

QA: QA

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

**OFFICE OF QUALITY ASSURANCE**

**QUALITY ASSURANCE AUDIT REPORT**

**FOR**

**OQAP-BSC-03-05**

**OF THE  
BECHTEL SAIC COMPANY, LLC**

**AT  
LAS VEGAS, NEVADA**

**March 17-27, 2003**

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

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**Date:** \_\_\_\_\_

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

**R. Dennis Brown  
Director  
Office of Quality Assurance**

**Date:** \_\_\_\_\_

## 1.0 EXECUTIVE SUMMARY

Auditors representing the Office of Civilian Radioactive Waste Management (OCRWM) conducted a performance-based audit of Bechtel SAIC Company, LLC (BSC) March 17 through 27, 2003. The limited-scope audit was performed to evaluate BSC's implementation of the OCRWM DOE/RW-0333P, Revision 12, *Quality Assurance Requirements and Description* (QARD) document and to assess the integrity of data associated with the Yucca Mountain Project (YMP) License Application (LA) process. Except as noted, both were found to be adequate and effective. However, overall the result was indeterminate since the sample size of final data was small and did not include data from products considered to be critical. Additional assessments will be conducted as data supporting LA becomes available.

Three conditions adverse to quality and four isolated conditions were identified. The conditions adverse to quality are documented as deficiencies, and the isolated conditions are recorded as Quality Observations. All seven conditions are summarized below and detailed in the report.

One Deficiency Report (DR) was written to address inadequate documentation for evaluation criteria in technical work plans (TWP) as required by Administrative Procedure (AP)-SIII.2Q, Revision 1, ICN 0, *Qualification of Unqualified Data and the Documentation of Rationale for Accepted Data*. A second DR identified a failure to adequately document the results of data qualifications, a lack of rationale for abandoning selected evaluation criteria, and failure to sufficiently identify subject matter experts. A third DR detailed a lack of traceability and transparency of data to the Technical Data Management System (TDMS).

One observation documented inadequate control of electronic data in one scientific notebook (SN) related to a TWP. A second observation cited a minor procedural inadequacy in AP-2.27, Revision 0, *Planning for Science Activities*. Another observation was written to document an incorrect document reference where a SN number was transposed. A fourth observation cited a QARD requirement incorrectly in AP-SIII.2Q, Revision 1, ICN 0.

Several good practices were acknowledged that included a heightened commitment of personnel to produce quality products and a BSC management emphasis on building quality into products. Also, the TDMS was recognized as an excellent data control tool.

## 2.0 SCOPE

Auditors representing OCRWM conducted a performance-based audit to evaluate BSC's implementation of the OCRWM QARD with focus on the integrity of data associated with YMP LA. The scope was limited to data referenced in completed technical products.

The majority of technical products related to LA are not final as this time. As a result, the data cited is still considered preliminary. Therefore, the audit was limited to a review of data sampled from completed products and included a small sample of data from products considered critical to LA. Additional reviews will be conducted when a broad sample of technical products are completed and the overall integrity of data can be fully evaluated.

Seventy-five data tracking numbers (DTNs) were selected as samples that were used as input to completed technical products. The products used to select the samples are detailed on Attachment 3, "Technical Products Selected for Data Sampling." The applicable Document Input Reference Sheets (DIRS) were used to select the samples. The DTN sample was expanded to include a review of the origin/source DTNs. The specific DTNs sampled were increased in number by the inclusion of DTNs identified on the corresponding road maps. The total DTNs sampled are identified in the corresponding audit checklist.

Performance of the following critical process steps were evaluated and found adequate and effective:

- 1) planning,
- 2) data input and development,
- 3) technical product input and selection,
- 4) analysis and documentation, and
- 5) control and management of data.

The performance-based evaluation of process effectiveness and data integrity was based on:

- 1) satisfactory completion of the critical process steps,
- 2) documentation that substantiates quality of the product,
- 3) implementation of the applicable QA program sections, and
- 4) adequacy of processes and procedures.

