockwell. DOE receives and performs evaluations of Conceptual Design Reports.

Currently KE/PB has incorporated resolutions to comments from Rockwell and DOE and the camera-ready copy of the BWIP Engineering Study 10, Repository Site Characterization Plan/Conceptual Design Report (SCP/CDR), SD-BWI-ES-030, Revision 0, has been issued to Rockwell for formal release. The document is under DOE-HQ's acceptance review.

ITEM - 3 Task V, Study 11, Exploratory Shaft, Phase 1 (584).

The Exploratory Shaft I casing was designed and fabricated to a safety factor of 1.5 times the hydrostatic pressure, consistent with mining industry practice for shaft liners. Based on the concern for licensing the ES No. 1 shaft for use in, or effect on, the repository, a more rigorous design basis considering additional load conditions and combinations was undertaken.

Under Study 11, KE/PB with representatives from Rockwell and industrial consultants formulated a new shaft casing design criteria and methodology. This Design Criteria and Methodology document, intended to be used for development of final Exploratory Shaft Liner designs, was released in August 1986.

The design media (Basis of Design Document, Drawings and Specifications) had been issued by KE/PB to Rockwell for approval on April 7, 1987.

ITEM - 4 Task V, Study 11, Title III NDE Inspection of ES No. 1 Casing.

Based on the new shaft casing design criteria and methodology, KE/PB evaluated the need to obtain ring-to-shell fabrication measurements on the as built casing, leading to the field inspection of 794 casing stiffener rings.

The field nondestructive examination (NDE) was to determine whether or not detectable gaps existed between the casing shell and the stiffener rings. Any casing rings without a detectable gap were to require a field fix in accordance with casing design modifications (to be prepared).

ITEM - 7 Control of KE/PB Action Items.

KE/PB tracks action items through an Agreements and Commitments Status Report maintained on a computer database and updated periodically (monthly). The report is signed off by KE/PB Project Manager, Rockwell Contracting Officer Technical Representative, and DOE-RL Representative.

As this tracking system was not based on any written KE/PB procedure, the audit included review of items tracked by this system to ensure that the tracking system does not circumvent the nonconformance or audit finding reports system required to identify quality problems at KE/PB.

ITEM - 8 Task VI (829), Design Methodology (Update).

The Design Methodology is a logic developed by BWIP participants for identifying solutions to issues, study needs, and data needs based upon sequencing a design evolution process.

The purpose of the current Design Methodology (DM) task is to define and show (1) its role in addressing resolution of design issues, (2) how it is to be used in preparing lists of test, studies, and trade-off studies, and (3) how it is used to identify information data needs for site characterization, as well as updating the DM with the latest program information.

This document assists BWIP management in identifying activities to be performed on BWIP to meet the Mission Plan requirements and develops as the overall program evolves.

Current status is that KE/PB is evaluating the impact of incorporating Rockwell's Review Comment Records (RCRs). The camera ready copy of Revision 0 of this document is scheduled to be issued in a couple of months.

Task VI (685), Improved Geotechnical Design Analysis Methodology for Advanced Conceptual Design.

KE/PB is currently in the process of incorporating resolution to external comments on the IFA submittal of this study to develop a ground control plan. The current audit could not address this study but future audit or surveillance will include it. The information on this Task is included in the audit report because the final audit plan included this study.

3.0 OVERALL QA PROGRAM ASSESSMENT

3.1 QA PROGRAM

The objective of the audit was:

1. to verify that KE/PB has an approved, adequate QA program in place, and that it is being implemented effectively;
2. to perform follow-up evaluation and verification of action taken by KE/PB in response to earlier DOE-RL audit No. 8607 and Rockwell audit BWIP-EA-87-02; and
3. to examine whether or not KE/PB has an effective in-house program to identify deficiencies. This question is particularly significant in view of the large number of deficiencies identified by the recent Rockwell audit.

The conclusion of the audit is that KE/PB has an approved and adequate written QA program subject to the approval of Revision 9 to KE/PB QA plan currently under review by Rockwell and DOE-RL. KE/PB has qualified and trained personnel capable of implementing effectively the approved program. However, KE/PB's implementation of the QA program as written, requires improvement as evidenced by the six concerns and one observation identified in this audit report. The one observation included in the report supports the conclusion that KE/PB's own Surveillance and Audit programs to identify deficiencies were effective. Again, implementation of timely and effective corrective action is an area which requires concerted effort by KE/PB management.

