

QA: QA

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

**AUDIT REPORT ARC-01-08**

**OF THE**

**BECHTEL SAIC COMPANY, LLC**

**AT**

**LAS VEGAS, NV**

**YUCCA MOUNTAIN SITE, NV**

**LAWRENCE LIVERMORE NATIONAL LABORATORY, LIVERMORE, CA**

**LAWRENCE BERKLEY NATIONAL LABORATORY, BERKLEY, CA**

**LOS ALAMOS NATIONAL LABORATORY, LOS ALAMOS, NM**

**SANDIA NATIONAL LABORATORIES, ALBUQUEREQUE, NM**

**AUGUST 6 THROUGH AUGUST 17, 2001**

**Prepared by: \_\_\_\_\_ Date: \_\_\_\_\_**

**Lester W. Wagner  
Audit Team Leader  
Navarro Quality Services**

**Approved by: \_\_\_\_\_ Date: \_\_\_\_\_**

**Ram Murthy  
Acting Director  
Office of Quality Assurance**

## 1.0 EXECUTIVE SUMMARY

As a result of Quality Assurance (QA) limited-scope compliance-based audit BSC-ARC-01-08, the audit team determined that, with the exception of those areas where conditions adverse to quality (CAQ) were identified, the Bechtel SAIC Company, LLC (BSC), at the Las Vegas Office (LVO), Yucca Mountain Site (YMS), Lawrence Berkeley National Laboratory (LBNL), Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL), and Sandia National Laboratories (SNL) are satisfactorily and effectively implementing the examined portions of the U.S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM) Quality Assurance Requirements and Description (QARD), DOE/RW-0333P, Revision 10, *Quality Assurance Requirements and Description*, and applicable implementing procedures.

QA Program Sections 1.0, 2.0, 5.0, 6.0, and 17.0 were determined to be effectively implemented based on activities evaluated. Appendix C of the QARD, in the area of “Expert Elicitation,” was identified as not being implemented within the past year. All sections audited were evaluated as being effectively implemented; however, one of the implementing procedures for Section 5.0 was identified as being inadequate. This CAQ is identified below and detailed in Section 5.5.2.

The audit team identified several CAQ during the audit that resulted in the issuance of three Deficiency Reports (DRs) and one Deficiency Identification and Referral (DIR). These CAQ are described in Section 5.5.

**BSC-01-D-127** identifies several instances of obsolete controlled documents that were observed to be inadequately controlled to ensure that they are not used to perform work.

**BSC-01-D-128** identifies procedure AP-5.1Q, Revision 2, *Plan and Procedure Preparation, Review and Approval*, as not providing the methodology to ensure that the required work will be carried out efficiently and effectively.

**BSC-01-D-129** identifies that there was no objective evidence documenting the completion of required training for several individuals, as specified in the approved Training Requirements Matrix (TRM).

**DIR 01-07** identifies inadequate performance of the required annual review of controlled document owners at LLNL. This item is being referred to DR BSC-01-D-061 on which BSC has already identified this item in the LVO.

In addition to the above, the audit team identified one CAQ requiring only remedial action that was corrected during the audit (CDA).

**CDA #1** identified a weakness in procedure AP-6.1Q, Revision 6, *Controlled Distribution*, concerning the disposition of obsolete or superseded documents. An Expedited Change Notice (ECN) was issued to correct this situation.

The audit team also evaluated the effectiveness of corrective actions related to 15 previously closed DRs. Overall the results of these reviews revealed that the committed corrective actions were effective to prevent recurrence. These results are described in Section 5.5.5.

There is one recommendation for improvement, which is detailed in Section 6.0 of this report.

Acronyms and abbreviations used in this report are listed in Attachment 3, "Acronyms/Abbreviations."

## 2.0 SCOPE

Auditors representing the DOE Office of Quality Assurance (OQA) conducted a limited-scope compliance-based audit to assess through interviews with cognizant personnel, reviews of documentation and evaluation of procedures the adequacy and effectiveness of BSC implementation of the OCRWM QA Program, as described in the QARD and implementing procedures.