The following QARD sections were determined to be adequate and effectively implemented and are directly related to the Performance Assessment (PA) organization's process/activities for controlling and managing data:

|                |   |
|----------------|---|
| 2.0            | Quality Assurance Program                     |
| 3.0            | Design Control                                |
| 5.0            | Implementing Documents                        |
| 16.0           | Corrective Action                             |
| 17.0           | Quality Assurance Records                     |
| Supplement III | Scientific Investigation                      |
| Supplement V   | Control of the Electronic Management of Data. |

The audit did not include a separate technical evaluation of product acceptability. The technical review was incorporated into the overall evaluation and detailed in the checklist. A list of procedures and their relationship to the critical process steps are detailed in Attachment 2, "Summary Table of Audit Results."

### **3.0 AUDIT TEAM MEMBERS AND OBSERVERS**

#### Audit Team Members

Marilyn A. Kavchak, Navarro Quality Services (NQS)/Audit Team Leader,  
Las Vegas, Nevada

F. Harvey Dove, NQS/Technical Specialist, Las Vegas, Nevada

Bruce D. Foster, NQS/Auditor, Las Vegas, Nevada

Christian M. Palay, NQS/Auditor, Las Vegas, Nevada

James V. Voigt, NQS/Auditor, Las Vegas, Nevada

Mary E. Bennington, OQA/Auditor, Las Vegas, Nevada

Ronald M. Linden, Management and Technical Support/Golder Associates  
(MTS)/Technical Specialist, Las Vegas, Nevada

Eric D. Zwahlen, MTS/Technical Specialist, Las Vegas, Nevada

#### Observers

Ted Carter, U.S. Nuclear Regulatory Commission (NRC), Rockville, Maryland

David Esh, NRC, Rockville, Maryland

Tom Matula, NRC, Rockville, Maryland

Beth Schlapper, NRC, Rockville, Maryland

Rod Weber, Southwest Research Institute/Center for Nuclear Waste Regulatory Analysis,  
San Antonio, Texas

John White, Office of Repository Development, Las Vegas, Nevada

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

A pre-audit meeting was held on March 17, 2003 in Las Vegas, Nevada. Daily team/observer debriefing meetings were conducted to report the progress of the audit and discuss audit status, including any potential conditions adverse to quality. Daily management meetings were held to keep BSC informed as the audit progressed. The audit was concluded with a post-audit meeting held on March 27, 2003 in Las Vegas, Nevada.

Personnel contacted during the audit, including those who attended the pre-audit 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, except as noted in Subsection 5.3, “Summary of Conditions Adverse to Quality” data reviewed and procedures associated with the process of controlling data were found to be adequate and effective.

### 5.2 Audit Activities

The results for each process/activity and the results of the procedure adequacy evaluations are provided in Attachment 2, “Summary Table of Audit Results.” 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 AP-18.3Q, Revision 0, *Internal Audit Program*.

The audit team held discussions with PA management during the audit that resulted in some suggestions that would clarify, streamline or add consistency to processes/procedures. The discussions were informal.

Several good practices were acknowledged that included a heightened commitment of personnel to produce quality products and a BSC management emphasis on building quality into products. Also, the TDMS was recognized as an excellent data control tool.

### 5.3 Summary of Conditions Adverse to Quality

The audit team identified three (3) conditions adverse to quality that are identified in DRs and four (4) isolated deficiencies that resulted in Quality Observations.

#### 5.3.1 Deficiency Reports (DR)

##### BSC(O)-03-D-129

AP-SIII.2Q, Revision 1, ICN 0, requires TWPs or Data Qualification Plans include evaluation criteria, including specific information such as sample size, statistical test method, and identification of computer codes to be used. Contrary to the requirement, three planning documents of five reviewed, DQP-EBS-MD-000001, Revision 01, TWP-WHS-GE-000001, Revision 00 and TWP-MGR-GE-000002, Revision 00, did not contain specific information to measure the successful/unsuccessful application of selected criteria.