3.2 Technical Performance.

The technical advisor supported the three teams and evaluated the technical adequacy of the controls used to ensure accuracy, correctness, and/or validity of the work being performed. Table in Attachment No. 4 (Technical Advisor Report) identifies the population and sample sizes used during Rockwell and DOE-RL audits to provide a quantitative base for the conclusions drawn from this audit. The overall conclusion of the technical performance portion is that each discrepancy by itself is not technically significant. However, all the discrepancies identified require the corrective actions/recommendations noted under Discussion of results section of this audit report.

3.3 Management Effectiveness.

The audit did not undertake management effectiveness evaluation as one of the task items for audit coverage (see Attachment 2).

However, KE/PB management's approach to effective and timely corrective action was evaluated during the audit. The audit concludes that KE/PB management needs to take up effective and timely corrective action to QA identified deficiencies as a major objective for 1987.

This conclusion is based on the surveillance and audit results noted in Observation 1 and the management interview responses.

During the audit KE/PB management was asked why repetitive procedural discrepancies occur, particularly related to the procedure 6.2 Engineering calculations. Management identified two factors:

- (1) strategy of "task" based manloading as opposed to adequate level of permanent staff for performing the studies or calculations, and
- (2) the fact that what KE/PB is currently doing is not strictly final design calculations meant for construction but rather "conceptual" design reports and therefore, the "task" engineers tend to use more of their judgement than the engineering calculation procedure permits.

The response indicates that KE/PB management is cognizant of the problem and its potential impact on the credibility of KE/PB studies. DOE-RL recognizes the constraints of "conceptual" design calculations stated in (2) above, but does not accept 'task' based manloading as a basis for repeated procedural discrepancies stated in (1) above. KE/PB management needs to address these issues to prevent problem recurrence. Observation No. 1 suggests that QA identified calculation related discrepancies be included as examples during the training sessions for engineers, whether they are "task" based or permanent and calls for a redefinition of design input information and assumptions through appropriate guidelines to engineers so that their judgement calls are limited to "preliminary" type calculations.

4.0 COMMENDABLE PRACTICES

KE/PB Surveillance program and Kaiser Engineers Audit program were identifying deficiencies in a timely manner. The Observation, under Discussion of Results, lists selected surveillances and audits which surfaced KE/PB deficiencies.

5.0 AUDIT PERFORMANCE

The KE/PB Tasks/Studies and the QA criteria selected for the current Rockwell-DOE joint audit and the Rockwell audit (BWIP-EA-87-002) are shown in Attachments 2 and 3.

While most KE/PB Tasks are Design Studies, the recently completed field NDE inspection of ES No. 1 Casing, Task V, Study 11, (586) attracted significant audit effort as this KE/PB activity covered Design, Procurement of Services, and Inspection and Test Control activities and the final report on the inspection was in process. Two other KE/PB tasks, Fuel Rod Consolidation Study and Retrievability Study were selected for technical review of calculations as other major studies were covered by earlier audits.

The population, i.e., total number of data sheets or calculation packages available in the KE/PB studies and the sample sizes selected by the two audits on KE/PB, are shown in the Table which is a part of Attachment 4 to emphasize the current audit focus.

In addition, since contributions of consultants and subcontractors occupy a preeminent position in the overall credibility of A/E output, control of procurement of services was examined in detail. The two consultants, Dr. Bedrosian and Dr. DeHart, and one subcontractor, Mine Ventilation Services, Inc., whose services were audited, contributed to the KE/PB Tasks Study 10, Study 11, Fuel Rod Consolidation Study, Retrievability Strategy Report and Design Methodology Document.

Checklists were prepared to address the applicable QA criteria and KE/PB procedures. In addition, a more detailed (compliance type) checklist to cover the KE/PB procedure 2.5, Procurement of Services, and a generic calculation review checklist by the technical advisor were also utilized during the audit.

A pre-audit briefing held at Richland addressed the responsibilities of Rockwell and DOE auditors and the technical advisor relative to the final audit plan. During the Oakland pre-audit briefing, the observer, Dr. Georges Abi-Ghanem was provided with copies of the final audit plan and audit checklist and was briefed on the scope and schedule of the audit, audit teams, and their responsibilities of the observer. Technical Advisor D. Becker briefed on his background relative to the KE/PB studies. It should also be recognized that D. Brown from DOE-HQ and D. Becker from Rockwell were members of the earlier audits on KE/PB and provided a great deal of continuity during the current audit.