The audit team also reviewed 15 OCRWM deficiency documents, which were closed since the last compliance-based audit to evaluate the effectiveness of completed corrective actions by BSC.

In accordance with the approved audit plan, the following QA Program Sections were evaluated.

1.0	Organization
2.0	Quality Assurance Program
5.0	Implementing Documents
6.0	Document Control
17.0	Quality Assurance Records

## 3.0 AUDIT TEAM AND OBSERVERS

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

<u>Name/Title/Organization</u>	<u>QA Program Sections</u>
Lester W. Wagner, Audit Team Leader, Navarro Quality Services (NQS)	1.0, 5.0 & 6.0 (LVO, LBNL & LLNL)
Victor J. Barish, Jr., Auditor, NQS	2.0 & 17.0 (LVO, LBNL & LLNL)
John R. Doyle, Auditor, NQS	1.0, 2.0 & 17.0 (LANL & SNL)
William J. Glasser, Auditor, NQS	1.0, 2.0 & 17.0 (YMS)
James V. Voigt, Auditor, NQS	2.0, 5.0 & 6.0 (YMS, LANL & SNL)

#### **4.0 AUDIT MEETINGS AND PERSONNEL CONTACTED**

The pre-audit meeting was held on August 6, 2001 at LBNL's office in Berkeley, California. Daily team meetings were held by audit team members to report the progress of the audit and discuss any evaluation, including potential CAQ. Daily management meetings were held, as necessary, to advise BSC management and staff of the pertinent audit information as it was developed. The audit was concluded with a post-audit meeting held on August 17, 2001 at BSC's offices in Las Vegas, Nevada.

Personnel contacted during the audit, including those who attended the pre-and post-audit meetings, are listed in Attachment 1, "Personnel Contacted During the Audit."

#### **5.0 SUMMARY OF AUDIT RESULTS**

##### **5.1 Program Effectiveness**

The audit team concluded that, with the exception of those areas where CAQ were identified, the BSC is satisfactorily and effectively implementing the examined sections of the QARD and applicable implementing procedures. The results for each program section evaluated are contained in Attachment 2, "Summary Table of Audit Results."

##### **5.2 Stop Work or Immediate Corrective Actions Taken**

There were no stop work orders or immediate corrective actions as a result of the audit.

##### **5.3 Audit Activities**

Attachment 2, "Summary Table of Audit Results" provides the results for each QA Program Section audited. Details of audit activities, including objective evidence reviewed, are documented in the audit checklist. The checklist is administered as a QA record in accordance with QA procedure QAP-18.2, Revision 8, *Internal Audit Program*.

##### **5.4 Technical Audit Activities**

An audit of technical activities was not included in the scope of the audit.

##### **5.5 Summary of Deficiencies**

The audit team identified several CAQ during the audit from which three DRs, and one DIR have been issued. One CAQ was identified and CDA. Details of the DRs, DIR, and CDA are provided in Sections 5.5.2, 5.5.3, and 5.5.4 respectively.

### **5.5.1 Corrective Action Reports**

There were no corrective action reports issued as a result of this audit.

### **5.5.2 Deficiency Reports**

**BSC-01-D-127.** QARD, Section 6.2.5c, states: “The disposition of obsolete or superseded documents shall be controlled to ensure that they are not used to perform work.”

Contrary to the above, several instances of obsolete documents at both LLNL and SNL were observed to be inadequately controlled to ensure that they are not used to perform work.

**BSC-01-D-128.** QARD, Section 2.2.1.B 1 and 2 state, “Affected Organizations shall establish implementing documents applicable to their scope of work that translate QARD requirements into work processes.” The following requirements apply to implementing documents:

1. Each affected organization shall establish a structured system of implementing documents that provides for top down implementation of the QARD or, if stipulated in procurement documents, shall work to the implementing documents of another affected organization.
2. The system shall accommodate the size and location(s) of the organization, the organizational structure, and the nature of the work such that management processes will be carried out efficiently and effectively.”