BSC(O)-03-D-130

AP-SIII.2Q, Revision 1, ICN 0, requires that data qualification tasks be documented and include a discussion of evaluation criteria and the evaluation results. However in one Data Qualification Report, TDR-EBS-MD-000022, Revision 00b, *Data Qualification: Update and Revision of the Geochemical Thermodynamic Database, Data0.ymp*, 24 technical publications were not evaluated individually. Instead, the evaluation criteria are summarized without sufficient criteria and evaluation results. AP-SIII.2Q, Revision 1, ICN 0, also requires that data qualification tasks be documented and include a discussion of evaluation criteria and a rationale if any of the selected qualification methods are abandoned. Contrary to the requirement, one of four evaluation criteria selected for Data Qualification Report TDR-EBS-MD-000022, Revision 00b was discarded without any documentation of rationale. The selected criteria involved evaluating the qualifications of the personnel or organization generating the data comparable to the qualifications requirements of personnel generating similar data under an approved 10 CFR 60, Subpart G, QA program. Because most of the technical publications being qualified in the report were European in origin, insufficient documentation was available to measure the qualification of either the personnel or the organization. The decision to abandon the selected criteria was not addressed in the data qualification report.

Finally, the technical assessment approach is a method of qualification allowed by AP-SIII.2Q when the technical correctness of data is questionable. Technical assessments must be performed by subject matter expert(s), who evaluate the appropriateness of the employed methodology and the correctness of the resulting data. However, the subject matter expert(s) were not identified for each of the 24 Technical Assessments used for direct input to the data qualification report. Instead, only the 11 authors are listed on the cover page of the report, leaving the technical experts for each of the 24 technical assessments contained in the report unidentified.

It should be noted that the data qualification report referenced in the DR was the only technical product reviewed that used the 'technical assessment' qualification method.

BSC(O)-03-D-135

AP-SIII.9Q, Revision 0, ICN 1, *Scientific Analyses*, and AP-SIII.10Q, Revision 0, ICN 2, *Models*, require information presented in scientific analysis and model documentation to be transparent and traceable. Also, data values used as input are to be the same as those in the TDMS.

Contrary to these requirements three of eight Analysis Model Reports (AMR) reviewed had conditions where the DTN referenced in the AMR was not transparent or traceable to the reference.

AMR ANL-MGR-MD000006, Revision 01D contains an additional column of data entitled “Max Average Monthly Relative Humidity”, not found in the cited input DTN in the TDMS. In Table 4.1-3, the listed values had been modified to accommodate a different unit of measurement without explanation. AMR ANL-EBS-MD-000006, Revision 01 contained two input DTNs, M00003SPASUP02.003 and LL990610605924.079, that were presented with correction factors not documented or explained in the AMR. The corrected values are not contained in the TDMS.

MDL-NBS-HS-000002, Revision 1, Table 4, contains two model layers with the same label of tcwf referenced. Also, a referenced source DTN, LB0207REVUZPRP.001, shows the second model layer as tswf. The same table also records a tcwf (instead of tswf) model layer van Genuchten parameter value as  $3.2E-4$ . The referenced DTN LB0207REVUZPRP.001 shows this value as  $3.2E-3$ . Table 15 of the same report records a base case permeability for Model Layer ptn21 as  $2.11E-11$ . The output DTN LB02091DSSSCP31.002 shows a permeability value for the corresponding layer as  $2.11E-12$ .

### **5.5.2 Quality Observations**

#### **BSC(O)-03-O-071**

AP-SV.1Q, Revision 0, ICN 3, *Control of the Electronic Management of Information*.

The TWP for the Integrated Site Model, TWP-NBS-GS-000003, was revised on 04/04/02 to Revision 2. Supplement V controls were in part deferred to the original SN (in Section 10.1 of the TWP). A review of the referenced SN identified a lack of documentation for controls that were established in the SN initial entry.

This issue was evaluated for impact and it was determined that there was no impact on data integrity associated with the Geologic Framework Model. This Quality Observation was cross-linked to the Geologic Framework Model scientific notebook record and this issue was subsequently closed on 4/14/03.

BSC(O)-03-O-073

AP-2.27Q, Revision 0, *Planning for Science Activities*.