The auditors interviewed the KE/PB personnel noted in Attachment No. 1. The technical advisor and the auditors reviewed the documentation required (a partial list is included in Attachment 4) to complete the checklists. Completed checklists are retained with the file copy of this audit report.

The audit also covered review of open action items tracked by KE/PB (commitments/agreements coordination meeting memo transmittals dated November 21, 1986, through March 30, 1987) to ensure that the items tracked by such a system (not proceduralized) are not of the nature which requires a nonconformance or an audit finding report for identification and tracking.

In addition to R. Viens verifying KE/PB response for possible closeout of Rockwell audit findings (see Attachment No. 5 for the status) the other auditors verified as corrective action follow-up, status of KE/PB response to DOE audit (No. 8607) findings and concerns.

6.0 DISCUSSION OF RESULTS

This audit did not result in any findings but has six Concerns and one Observation, which require KE/PB response to DOE-RL. The concerns address the continued KE/PB lack of attention to detail in the area of design control. The observation highlights that KE/PB's own QA program identified the problems but corrective actions taken were not effective.

The failure to follow procedures that outline the work indicate a lack of procedural discipline which has been cited frequently in KE/PB's own surveillance reports. Therefore, it would appear that an increased amount of management attention is required to assure effective corrective action to the findings in KE/PB's own program.

This section addresses results of current and previous audit open findings and concerns.

6.1 Current Audit Results.

Concern QC 8702-A: INADEQUATE CONTROL OF DESIGN DOCUMENTS

Procedure 6.2 R/4, Paragraph 3.22 and 4.1 requires designer's signature and checker's initials and dates on each sheet.

Some of the sheets in Calc. X-0001 R/1 are missing one or the other of the required initial, dates, or signatures. This calc. was done by Mine Ventilation Services (MVS) for the Retrievability study.

Corrective Action requires that suitable corrections be made.

Concern QC 8702-B: INADEQUATE CONTROL OF DESIGN DOCUMENTS

Procedure 6.2 R 4, Paragraph 3.2 states, "After the calc. has been signed by the JE/S, any revisions, no matter how minor, shall be revision controlled."

The index sheets to Calcs. 684-9 R/1 and 684-6 R/O contain the contrary note: "These are scoping Calcs. -- not to be revision controlled."

It is not clear if the subject procedure allows a departure of this nature or not. Above calcs. are associated with BWIP Fuel Rod Consolidation Study. Resolve the conflicting statement.

Concern QC 8702-C: INADEQUATE CONTROL OF DESIGN CHANGE DOCUMENTS

Section 17 of NQA-1 states, among other things, that quality documents will be identifiable, traceable, and legible.

DCNs 87-001, 002, 003, and 007 are neither paginated nor are the sheets (other than the title pages) identified with the DCN number. With exception of DCN 007, there are some line-outs without initial or date, and an occasional signature missing.

These DCNs are associated with Spec. SP86-S001A R/1 of Title III Inspection Task 846.

The discrepant conditions of QC 8702-C require response from KE/PB addressing corrective action and/or clarification of the described conditions.

CONCERN QC 8702-D: LACK OF EVIDENCE OF VALIDATION OR VERIFICATION

Procedure 6.2, R/4, Paragraph 1.2, Page 7 of 14, states, "The computer program has been verified to show that it produces correct solutions."

Computer Program SHAKE was referenced in the Basis of Design Document (BODD) without verification or validation. KE/PB letter (Kugler to Bedrosian) March 24, 1987, requested that document be submitted but KE/PB has not been able to produce the validation document.

Corrective action requires that this discrepancy be addressed and the evidence be given to DCC records for permanent records.

CONCERN QC 8702-E: CONFLICTING VALIDATION RESPONSIBILITIES

Procedure 6.2, Paragraph 3.1.2 and 3.2.1

3.1.2 The responsible engineer obtains the calculation name and number.

3.2.1 No engineer shall be the checker of his own work.

Calc. set numbers S0011 and S0012 have not been validated or documented in the Calc. Control Log in the DCC Control Center.

Calc. set S0011 is referenced in the Basis of Design Document but has not received the review of a checker.

