

September 23, 2002

Mr. Ronald A. Milner, Chief Operating Officer  
Office of Civilian Radioactive Waste Management  
U. S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION'S OBSERVATION AUDIT  
REPORT NO. OAR-02-10, "OBSERVATION AUDIT OF THE OFFICE OF  
CIVILIAN RADIOACTIVE WASTE MANAGEMENT, OFFICE OF QUALITY  
ASSURANCE, AUDIT NO. BSC-ARC-02-15"

Dear Mr. Milner:

I am transmitting the U.S. Nuclear Regulatory Commission's (NRC's) Observation Audit Report No. OAR-02-10. It is of the U.S. Department of Energy's (DOE's), Office of Civilian Radioactive Waste Management (OCRWM), Office of Quality Assurance (OQA) audit of Bechtel SAIC Company, LLC (BSC), conducted on July 29-August 2, 2002.

The OQA audit team (hereafter, audit team) performed a limited-scope compliance-based quality assurance (QA) audit to evaluate BSC's implementation of the applicable provisions of the OCRWM Quality Assurance Requirements and Description document, DOE/RW-0333P, Revision 11, and associated implementing procedures relevant to BSC activities supporting the Yucca Mountain Site Characterization Project Office. The audit focused on design, but other programmatic elements were also reviewed.

The NRC observers (hereafter, observers) determined that DOE's audit of BSC was effective in identifying potential deficiencies and recommending improvements for the reviewed BSC activities. During the audit, both the audit team and the observers independently reviewed applicable BSC documents, QA procedures, and activities within the audit's scope.

Although the audit team identified potential deficiencies, and made a quality observation and recommendations, the observers believe that BSC has effectively implemented these areas of its QA program with the exception of the deficiencies identified in this report. The observers agreed with the audit team's conclusions, findings, and recommendations presented at the audit exit meeting.

R. Milner

-2-

The staff will continue to interface with OCRWM and follow the progress that BSC is making to address the issues identified during this audit. A written response to this letter and the enclosed report is not required. If you have any questions, please contact Ted Carter of my staff at (301) 415-6684.

Sincerely,  
/RA/

Janet Schlueter, Chief  
High-Level Waste Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: NRC Observation Audit Report  
No. OAR-02-10, "Observation Audit of the  
Office of Civilian Radioactive Waste Management,  
Office of Quality Assurance, Audit No. BSC-ARC-02-15"

cc: See attached list.

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cc: See attached list.

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Letter to R. Milner from J. Schlueter dated September 23, 2002

cc:

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C. Meyers, Moapa Paiute Indian Tribe  
V. Miller, Fort Independence Indian Tribe  
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R. Quintero, Inter-Tribal Council of Nevada  
(Chairman, Walker River Paiute Tribe)  
M. Bengochia, Bishop Paiute Indian Tribe  
J. Egan, Egan & Associates, PLLC  
J. Leeds, Las Vegas Indian Center  
K. Tilges, Citizen Alert  
J. Triechel, Nuclear Waste Task Force  
W. Boyle, YMPO

R. Bahe, Benton Paiute Indian Tribe  
C. Bradley, Kaibab Band of Southern Paiutes  
R. Joseph, Lone Pine Paiute-Shoshone Tribe  
L. Tom, Paiute Indian Tribes of Utah  
E. Smith, Chemehuevi Indian Tribe  
J. Charles, Ely Shoshone Tribe  
D. Crawford, Inter-Tribal Council of Nevada  
H. Blackeye, Jr., Duckwater Shoshone Tribe  
D. Eddy, Jr. Colorado River Indian Tribes  
G. Runkle, DOE, Washington, DC  
W. Briggs, Ross, Dixon & Bell  
H. Jackson, Public Citizen  
M. Smurr, BNFL, Inc.

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High-Level Waste Branch  
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N. King Stablein, Chief  
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High-Level Waste Branch  
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## 1.0 INTRODUCTION

Staff from the U.S. Nuclear Regulatory Commission (NRC) Division of Waste Management, and the Center for Nuclear Waste Regulatory Analyses (CNWRA), observed the U.S. Department of Energy's (DOE's) Office of Civilian Radioactive Waste Management (OCRWM), Office of Quality Assurance (OQA) audit of Bechtel SAIC Company, LLC (BSC), Las Vegas, NV.