Contrary to the above, the Document Action Request (DAR) process currently in use does not provide the methodology for carrying out the purpose of AP-5.1Q efficiently and effectively. The following items were identified and, when taken in total, indicate that the process provided by procedure AP-5.1Q does not meet the above QARD requirements:

1. A review of the list of open DARs revealed that 547 DARs are open in various states of the process, several of which have been open since 1999.
2. Review of procedure review record packages identified that the Requirements Traceability Network (RTN) cannot be updated as required by AP-5.1Q, Section 5.9.6 b) when using a RTN 012 report as specified by AP-5.1Q, Attachment 9.

3. Review of procedure review record packages identified that several DARs were closed without being included in the records package and/or referenced on the Document Development Form, as required.

**SC-01-D-129.** Procedure AP-2.1Q, Revision 1, *Indoctrination and Training of Personnel*, Section 5.4.2 states in part “Employee: a) complete indoctrination and training as specified in the Individual Development Plan or TRM.”

Contrary to the above, no objective evidence of completion of required training for several individuals, as specified in the approved TRM, could be identified.

### **5.5.3 Deficiency Identification and Referrals**

The following DIR was initiated as a result of this audit:

**DIR 01-07.** AP-6.1Q Section 5.7.2 requires that owners of controlled documents determine the need and status of controlled documents they own on an annual basis.

Contrary to the above, no evidence of this action being accomplished was available at LLNL. This CAQ is being deferred to DR BSC-01-D-061, which already identifies this condition at BSC Las Vegas.

### **5.5.4 Deficiencies Corrected During the Audit**

The following CDA was identified and corrected during the audit:

AP-6.1Q did not address QARD Section 6.2.5.c relating to the disposition of obsolete or superceded documents. ECN #01 was issued to AP-6.1Q Revision 6, on 8/17/01 to correct this deficient condition.

### **5.5.5 Follow up of Previously Identified Conditions Adverse to Quality**

**LVMO-00-D-076.** Q work activities were completed without a work package to control the activity. No additional occurrences of this condition were identified during the audit.

**LVMO-00-D-093.** Failure to submit records to the Records Processing Center in accordance with the requirements of procedure AP-17.1Q, Revision 2, *Record Source Responsibilities for Inclusionary Records*. No additional occurrences of this condition were identified during the audit.

**SNL-00-D-098.** Training assignments had not been prepared for recently assigned individuals. No additional occurrences of this condition were identified during the audit.

**LVMO-00-D-114.** Failure to submit, validate and process QA records packages in the timeframes specified in approved procedures. No additional occurrences of this condition were identified during the audit.

**LVMO-00-D-125.** Records containing numerous errors accepted and processed by the Records Processing Center (RPC). No additional occurrences of this condition were identified during the audit.

**LVMO-00-D-145.** Constructor generated records are not in compliance with QARD Section 17.0. No additional occurrences of this condition were identified during the audit.

**LLNL-00-D-152.** Record packages, i.e., scientific notebooks, do not meet the requirements of AP-17.1Q as far as titles, unique identifiers, and QA designators. No additional occurrences of this condition were identified during the audit.

**LVMO-01-D-013.** Warehouse personnel found working to a superseded procedure revision. No additional occurrences of this condition were identified during the audit.

**LVMO-01-D-017.** Document Control personnel failed to comply with procedure, i.e., personnel did not check the electronic source file for two controlled documents against the hard copies of those documents upon receipt for controlled distribution. No additional occurrences of this condition were identified during the audit.

**LVMO-01-D-019.** Signature and Initials list not updated per procedure. No additional occurrences of this condition were identified during the audit.

**LVMO-01-D-022.** Inadequate procedure preparation and review. The procedure does not provide a management process to adequately address the cited and applicable requirement and the failure was not detected or corrected in procedure review and comment process prior to issuance. No additional occurrences of this condition were identified during the audit.