KE/PB letter (Kugler to Bedrosian) March 24, 1987, indicates that the engineer responsible for the work will also be the checker. The above work is for ES-1 for Rigid Body and Beam Column Stability R/O.

Corrective action must address the above discrepant condition and clarification be given to Document Control Center to correct the records and remove the conflicting conditions.

CONCERN QC 8702-F: WORKING TO AN UNAPPROVED QA DRAFT DOCUMENT

Title III NDE inspection was performed per task specific KE/PB QA plan and procedures before Revision 9 to KE/PB QA plan was approved.

NOTE: This concern was identified as Observation No. 9 during Rockwell Audit BWIP-EA-87-002.

As part of KE/PB response, Revision 9 to KE/PB QA Plan was submitted to Rockwell and DOE. Revision 9 addresses preparation and approval of lower-tier task specific plans by KE/PB for specific tasks assigned by DOE-RL and, therefore, satisfactorily addresses the concern.

This concern does not require a response from KE/PB and will be closed after satisfactory verification of Rockwell's review and DOE-RL approval for Revision 9 of KE/PB QA Plan.

OBSERVATION 8702-1: NEED FOR EFFECTIVE CORRECTIVE ACTION

Based on a review of KE/PB surveillance reports, audit reports, CARs, and Rockwell Audit Report BWIP-EA-87-002, the attached Table was prepared. This Table focuses on calculation-related procedural discrepancies, identified by KE/PB or KE Corporation QA personnel

CAR 86-001	8/86	10/86	o Inadequate design interfaces
AFR 95-01 Study 10	1/87		o Input utilized in calcs were not identified in DRD or BODDS
95-02	1/87		o BODD Supplements not included in the BODD
95-03	2/87		o Calcs have missing pages, lack required signatures, lack back-check after changes, etc. (lack of attention to detail for consistency)
95-04	2/87		o Affected drawing numbers and revision status not noted
95-05	2/87		o Calcs used input that appear neither to be approved nor from approved DRD, BODD, or BODDS
[Audit QSD-095]			
CAR 87-003	3/87	OPEN	o Repetitive procedural noncompliance 6.2 Engineering calculations

ROCKWELL Audit: BWIP-EA-87-002 (Examples of Findings)

Surv/Audit Report and Subject	Audit/Surv Date	Close Date	Deficiencies identified and Corrective Actions (CA) taken.
AFR-001	2/87		o Inadequate checker verification
AFR-004	2/87		o Inadequate checker verification
AFR-006	2/87		o Inadequate checker verification
AFR-005	2/87		o Assumptions to be verified were not identified
AFR-007	2/87		o Calcs do not reference BODD
AFR-008	2/87		o Calcs do not provide specific version (revision) of code used
AFR-009	2/87		o Checker failed to sign off change
AFR-010	2/87		o Input data not traceable to approved source

While a total picture of calculation-related procedural inadequacies is a cause for concern, and raises doubts about the credibility of the KE/PB calculation effort, the fact remains that the KE/PB internal system to identify deficiencies is effective, evidenced by CAR 86-001 and CAR 87-003. The area that requires improvement is effective corrective action.

Therefore, based on the Table and interviews with KE/PB project personnel, an observation was made. The following items constitute the observation:

from January 1986 through March 1987. This period encompasses Study 10, Study 11, Design Methodology, and Title III NDE Inspection calculations. Comparison of these discrepancies with findings and observations from the recent Rockwell audit of KE/PB BWIP-E7-87-002 indicates several "similarities."

Discrepancies Noted from KE/PB Surveillance
and Audit Reports

<u>Surv/Audit Report and Subject</u>	<u>Audit/ Surv Date</u>	<u>Close Date</u>	<u>Deficiencies identified and Corrective Actions (CA) taken.</u>
92 Study 11	2/86	2/87	o Calculations insufficiently detailed as to assumptions, methods, design input, and reference <u>CA:</u> calcs classified as "information only"
97 Design Methodology	12/86	2/87	o No checker has been assigned o CPE has not reviewed o No reviewer initialled comments <u>CA:</u> checker assigned; CPE reviewed; reviewer signed off
91 Study 10	1/86	1/87	o No BODD exists o Calcs did not state subject area, discipline, criteria, and source, lacked back-up materials, were not initialled by checker, did not list reference drawings <u>CA:</u> (items 28 through 65) deficiencies corrected
103 Title III NDE Inspec	3/87	OPEN	20 deficiencies based on Procedures 846-02, 03, 05, 10, 11, and 13 ranging from not using routine forms for routing procedures to lack of training files for three task participants
Surv/Audit Report and Subject	Audit/ Surv Date	Close Date	Deficiencies identified and Corrective Actions (CA) taken.
AFR 93-01 Study 10	1/86	8/86	o Calcs have no area, building, facility, or component identified o Calc index did not provide drawing number and revision status <u>CA:</u> calcs corrected and training conducted (12/85); Surveillance Report 91 has similar problems
93-02 Study 10			o Calc revision not per procedure <u>CA:</u> revision status included in the calc