The objectives of the OQA audit were to assess the adequacy and effectiveness of BSC's implementation of the Quality Assurance Requirements and Description (QARD) and implementing procedures, and to verify BSC's compliance with the requirements in the areas reviewed. The NRC observers' (hereafter, observers) objective was to assess the effectiveness of the OQA audit team (hereafter, audit team) and audit process, as well as the BSC implementation of the provisions in the QARD. This report documents the observers' determination of the effectiveness of the OQA audit and BSC's implementation of QARD provisions.

## 2.0 MANAGEMENT SUMMARY

The observers determined that OQA Audit BSC-ARC-02-15 was effective in determining the level of compliance of BSC Quality Assurance (QA) activities with the QARD and with associated implementing procedures. The observers agreed with the audit team's conclusions, findings, and recommendations. The observers determined that the audit team members were qualified, independent of the activities that they reviewed, and knowledgeable of the QA requirements. Based on these observations, the OCRWM QA program has been effectively implemented, except for the items noted in the two potential deficiency reports (DRs), one quality observation (QO), and two recommendations. The potential DRs, QO, and recommendations were in the areas of procedural controls, drawing reviews, and specification review documentation.

## 3.0 AUDIT PARTICIPANTS

### 3.1 Observers

Daniel S. Rom	Team Leader	NRC
Donald W. Dunavant	QA Specialist	CNWRA
Rodney M. Weber	QA Specialist	CNWRA

### 3.2 Audit Team

Marilyn A. Kavchak	Audit Team Leader	OQA/Navarro Quality Services (NQS)
F. Harvey Dove	Auditor	OQA/NQS
James E. Flaherty	Auditor	OQA/NQS
Donald J. Harris	Auditor	OQA/NQS
Christian M. Palay	Auditor	OQA/NQS

## 4.0 REVIEW OF THE AUDIT AND AUDITED ORGANIZATION

OQA conducted this audit of BSC in accordance with OCRWM Quality Assurance Administrative Procedures (APs) 18.3Q, "Internal Audit Program," and 16.1Q, "Management of Conditions Adverse to Quality." The NRC staff's observation was based on NRC Manual

Chapter 2410, "Conduct of Observation Audits," dated July 12, 2000.

#### **4.1 Audit Scope**

This was a limited-scope compliance-based audit to evaluate BSC's implementation of the OCRWM QA program defined in the QARD, DOE/RW-0333P, Revision 11, and applicable implementing procedures. The audit team evaluated the implementation, compliance, adequacy, and effectiveness of the activities of the BSC Repository Design Project's support of the Yucca Mountain Site Characterization Project (YMSCP).

#### **4.2 Audit Conduct and Timing**

The audit was performed in a professional manner and the audit team demonstrated a sound knowledge of the applicable BSC and DOE programs and procedures. The audit team personnel were unified in approach, persistent in their interviews, challenged responses when appropriate, and followed their checklist questions, deviating when necessary to more fully understand the BSC process or pursue discrepancies. The audit team performed a thorough and effective audit.

The audit team and observers caucused at the end of each day to discuss the audit status and any new and developing issues. The observers were provided with ample opportunity to participate in the discussions with any comments, concerns, or questions. The audit team leader met with BSC management each morning, with some of the observers present, to discuss the current audit status and potential discrepancies. Members of the BSC organization also participated in the discussions via teleconference. The observers determined that the timing of the audit was appropriate for the team to evaluate the BSC QA program. It was also noted that the BSC personnel had a good understanding of the QA program requirements and accepted ownership of the products audited.

#### **4.3 Audit Team Qualification and Independence**

The observers determined that the qualifications of the audit team lead (ATL) and the OQA audit team members met the requirements of AP-18.1Q, "Audit Personnel Qualification." The ATL provided the qualification records of the audit team. The observers concluded that the audit team members had the necessary expertise to perform the audit and had sufficient authority and organizational freedom to make the audit process meaningful and effective.