**LVMO-01-D-034.** Failure to comply with procedure requirements. No additional occurrences of this condition were identified during the audit.

**SNL-01-D-045.** Records not submitted to RPC within 90 days per procedure. No additional occurrences of this condition were identified during the audit.

**BSC-01-D-052.** BSC Position Descriptions for personnel performing design and software development and verification do not meet the requirements of the QARD and procedure AP-2.2Q, Revision 1, *Establishment and Verification of Required Education and Experience of Personnel*. No additional occurrences of this condition were identified during the audit.

**BSC-01-D-060.** Document Control Action Request package was neither complete nor correct. No additional occurrences of this condition were identified during the audit.

## **6.0 RECOMMENDATIONS**

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

It is recommended that Self-Assessment Reports from YMS be submitted to the RPC via the transmittal, receipt and acknowledgement process versus the current method of adding the RPC to the report's distribution list.

## **7.0 LIST OF ATTACHMENTS**

Attachment 1 "Personnel Contacted During the Audit"

Attachment 2 "Summary Table of Audit Results"

Attachment 3 "Acronyms/Abbreviations"

**ATTACHMENT 1**  
**Personnel Contacted During the Audit**

<b>Name</b>	<b>Organization</b>	<b>Pre-audit Meeting</b>	<b>Contacted During Audit</b>	<b>Post-audit Meeting</b>
Aden-Gleason, Nancy	BSC/LBNL	X	X	
Alegre, Barbara J.	BSC/LLNL		X	
Alvarez, Annette	BSC/Document Control		X	
Archuleta, Jose A.	BSC/SNL	X	X	
Bastian, C. Thomas	BSC/Radiation Programs		X	
Bates, Gregory L.	BSC/Site Services & Field Support		X	
Beall, G. Ken	BSC/Corrective Action Coordination	X		X
Belanger, Mike	BSC/LLNL			X
Berlien, Ronald B.	BSC/Internal Assessment And Performance Improvement		X	
Blaylock, James	DOE/Office of Quality Assurance			X
Bodvarssen, Bo	BSC/LBNL	X	X	
Boldt, Gerald K.	BSC/Methods & Procedures			X
Buenviaje, L. Paul	BSC/Quality Engineering @ LANL	X	X	X
Burningham, Andrew G.	BSC/Compliance			X
Carter, John W.	BSC/Quality Assessment	X		
Castagna, Iris J.	BSC/SNL		X	
Chaffin, Novella F.	BSC/Media/Email		X	
Colehour, Lana L.	BSC/Records Processing		X	X
Cox, Howard R.	BSC/Site Quality Control		X	
Crumpacker, Gary L.	BSC/Title III Design		X	
Cuzner, Marlene	BSC/LBNL	X	X	
Dana, Stephen R.	BSC/Quality Engineering	X	X	X
Davis, Dwayne D.	BSC/Site Services & Field Support		X	
Dixon, Paul R.	BSC/LANL	X	X	X
Dresel, Ralph R.	BSC/Site Services & Field Support		X	
Drummond, Christine L.	BSC/Human Resources & Training		X	
El-Madani, Debra	BSC/Media/Email		X	
Estill, John C.	BSC/LLNL	X		
Fagg, Rennae K.	BSC/Work Planning And Control		X	
Ferrerio, Gloria M.	BSC/Human Resources & Training		X	
Fix, David	BSC/LLNL		X	
Fransioli, Paul M.	BSC/Radiation Programs			X