- 1.1 Implement more frequent (timely) and effective training sessions for engineers, addressing not just the KE/PB procedures but the "discrepancies" identified in surveillance and audit reports relevant to the KE/PB procedures.
- 1.2 Make appropriate managers accountable for attention to detail and take the surveillance and audit report messages seriously, including timely corrective actions.
- 1.3 This DOE-Rockwell joint audit endorses the KE audit (QSD-095) recommendation that the project consider providing guidelines, definitions, or requirements for design input information and assumptions.

NOTE: Memo dated February 20, 1987, from D. L. Howard, the Kaiser Engineers (KE) Corporate QA Chief, to K. R. Bumgarten, the KE Lead Auditor for the Audit QSD-095 noted in the Table above, indicated that draft QSD-095 audit report was reviewed by Rockwell auditors during the February 1987 Rockwell of KE/PB.

Both the KE audit (QSD-095) and the Rockwell audit (BWIP-EA-87-002) addressed control of designinput and lack of attention to detailed procedural requirements. Many of these audit findings and KE/PB CAR 87-003 were open during the current audit.

6.2 VERIFICATION STATUS OF PREVIOUS AUDIT FINDING AND CONCERNS

6.2.1 DOE Audit (8607, 4/86)

1. FINDING 8607-1

This finding, which calls for fireproof file cabinets at KE/PB for NQA-1 requirement remains open -- as such, cabinets are not currently provided. DOE-RL has assigned the action to Rockwell to evaluate and provide recommendations for closure of this finding. (Reference: DOE-RL letter 87-ECB-63 from R. A. Holten to General Manager, Rockwell Hanford Operations, dated April 14, 1987.)

2. CONCERN 8607-B

The concern that there is no provision in the KE/PB QA program to address 10 CFR 60.73, "Reporting of Deficiencies" is considered closed based on the following:

KE/PB's Procedure 6.25, "Unusual Occurrence Reporting" (approved by DOE-RL), although it does not explicitly address 10 CFR 60.73, provides for the reporting of deficiencies to DOE-RL. In addition, the latest revision to BQARD indicates that information on 10 CFR 60.73 will be distributed separately. (Page 3 of 3, Section 5.)

6.2.2 ROCKWELL AUDIT BWIP EA-87-002

The KE/PB responses to the Rockwell findings and concerns were verified by R. Viens, auditor and D. Becker, technical advisor. The details of the verification and status of findings/concerns are provided in Attachment 5.

DOE AUDIT 8702 OF KE/PB

ATTENDANCE ROSTER

	<u>NAME</u>	<u>COMPANY</u>	<u>ENTRANCE</u>	<u>INTERVIEWED</u>	<u>EXIT</u>
1.	A. N. Kugler, Proj. Mgr.	KE/PB	X	X	X
2.	B. Conn, Chief Engineer	KE/PB	X	X	
3.	H. Cox, Engineer	KE/PB		X	
4.	C. Holman, QA	KE/PB	X	X	X
5.	L. Kantola, Admin. Mgr.	KE/PB	X	X	X
6.	W. J. Dodson, Engineer	KE/PB	X		X
7.	J. P. Dillon, Engineer	KE/PB	X		X
8.	A. A. Madson, Engineer	KE/PB	X		X
9.	R. K. Dann, PQA Manager	KE/PB	X	X	X
10.	J. Mahoney, Engineer	KE/PB	X	X	X
11.	O. Spacek, Engineer	KE/PB			X
12.	M. T. Mooney, Admin. Mgr.	KE/PB	X	X	X
13.	F. Dooley, LISC. Specialist	KE/PB	X	X	
14.	G. V. Abi-Ghanem	OBSERVER	X		
15.	W. R. Manis, Engineer	KE/PB	X	X	X
16.	D. L. Howard, Corporate QA	KE/PB			X
17.	J. C. Guyette, QC	M-K	X	X	
18.	J. F. Bores, QC	M-K	X	X	
19.	R. V. Veins, Auditor	ROCKWELL	X		
20.	H. B. Litz, Auditor	DOE-RL	X		X