The subject procedure fails to address QARD Sections 2.2.10B and 2.2.10D, which require that pertinent background information or data be made available during reviews, and that reviewers be technically competent.

AP-2.27Q was subsequently designated for revision to address this concern and this Quality Observation was closed on 4/7/03.

LBNL(O)-03-O-074

AP-SIII.10Q requires that sources of data be documented in the model discussion. However, SN-LBNL-SCI-229-V1, is incorrectly referenced as SN-LBNL-SCI-299-V1 in Table 5 of MDL-NBS-HS-000003, Revision 01, "Calibrated Properties Model." A review of the initial entry for the subject notebook showed a SN Compliance Review Worksheet that also incorrectly identified the SN.

Technical Error Report, TER-03-0023, was subsequently issued to correct the SN reference in Table 5 in addition to making corrections to the associated SN records package. This Quality Observation was closed on 4/11/03.

BSC(O)-03-O-075

AP-SIII.2Q does not correctly reflect the QARD requirement in Section SIII.2.4. The QARD specifies that qualification reviews be conducted to determine the technical correctness of data in accordance with established review criteria. Contrary to this requirement, the procedure specifies that the purpose of the review is to determine the adequacy of previously documented reviews of data.

AP-SIII.2Q was subsequently revised to address this concern and this Quality Observation was closed on 4/28/03.

**5.5.3 Follow-up of Previously Identified Deficiencies**

The following previously identified DRs were reviewed for effective corrective action. No repetitive issues were identified associated with the previously identified conditions.

DR BSC-01-D-055 documented the lack of required impact reviews when data are superseded. Based on the documentation reviewed during the audit, impact reviews have been performed.

DR BSC-02-D-009 documented the lack of technical reviews of data originating from SNs. Technical reviews of data in SNs were reviewed during the audit and found satisfactory.

DR BSC-02-D-074 identified the use of data in a SN not obtained from the TDMS or identified by an approved data tracking number. No instances of data being obtained incorrectly in SNs were discovered during the audit.

DR BSC-02-D-123 was written to document a lack of record road maps for data submitted to the TDMS. Record road maps were available, where required, for data sets sampled.

DR BSC-02-D-124 was written to identify procured data, classified as final, but not technically reviewed as required. No evidence of a lack of required technical reviews was cited during the review of the implementation of technical reviews.

DR BSC-02-D-191 cited the use of unqualified data from an uncontrolled source. No audited data was found to be from an uncontrolled source.

## **6.0 LIST OF ATTACHMENTS**

Attachment 1 – “Personnel Contacted During the Audit”

Attachment 2 – “Summary Table of Audit Results”

Attachment 3 – “Technical Products Selected for Data Sampling”