Name	Organization	Pre-audit Meeting	Contacted During Audit	Post-audit Meeting
Garcia, Nina	BSC/SNL	X	X	
Garrett, Charles R.	BSC/Title III Design		X	
Graff, James F.	BSC/Quality Engineering @ SNL	X	X	
Gray, Elizabeth A.	BSC/LANL		X	X
Griffith, Rhonda J.	BSC/Work Planning & Control		X	
Gundlach, Bradley D.	BSC/LANL		X	
Harris, Stephen D.	BSC/Quality Engineering @ LBNL	X	X	X
Harris-Womack, Sharon D.	BSC/Receipt Processing		X	
Heerd, Mary J.	BSC/SNL		X	
Henning, Roger J.	BSC/Science And Engineering Testing		X	
Hess, Ken	BSC Management		X	
Hill, Catherine	BSC/LANL		X	
Horton, Sam H.	BSC/Quality Assurance		X	
Howard, Robert L.	BSC/Science & Analysis			X
Howe, Bonnie J.	BSC/Document Control		X	
Hudy, Edythe	BSC/Document Control		X	
Humphries-Alder, Cynthia	BSC/Quality Engineering		X	X
Iyer, Muthuraman S.	BSC/Repository Design			X
James, Eloise	BSC/SNL		X	
Johnson, Marty	BSC/Document Control			X
Jones, Catherine	BSC/LANL		X	
Keele, Robert P.	BSC/Quality Engineering			X
Kohler, Martha	BSC/LLNL		X	X
Kovach, Richard G.	BSC/Test Coordination Office		X	
Krank, Kevin C.	BSC/Site Quality Control			X
Krishna, Donald T.	BSC/Quality Assurance		X	
Kunihiko, Dean M.	BSC/Resource Management		X	
Law, Robert I.	BSC/Contracts And Coordination		X	
Lentz, F. Hugh	BSC/Information Compliance	X		
Lin, Wunan	BSC/LLNL		X	
Mackinnon, Robert	BSC/SNL		X	
Martinez, Cleovis	BSC/LANL	X	X	X
McFall, Kenneth T.	BSC/Site Quality Control		X	X
McGuire, Gail A.	BSC/Analytical Support			X
Mellor, Barry L.	BSC/Human Resources & Training		X	
Moran, Timothy M.	BSC/Radiation Programs		X	

Name	Organization	Pre-audit Meeting	Contacted During Audit	Post-audit Meeting
Olson, Roger M.	BSC/Systems Operation		X	
Osborne, C. Dave	BSC/Site Quality Control		X	
Palay, Christian	NQS			X
Palmer, Cynthia E.	BSC/LLNL		X	
Persoff, Peter	BSC/LLNL		X	
Pointer, Kenneth.	BSC/Regulatory Programs			X
Powe, Richard E.	BSC/Quality Engineering	X	X	X
Quinnell, Kim L.	BSC/Records Processing		X	
Reitan, Judith E.	BSC/Site Quality Control		X	
Reshel, Tanya	BSC/LLNL/	X	X	
Roberson, Janice A.	BSC/Functional Support		X	
Rodgers, Thomas E.	BSC/Resource Management		X	X
Rupp, Trudy	BSC/Site Services & Field Support		X	
Schelling, F. Joseph	BSC/SNL		X	
Skorseth, Robert A.	BSC/Title III Design		X	
Smith, Steven C.	BSC/Work Planning And Control		X	
Spangler, Elaine L.	BSC/Human Resources & Training		X	
Sparks, Charles M.	BSC/Site Services & Field Support		X	
Stanworth, Pamela	BSC/LLNL		X	
Sweeney, Sylvia A.	BSC/SNL		X	
Therien, John E.	BSC/Quality Assessments		X	
Thompson, Kathleen	BSC/Customer Support		X	
Turner, Paul E.	BSC/Human Resources & Training		X	X
Valladao, Carol	BSC/LBNL	X	X	
Warnock, Maryam	BSC/Records Processing	X	X	X
Warren, Charles C.	BSC/Quality Engineering @ LLNL	X	X	X
Washington, Bunny	BSC/Document Control		X	
Weaver, Douglas J.	BSC/LANL		X	
Weeks, Richard L.	BSC/Site Quality Control			X
Wetzel, Judy A.	BSC/Document Control		X	
Williams, E. K.	BSC/Site Quality Control		X	
Wolverton. Ken M.	BSC/Regional Data Analysis			X
Young, James E.	BSC/LANL	X	X	X
Zinkevich, Fred N.	BSC/Corrective Action Coordination	X	X	X