NAME	COMPANY	ENTRANCE	INTERVIEWED	EXIT
21. D. Becker, Tech. Advisor	ROCKWELL	X		X
22. D. Brown, Auditor	DOE-HQ	X		X
23. A. Koedding, Engineer	KE/PB	X		
24. B. Lawrence, Chf. Proj. Eng.	KE/PB	X	X	
25. T. K. Subramanian, Lead Aud.	DOE-RL	X		X
26. C. E. Williams, Proj. Dir.	KE/PB		X	
27. G. Rokkan	DOE-RL			X
28. K. Chowdhary	ROCKWELL			X

TEAMS AND ITEMS AUDITED

- ITEM 1 -- Corrective Action Response to Rockwell Audit
- ITEM 2 -- TASK V -- Study 10 SCP Conceptual Design
- ITEM 3 -- TASK V -- Exploratory Shaft Phase I (584) Study 11
- ITEM 4 -- TASK V -- Study 11 Title III NDE Inspection (584/846)
- ITEM 5 -- Fuel Rod Consolidation (684)
- ITEM 6 -- TASK VI -- Retrievability Strategy Report
- ITEM 7 -- Control of KE/PB Action Items
- ITEM 8 -- TASK VI -- Design Methodology Work (829)

<u>TEAM</u>	<u>MEMBERS</u>	<u>COVERAGE</u>
X	R. Viens	Verification of KE/PB response to Rockwell audit BWIP-EA-87-002.
Y	H. Litz D. Brown	Criterion III, IV, VII, IX, X, XVII
Z	T. K. Subramanian H. Litz	Criterion I, II, XVI, XVII, XVIII
Technical Advisor	D. Becker	Support for all the teams (see Attachment 4)

Note: "Item number" is an arbitrary tracking identifier used to identify each of those tasks in Attachment 3 which shows audit coverage for QA program criteria.

April 30, 1987

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To: T. K. Subramanian

FROM: D. L. Becker

SUBJECT: Technical Support for Audit No. 8702



Ref: (a) Letter, 87-QSD-72, March 16, 1987, D. W. Cooper to A. N. Kugler, "Quality Assurance Audit, April 7-10, 1987, A Quality Assurance Audit of the Basalt Waste Isolation Project (BWIP) at the KE/PB Oakland, California, Facility"

(b) Final Quality Assurance Audit Plan, KE/PB Audit No. 8702, Selected QA Program Elements, March 30 - April 3, 1987.

In accordance with the references, technical support and assistance was provided to the Department of Energy-Richland Operations Office (DOE-RL) for conducting Quality Assurance (QA) Audit No. 8702, at the offices of Kaiser Engineers, Inc./ Parsons, Brinckerhoff, Quade & Douglas, Inc. (KE/PB), Oakland, California, on April 7 through April 10, 1987.

Technical assistance was previously provided to support Rockwell Hanford Operations (Rockwell) QA Audit BWIP-EA-87-002 conducted at KE/PB's offices in Oakland, California, on February 17-20, 1987. Assignment for technical support to Audit No. 8702 was for the purpose of providing technical assistance/support to the audit team members, to maintain continuity with the previous auditing efforts, and to assist as required in closeout of BWIP-EA-87-002 Audit Findings.

The technical support was provided for review of the following specific activities/tasks:

- o Review of Title III Ultrasonic Testing Inspection of the Exploratory Shaft Facility (ESF) first shaft liner (Task 585)
- o Procurement activities conducted by KE/PB for the services of Dr. B. Bedrosian (Task 584)
- o Procurement activities conducted by KE/PB for the services of Mine Ventilation Services, Inc. (Engineering Study No. 10 and tasks 684, 692, and 829)
- o Design analysis conducted by KE/PB for backup to Task VI Authorization No. 684 - Fuel Rod Consolidation Study (Task 684)
- o Design analysis conducted by KE/PB for backup to Task VI Authorization No. 692 - Retrievability Strategy Report (Task 684)

A list of specific document packages and/or calculation analyses reviewed is provided in Attachment I. Observations and concerns with respect to those items reviewed were reported to audit team members for reporting.