#### **4.4 Examination of the QA Elements**

The NRC staff observed the audit team conducting detailed checks of the adequacy of BSC QA activities related to the YMSCP. The audit team effectively used its prepared checklist identifying the QA program implementing procedures. Interviews were held with BSC personnel, as well as appropriate management personnel, who had performed or are currently performing activities required by the implementing procedures. Record packages were also reviewed to assure documentation was in compliance with procedural requirements. The audit team effectively shared information among team members and assisted one another to assure each area was adequately covered and completed.

##### **4.4.1 Organization—[LP-1.0Q-BSC, Revision 1, Interim Change Notice (ICN) 1]**

The audit team reviewed several organization charts of various BSC groups. Administrative and functional reporting structures of the matrixed organizations (i.e., direct reporting of a staff member to an administrative and a technical manager) were identified in the previous audit of



the BSC activity as not being completely clear. The charts have been revised since the last audit and were found to be acceptable.

The observers agreed with the findings in this area.

#### **4.4.2 QA Program**

##### **Review of Technical Documents and Data—(AP–2.14Q, Revision 2)**

The audit team reviewed two technical documents and four drawing packages. Technical review of these documents was conducted to verify reviewer qualifications, extent of review, and objective evidence of procedural compliance. It was determined that the drawing packages reviewed did not receive an impact review and that there was no justification for not completing this review, as required by AP–3.24Q, “Drawings.” The audit team identified a potential DR for this condition.

The observers agreed with the finding in this area.

##### **4.4.3 Design Control—(AP–3.13Q, Revision 3)**

The audit team reviewed available reports, calculations, specifications, and other documents to determine compliance with the applicable design process implementing procedures. These procedures included:

- “Technical Reports”—AP–3.11Q, Revision 3, ICN 2
- “Design Calculations and Analyses”—AP–3.12Q, Revision 1, ICN 2
- “Managing Technical Products”—AP–3.15Q, Revision 3, ICN 2
- “Specifications”—AP–3.19Q, Revision 2
- “Technical Design Verifications”—AP–3.20, Revision 1
- “Technical Review and Approval Construction Submittals”—LP–3.22Q–BSC, Revision 0, ICN 3

Three of seven available System Design Documents (SDDs) were reviewed. The review of draft SDD, “Surface HVAC System,” dated July 23, 2002, revealed that the technical reviewer did not verify that meteorological data used to support the system design were placed under control (assigned a data tracking number). Although the applicable procedures were followed (LP–3.25Q–BSC, Revision 1, “Design Criteria,” and LP–3.26Q–BSC, Revision 0, “System Description Document,”), the auditors identified this as a risk area since the procedure(s) did not clearly define a method of referencing data. The auditors noted that terminology has changed from data to design input and from generation and use of data in science to design and design input. This has left a gap in procedures related to engineering use and control of data as required by the QARD in Supplement III. A recommendation was proposed to revise procedures to require the use of the technical data management system for control of Supplement III data, for the engineering processes.

The auditors also examined specification review packages to determine compliance with procedural requirements for technical reviews. During this review, it was noted that a reviewer had not indicated an organizational affiliation. This isolated incident was documented in a proposed observation.

The observers agreed with the findings in this area.

#### **4.4.4 Implementing Documents**

##### **Plan and Procedure Preparation, Review, and Approval—(AP-5.1Q, Revision 3, ICN 1)**

In addition to the review of in-process and completed design documents, design team personnel responsible for the various documents were interviewed and asked to describe their processes for design approach. In the course of these discussions, it became clear that the requirements of the QARD, Section 2.2.5 were not followed by BSC and the applicability of these planning requirements was questioned as they applied to the construction engineering activities. Additional discussions were held with design management and a recommendation made to seek clarification about the application of the QARD requirements in this area. The audit team leader contacted OQA management personnel who had been involved in the QARD development and evolution in previous years. This discussion resulted in a recommendation to draft a proposed position statement that would relieve the design engineering process from certain QARD planning requirements. The draft proposal will be submitted to current DOE/OQA and DOE/YMSCO management.