**Attachment 1  
 Personnel Contacted During the Audit**

| Name               | Organization | Pre-Audit Meeting | Contacted During Audit | Post-Audit Meeting |
|--------------------|--------------|-------------------|------------------------|--------------------|
| Andrews, Robert    | BSC/PA       | x                 | x                      |                    |
| Apgar, Annie       | USGS/Stoller |                   | x                      |                    |
| Arthur, W. John    | DOE/ORD      |                   |                        | x                  |
| Ashley, David      | BSC/PA       |                   | x                      |                    |
| Beall, Ken         | BSC/CM       | x                 | x                      | x                  |
| Beckman, Don       | BSC/BA/LA    | x                 | x                      | x                  |
| Blaylock, James    | DOE/ OQA     | x                 | x                      | x                  |
| Boyle, William     | DOE/ORD      | x                 | x                      | x                  |
| Bryan, Debbie      | BSC/LANL     |                   | x                      |                    |
| Brown, R. Dennis   | DOE/ OQA     | x                 | x                      | x                  |
| Brumfield, Ed      | BSC/QA       |                   | x                      | x                  |
| Burningham, Andrew | BSC/PA       | x                 | x                      | x                  |
| Carter, Ted        | NRC          | x                 | x                      | x                  |
| Cereghino, Stephen | BSC/LA       |                   |                        | x                  |
| Cikanek, Edward    | BSC/PA       |                   | x                      |                    |
| Cooper, Emily      | DOE/ORD      | x                 | x                      |                    |
| Derby, Shirl       | BSC/CM       |                   | x                      | x                  |
| Dixon, Paul        | LANL/PA      | x                 |                        | x                  |
| Esh, David         | NRC          | x                 | x                      | x                  |
| Esp, Mark          | BSC/PA       |                   | x                      |                    |
| Fissekidou, ViVi   | LBNL         |                   | x                      |                    |
| Fray, Russell      | BSC/PM       | x                 |                        | x                  |
| Gopal, De          | BSC/PA       |                   | x                      |                    |
| Grant, Terry       | BSC/PA       |                   | x                      |                    |
| Grooms, Kerry      | DOE/ OQA     |                   |                        | x                  |
| Harper, James      | BSC/QA       |                   | x                      | x                  |
| Harris, Sharon     | BSC/Records  |                   | x                      |                    |
| Hartstern, Robert  | BSC/QA       | x                 | x                      | x                  |
| Hasson, Robert     | NQS          | x                 | x                      |                    |
| Hastings, Cheryl   | BA/PA        | x                 |                        |                    |
| Horseman, Marlin   | NQS          |                   | x                      | x                  |
| Houseworth, Jim    | BSC/PA       |                   | x                      | x                  |
| Howard, Cliff      | BSC/PA       |                   | x                      |                    |

**Attachment 1 (Continued)**

**Personnel Contacted During the Audit**

| Name                 | Organization | Pre-Audit Meeting | Contacted During Audit | Post-Audit Meeting |
|----------------------|--------------|-------------------|------------------------|--------------------|
| Hudson, David        | USGS/PA      |                   | x                      |                    |
| Hutchins, William E. | BSC/BA/LA    | x                 |                        |                    |
| Jaeger, Michael      | BSC/PA       | x                 | x                      | x                  |
| Keele, Robert        | BSC/QA       | x                 |                        |                    |
| Krishna, Don         | BSC/QA       | x                 |                        | x                  |
| Latta, Robert        | NRC          | x                 | x                      | x                  |
| Liu, H.H.            | LBNL         |                   | x                      |                    |
| Lum, Clinton         | BSC/PA       |                   | x                      |                    |
| Matula, Thomas       | NRC          | x                 | x                      | x                  |
| McFall, Kenneth      | BSC/QA       |                   |                        | x                  |
| Mustard, Martha      | USGS         |                   | x                      |                    |
| Opelski, Edward      | NQS          |                   |                        | x                  |
| Parrott, Jack        | NRC          | x                 |                        |                    |
| Pasupathi, Pasu      | BSC/PA       |                   | x                      |                    |
| Pearman, Don         | BSC/GM       |                   |                        | x                  |
| Persoff, Peter       | LBNL         |                   | x                      | x                  |
| Rasmuson, Kaylie     | BSC/ES&H     |                   | x                      | x                  |
| Rautenstrauch, Kurt  | BSC/ES&H     |                   | x                      | x                  |
| Ryan, Kathy          | BSC/PA       |                   | x                      |                    |
| Rodgers, Thomas      | BSC/CSO      |                   | x                      |                    |
| Rucinski, Shellie    | BSC/PA       |                   | x                      |                    |
| Schlapper, Beth      | NRC          | x                 | x                      |                    |
| Scott, William       | BSC/PA       |                   | x                      |                    |
| Schuhlen, Michael    | BSC/PA       |                   | x                      |                    |
| Sinks, Donna         | USGS         |                   |                        | x                  |
| Smith, Anthony       | BSC/PA       |                   | x                      | x                  |
| Steinborn, Terry     | BSC/PA       |                   | x                      |                    |
| Summers, Tammy       | LLNL/PA      |                   | x                      |                    |
| Svalstad, Darrell    | BSC/QA       |                   | x                      |                    |
| Swenning, Steve      | BSC/CSO      | x                 | x                      | x                  |
| Tappan, J. J.        | BSC/PA       |                   | x                      |                    |
| Thompson, Kathleen   | BSC/Records  |                   | x                      |                    |
| Voegele, Michael     | BSC/CSO      |                   |                        | x                  |