T. K. Subramanian
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 4/30/87

The following tabulation shows the total number of calculation packages or data sheets for specific tasks and the number of calculation packages or data sheets reviewed. A breakdown is also provided for calculation packages or data sheets reviewed for compliance with technical requirements on the current audit (8702) and the previous Rockwell audit (BWIP-EA-87-002).

Task or Area Reviewed	Total Number of Data Sheets or Calculation Packages	Data Sheets or Calculation Packages Reviewed	
		DOE Audit 8702 (4/7-10/87)	Rockwell BWIP-EA-87-002 (2/17-20/87)
Study No. 10	88	-0-	5
Study 11 (584)	12	-0-	1
Study 11 (585) (Title III Inspection)	Approx. 630 pp	Approx. 50 pp	-0-
Fuel Rod Consolidation Study (584)	18	2	-0-
Retrievability Study (592)	18	3	-0-

The discrepancies noted in the calculations (Calculation Packages X-0001, Rev. 1, 684-9, Rev. 1, 684-6, Rev 0, and S0011, Rev. 0), require corrective actions and/or clarifications from KE/PB. However, each of the discrepancies alone, as noted in the corrective actions, are not considered technically significant.

If you need additional information or if I can be of any further assistance, please do not hesitate to contact me at 375-9899.

Documents/records reviewed for technical support to DOE-RL QA Audit 8702:

- o Title III Liner Ultrasonic Inspection Test Data Package (Task 585)
 - Ultrasonic Inspection reference specifications and verification records
 - Casing layout of locations for testing
 - Sign-off for verification of layout
 - Inspection record sheet log
 - Certification for ultrasonic testing personnel
 - Transmittals
 - CMTR for test/calibration block material

 - Inspection verification records for test/calibration blocks
 - Certifications for calibration
 - Qualification/certification for test personnel
 - Work Packages SAP-001, Rev. 0, SAP-002, Rev. 0, and SAP-003, Rev. 0
 - Purchase Orders for test examination equipment, etc.
 - Miscellaneous records for Task 846 (gap calculation data sheets) from Book 3A and 3B (approximately 50 pages of approximately 630 pages were reviewed)
- o Special Purchase Specification for Title III Inspection (Task 585)
 - DCNs 87-001, 87-002, 87-003, and 87-007
 - Exploratory Shaft I Casing Field Ultrasonic Testing for Gap Measurement, Specification SP-86-S001A, Rev. 1
- o Document record file for procurement of services of Dr. B. Bedrosian (Task 584)
- o Document record file for procurement of services from Mine Ventilation Services, Inc. (Engineering Study 10 and Tasks 684, 692, and some for Task 829)
- o Calculation Package X-0001, Rev. 1, (10/20/85) Air Cooling of Emplacement Drift (Task 692)
- o Calculation Package 684-9, Rev. 1 (10/20/85), BWIP Fuel Rod Consolidation Study, Cask Sizing for Hoist Development (Task 684)
- o Calculation Package 684-6, Rev. 0 (4/17/86), BWIP Fuel Rod Consolidation Study Fusher Assembly (Task 684)
- o Calculation Package M0006, Rev. 0 (10/27/85), Retrievalability - BWIP Borehole Temperature Distribution for 50 Year Old DHLW (Task 692)
- o Calculation Package M0005, Rev. 0 (8/15/86), BWIP - RRS Report, Transfer Cask Wall temperature Distribution (Task 692)

* this is attachment 1 to the memo from D. L. Becker to T. K. Subramanian, dated April 30, 1987

MEMORANDUM

DATE: May 11, 1987

TO: T. K. Subramanian

FROM: R. J. Viens
6-9359

SUBJECT: KE/PB Audit Number 8702

A review of the corrective actions taken as a result of the discrepancies noted during the February audit of KE/PB conducted by Rockwell BWIP QA Audit Group (BWIP-EA-87-002) revealed that even though all discrepancies had not been satisfactorily addressed that some corrective actions had been completed and others were in process.

Verification of corrective action completion of seven (7) findings and three (3) observations was performed and the deficiencies were closed.

Work was in process on corrective action for four (4) finding and thirteen (13) observations with a completion date extending beyond the audit dates.

A satisfactory response had not been reached between the Rockwell BWIP QA Lead Auditor and KE/PB on sixteen (16) findings and three observations, however, negotiations were in process.