The observers agreed with this determination and the proposed action to be taken.

##### **4.4.5 Software Management—(AP-SI.1Q, Rev. 3, ICN 4)**

The audit team reviewed the software verification process and records for GTSTRUDL 25 and FLAC3D 2.1. The records were found to be complete and demonstrated compliance with the requirements of AP-SIQ, Revision 3, ICN4, "Software Management." Auditor interviews with the affected personnel indicated that the personnel were familiar with the procedural requirements. Configuration control of the verified software was through the software library, which issued software items to individual computers on an as-requested basis.

The auditor team followed up on a previously identified finding, DR-99, on submitting review documents for maintenance as quality records. Of the three software packages reviewed during this audit, the reviewer had maintained copies of review records, but had not submitted them to the Records Processing Center. The auditors determined that the recent approval of DR-99 had not allowed sufficient time to implement its stated corrective action. The responsible software manager agreed to expedite corrective action and the auditor saw no value added in reporting this as a finding. It was determined that no further action would be taken at this time.

The observers agreed with this determination.

##### **4.4.6 Control of the Electronic Management of Data—(AP-SV.1Q, Rev. 0, ICN 2)**

The audit team reviewed AP-3.13Q, R3, "Design Control," as it affected the implementation of Supplement V. It was determined that AP-3.13Q did not address all the requirements of Supplement V and contained references to processes such as "BSC Policies", which are not controlled documents, to describe client design reviews (Section 5.11) and configuration audits (Section 5.1.9). The audit team identified a potential DR for this condition.

The observers agreed with the finding in this area.

##### **4.4.7 Potential Audit Findings, Recommendations, and Action Items**

The audit team identified three conditions adverse to quality during its review. These conditions were identified as DRs and Qos. In addition, two recommendations were made and one

additional related action item resulted from this audit. The following is a short description of each.

### **Two Potential Deficiency Reports**

- (1) Procedure AP-3.24Q, "Drawings," requires that impact reviews be conducted or that justification be given if they are not. There were no justifications provided for the lack of impact review of drawings sampled during the audit.
- (2) The QARD requires work to be performed in accordance with controlled procedures. Procedure AP-3.13Q, "Design Control," does not implement Supplement V requirements and contains references to processes that do not have controlled procedures, specifically client design reviews in Section 5.1.1, and configuration audits, Section 5.1.9.

### **One Potential QO**

- (1) One specification review did not identify the organizational affiliation of the reviewer, as required by procedure.

### **Audit Team Recommendations**

The audit team made two recommendations. They were:

- (1) Clarification is needed to better define requirements for design calculation checking, specifically "mathematical checking."
- (2) Control of scientific data should be strengthened by requiring the use of the Technical Data Management System for control of Supplement III data for the engineering processes.

### **Additional Action Item**

After an in-depth discussion with BSC and OQA management on implementation of QARD design planning requirements and the intent of these requirements, a recommendation will be drafted regarding clarifying the applicability of QARD, Section 2.2.5, requirements to engineering functions will be drafted. This recommendation will be presented to OQA management, for possible issue of written clarification to BSC, concerning the applicability of these requirements.

## **5.0 NRC STAFF FINDINGS**

The observers determined that Audit No. BSC-ARC-02-15 was effective in determining the level of compliance of the BSC activities associated with the programmatic implementation of QARD design requirements, with the exception of QARD planning requirements (see the action item above) and the identified potential deficiencies and observation.

### **5.1 NRC Audit Exit Summary**

During the audit exit meeting, the observers expressed their appreciation for the cooperation and responsiveness given them during their observation activities. In addition, the observers stated that they agreed with the audit team's findings and recommendations, as presented at the audit exit meeting.

## **5.2 NRC Audit Observer Inquiries**

During this audit, the observers followed up on the status of the Observer Inquiry from LLNL-ARC-02-07. The Navarro audit supervisor indicated that a response to the inquiry had been forwarded to NRC, and he produced a copy of the transmittal letter dated July 2, 2002. The observers verified that NRC had received the response and that the response was under review. No other inquiries were investigated and no new inquiries were written during this audit.