**Attachment 1 (Continued)**

**Personnel Contacted During the Audit**

| Name                    | Organization | Pre-Audit Meeting | Contacted During Audit | Post-Audit Meeting |
|-------------------------|--------------|-------------------|------------------------|--------------------|
| Vogt, Tim               | BSC/PA       |                   | x                      |                    |
| Wagner, Lester          | NQS          |                   | x                      | x                  |
| Wang, Joe               | LBNL/PA      |                   | x                      |                    |
| Wasiolek, Maryla        | BSC/PA       |                   | x                      |                    |
| Watson-Garnett, Milinka | BSC/PA       |                   | x                      |                    |
| Watson, William         | BSC/PA       |                   | x                      | x                  |
| Weber, Rod              | NRC/CNSWR    | x                 | x                      |                    |
| Wemheuer, Robert        | BSC/PM       |                   |                        | x                  |
| White, Jon              | DOE/ORD      | x                 | x                      | x                  |
| Williams, Albert        | DOE/ORD      |                   |                        | x                  |
| Williams, Nancy         | BSC/PM       |                   |                        | x                  |
| Wilson, Charles         | BSC/ISS      |                   | x                      |                    |
| Whitcraft, James        | BSC/ENG      | x                 |                        |                    |
| Yunker, Jean            | BSC/CSO      | x                 | x                      |                    |
| Ziegler, Joseph D       | DOE/ORD      |                   |                        | x                  |
| Zinkevich, Fred         | BSC/CM       | x                 | x                      | x                  |

Legend:

- |   |  |
|---|--|
| BA - Beckman & Associates                   | NRC - Nuclear Regulatory Commission    |
| BSC - Bechtel SAIC Company, LLC             | NQS - Navarro Quality Services         |
| CM - Commitments Management                 | OQA - Office of Quality Assurance      |
| SWR - Southwest Research                    | PA - Performance Assessment Project    |
| DOE - Department of Energy                  | PM - Projects Management               |
| ENG - Engineering                           | QA - Quality Assurance                 |
| ES&H - Environmental Safety & Health        | ORD - Office of Repository Development |
| GM - Deputy General Manager                 | USGS - U.S. Geological Services        |
| ISS - Integrated Science Solutions          |  |
| LA - License Application Project            |  |
| LANL - Los Alamos National Laboratory       |  |
| LBNL - Lawrence Berkley National Laboratory |  |