## ATTACHMENT 2 SUMMARY TABLE OF AUDIT RESULTS

QARD Sections	Implementing Documents	Checklist Pages						Deficiencies	REC	Program Adequacy	Procedure Compliance						Overall
		L V O	L A N L	L B N L	L L N L	S N L	Y M S				L V O	L A N L	L B N L	L L N L	S N L	Y M S	
1	LP-1.0Q-M&O YMP-LBNL-QIP-1.0 LLNL-033-YMP-QP 1.0 LANL-YMP-QP-01.3 LANL-YMP-QP-01.4 QAIP 01-02	1 to 3	43 to 46	87 to 88	117 to 118	151 to 153	184 to 185	None	None	SAT	SAT	SAT	SAT	SAT	SAT	SAT	SAT
2	AP-2.1Q AP-2.2Q AP-2.12Q AP-2.19Q AP-2.20Q AP-2.21Q NLP 3-29 LANL-YMP-QP-02.12	4 to 19	47 to 59	89 to 98	119 to 128	154 to 163	186 to 196	BSC-01-D-129	None	SAT	SAT	SAT	SAT	SAT	SAT	SAT	SAT
5	AP-5.1Q AP-5.2Q AP-OM-006Q NLP 5-3 YMP-LBNL-QIP-5.2 LLNL-033-YMP-QP-2.1 LLNL-033-YMP-QP-5.0 LANL-YMP-QP-06.2 LANL-YMP-QP-06.3 QAIP 05-01 QAIP 20-01	20 to 27	60 to 66	99 to 100	129 to 135	164 to 168	197 to 205	YMSCO-01-D-128	None	AP-5.1Q UNSAT  All Others SAT	SAT	SAT	SAT	SAT	SAT	SAT	SAT
6	AP-6.1Q AP-6.28Q YMP-LBNL-QIP-6.1 LANL-YMP-QP-06.1	28 to 35	67 to 79	101 to 109	136 to 143	169 to 176	206 to 213	BSC-01-D-127 DIR 01-07 1-CDA	None	SAT	SAT	SAT	SAT	SAT	SAT	SAT	SAT
17	AP-17.1Q	36 to 40	80 to 84	110 to 114	144 to 148	177 to 181	214 to 218	None	1 REC	SAT	SAT	SAT	SAT	SAT	SAT	SAT	SAT
Appendix C	AP-AC.1Q	41 to 42	85 to 86	115 to 116	149 to 150	182 to 183	219 to 220	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>TOTAL</b>		<b>3 DRs</b>						<b>1 DIR</b>	<b>1 CDA</b>	<b>1 REC</b>							<b>SAT</b>

**Legend:** CDA = Corrected During Audit      DIR = Deficiency Identification and Referral      DR = Deficiency Report      NA = Not Applicable      REC = Recommendation  
SAT = Satisfactory      UNSAT = Unsatisfactory

### ATTACHMENT 3

#### ACRONYMS/ABBREVIATIONS

BSC	Bechtel SAIC Company, LLC
CAQ	Condition(s) Adverse to Quality
CDA	Corrected During the Audit
DAR	Document Action Request
DIR	Deficiency Identification and Referral
DOE	U.S Department of Energy
DR	Deficiency Report
ECN	Expedited Change Control
LANL	Los Alamos National Laboratory
LBNL	Lawrence Berkeley National Laboratory
LLNL	Lawrence Livermore National Laboratory
LVO	Las Vegas Offices
NQS	Navarro Quality Services
OCRWM	Office of Civilian Radioactive Waste Management
OQA	Office of Quality Assurance
QA	Quality Assurance
QARD	Quality Assurance Requirements and Description
RPC	Records Processing Center
RTN	Requirements Traceability Network
SNL	Sandia National Laboratories
TRM	Training Requirements Matrix
YMS	Yucca Mountain Site