## Attachment 2

### Summary Table of Audit Results

| Critical Process Step               | Implementing Documents  | Details (✓) List | DR                   | QO                    | Program Adequacy | Procedure Compliance | Overall    |
|-------------------------------------|---|------------------|----------------------|-----------------------|------------------|----------------------|------------|
| Planning                            | AP-2.27Q, Revision 0, <i>Planning for Science Activities</i>  | Pgs 1-4          | N                    | Y<br>BSC(O)-03-O-073  | UNSAT            | SAT                  | SAT        |
|                                     | AP-5.1Q, Revision 0, ICN 3, <i>Plan and Procedure Preparation, Review, and Approval</i>                               | Pg 4             | N                    | N                     | SAT              | SAT                  |            |
|                                     | AP-SIII.2Q, Revision 1, <i>Qualification of Unqualified Data and the documentation of Rationale for Accepted Data</i> | Pg 5             | Y<br>BSC(O)-03-D-129 | N                     | SAT              | SAT                  |            |
|                                     | AP-SIII.1Q, Revision 2, ICN 2, <i>Scientific Notebooks</i>  | Pgs 6-10         | N                    | N                     | SAT              | SAT                  |            |
|                                     | YMP/93-09, <i>Technical Data Management Plan</i>  | Pgs 41-43        | N/A                  | N/A                   | N/A              | N/A                  | N/A        |
| Data Input & Development            | AP-SIII.2Q, Revision 1, <i>Qualification of Unqualified Data and the documentation of Rationale for Accepted Data</i> | Pgs 11-14        | Y<br>BSC(O)-03-D-130 | Y<br>BSC(O)-03-O-075  | UNSAT            | UNSAT                | SAT        |
|                                     | AP-SIII.3Q, Revision 1, ICN 2, <i>Submittal and Incorporation of Data to the Technical Data Management System</i>     | Pgs 15-18        | N                    | N                     | SAT              | SAT                  | SAT        |
| Technical Data Input Selection      | AP-3.15Q, Revision 3, ICN 4, <i>Managing Technical Product Inputs</i>   | Pgs 19-26        | N                    | N                     | SAT              | SAT                  | SAT        |
| Analysis and Documentation          | AP-SIII.9Q, Revision 0, ICN 1, <i>Scientific Analyses</i>   | Pgs 27-30        | Y<br>BSC(O)-03-D-135 | Y<br>LBNL(O)-03-O-074 | SAT              | UNSAT                | SAT        |
|                                     | AP-SIII.10Q, Revision 0, ICN 2, <i>Models</i>   | Pgs 31-32        | N                    | N                     | SAT              | SAT                  |            |
| Data Control and Management of Data | AP-2.14Q, Revision 2, ICN 2, <i>Review of Technical Products and Data</i>   | Pgs 33-36        | N                    | N                     | SAT              | SAT                  | SAT        |
|                                     | AP-SV.1Q, Revision 0, ICN 3, <i>Control of the Electronic Management of Data</i>                                      | Pgs 37-40        | N                    | Y<br>BSC(O)-03-O-071  | SAT              | UNSAT                |            |
| <b>TOTAL</b>                        |   | <b>43</b>        | <b>3</b>             | <b>4</b>              | <b>SAT</b>       | <b>SAT</b>           | <b>SAT</b> |

**Legend:**

|     |                     |       |                           |
|-----|---------------------|-------|---------------------------|
| DR  | Deficiency Report   | SAT   | Satisfies Criteria        |
| N   | None                | UNSAT | Does Not Satisfy Criteria |
| N/I | Not Implemented     |       |                           |
| QO  | Quality Observation |       |                           |

### ATTACHMENT 3

#### Technical Products Selected for Data Sampling

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- ANL-NBS-HS-000015, Revision 01F, *Development of Numerical Grids for UZ Flow and Transport Modeling*
- MDL-NBS-HS-000003, Revision 1, *Calibrated Properties Model*
- TDR-EBS-MD-000022, Revision 00 and TDR-MGR-GE-000003, Revision 00, *Data Qualification: Update and Revision of Geochemical Thermodynamic Database, Data0.ymp*
- ANL-NBS-GS-000008, Revision 00, *Future Climate Analysis*
- MDL-NBS-GS-000002, Revision 01, *Geologic Framework Model*
- MDL-NBS-GS-000005, Revision 00, *Thermal Conductivity of the Potential Repository Horizon Model Report*
- ANL-MGR-MD-000005, Revision 02B, *Characteristics of the Receptor for the Biosphere Model*
- TDR-MGR-GE-000005, Revision 00A, *Data Qualification and Data Summary Report: Intact Rock Properties Data on Tensile Strength, Schmidt Hammer Rebound Hardness, and Rock Triaxial Creep*
- TDR-MGR-GE-000004, Revision 00A, *Data Qualification and Data Summary Report, Intact Rock Properties Data on Poisson's Ration and Young's Modulus*
- ANL-MGR-MD-000006, Revision 01D, *Agricultural and Environmental Input Parameters for the Biosphere Model*
- ANL-EBS-MD-000006, Revision 01, *Hydrogen Induced Cracking of Drip Shield*
- TDR-NBS-HS-000005, Revision 00, *Data Qualification Report, Mineralogy Data for Use on the Yucca Mountain Project*
- TDR-WHS-CI-000001, Revision 00, *Data Qualification Report for 1991, 1:1200 Scale Topographic Maps for Use on the Yucca Mountain Project*