



## Department of Energy

Washington, DC 20585

QA: QA

FEB 14 2002

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U.S. DEPARTMENT OF ENERGY OFFICE OF CIVILIAN RADIOACTIVE WASTE  
MANAGEMENT OFFICE OF QUALITY ASSURANCE (OQA) ISSUANCE OF  
SURVEILLANCE RECORD BSC-02-S-06 OF BECHTEL SAIC COMPANY, LLC (BSC)

Enclosed is the Surveillance Record, BSC-02-S-06, conducted by representatives of OQA on January 7-11, 2002, at BSC's facilities in Las Vegas, Nevada and the Yucca Mountain Site.

The purpose of the surveillance was to evaluate compliance to Administrative Procedure 2.17Q, Revision 0, ICN 0, BSCN 1, *Tracers, Fluids, and Materials Data Reporting and Management*. The surveillance team examined work-planning documents, incorporation of upper-tier requirements into Determination of Importance Evaluations (DIE), reporting of the use of Tracers, Fluids, Materials (TFM), and submittal of records.

Based on personnel interviews and review of documentation, BSC is adequate and effective in the control and reporting of TFM with the exception of two conditions adverse to quality identified as Deficiency Reports (DR). DR BSC-02-D-066 identifies specifications, drawings, and implementing documents that have not undergone a Safety Assurance (SA) review. DR BSC-02-D-067 identifies a refrigerant at the Exploratory Studies Facility that has not been evaluated by SA.

This surveillance is considered complete and closed as of the date of this letter. A response to this surveillance record and any documented recommendations is not required; however, the open DRs will continue to be tracked until closure to the satisfaction of the Quality Assurance Representative, and the Acting Director, OQA.

If you have any questions, please contact either James Blaylock at (702) 794-1420 or John R. Doyle at (702) 794-5021.

*James Blaylock*  
Ram Murthy, Acting Director  
Office of Quality Assurance

OQA:JB-0660

Enclosure:  
Surveillance Record BSC-02-S-06



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**OFFICE OF CIVILIAN  
RADIOACTIVE WASTE MANAGEMENT  
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BSC-02-S-06  
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**QUALITY ASSURANCE SURVEILLANCE RECORD  
SURVEILLANCE PLAN**

1. ORGANIZATION/LOCATION:  Bechtel SAIC Company, LLC (BSC) Yucca Mountain Site and Las Vegas, NV	2. SUBJECT:  Tracers, Fluids, and Materials (TFM) Process	3. DATE:  01/07-11/02
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4. SURVEILLANCE OBJECTIVE:  
  
Evaluate compliance to requirements documents and implementing procedures related to TFM's.

5. SURVEILLANCE SCOPE: This is a full scope surveillance to review the following:  1) incorporation of upper tier requirements; 2) compliance to AP-2.17Q, Rev. 0, ICN 0, BSCN 1, <i>Tracers, Fluids, and Materials Data Reporting and Management</i> , and related implementing procedures; 3) compliance to work planning documents (Field Work Packages, Work Plans, etc); 4) reporting of the use of TFM's; and 5) submittal of records.	6. SURVEILLANCE TEAM: Team Leader: <u>Victor J. Barish, Jr.</u>  Team Member: <u>John R. Doyle</u> <u>Christian M. Palay</u>
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7. PREPARED BY: (Surveillance Team Leader) <u>Victor J. Barish, Jr.</u>	DATE <u>11/27/01</u>	8. CONCURRENCE: (Director, OQA) <u>James B. Langford for Robert D. Davis</u> Acting Director, OQA	DATE <u>11/29/01</u>
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**SURVEILLANCE RESULTS**

9. BASIS OF EVALUATION / DESCRIPTION OF OBSERVATIONS:  
  
(See pages 2 and 3)

10. SURVEILLANCE CONCLUSIONS:  
  
(See pages 3 and 4)

11. COMPLETED BY: (Surveillance Team Leader) <u>John R. Doyle</u>	DATE <u>2/7/02</u>	12. APPROVED BY: (Director, OQA) <u>James B. Langford for</u>	DATE <u>2/14/02</u>
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## 9. Basis for Evaluation/Description of Observations: (Continued)

### Documents Reviewed During the Course of the Surveillance:

On January 7 through 18, 2002, a surveillance was performed of the BSC organization at BSC's offices in Las Vegas, Nevada and the Yucca Mountain Site (YMS) Exploratory Studies Facility (ESF). The surveillance consisted of reviews of procedures to determine effectiveness of implementation, review of in-process and submitted documentation, and personnel interviews. The surveillance was subdivided into three sections based on organizational function and responsibility. The organizations evaluated were Site Construction, Technical Coordination Office (TCO), and Safety Assurance (SA). A brief summary of each functional area, documents reviewed and attributes verified are described below:

YMP/CM-0019, Revision 02, *Exploratory Studies Facility Design Requirements Document*  
YMP/CM-0022, Revision 01, *Surface Based Testing Facilities Requirements Document*  
AP-5.2Q, Revision 0, ICN 2, *Testing Work Packages*  
AP-2.17Q, Revision 0, ICN 0, *Tracers, Fluids, and Materials Data Reporting and Management*  
NWI-ESF-037, Revision 0, ICN 0, *Procedure for Freon/Refrigerant Control*  
NLP- 2-0, Revision 5, ICN 5, *Determination of Importance Evaluations*  
NWI-ESF-036Q, Revision 0, ICN 0, *Oil Usage for Pneumatic Drilling Operation*  
AP-EM-004, Revision 0, ICN 0, *Spill Management*  
NWI-ESF-042Q, Revision 0, *Shotcrete Placement*  
LP-OM-040Q-BSC, Revision 0, ICN 0, *Tracers, Fluids, and Materials Estimating, Accounting, and Reporting*  
LP-CON-001Q-M&O, Revision 0, ICN 0, *Traced Water System*  
LP-QC-015Q-OCRWM, Revision 0, ICN 0, *Bromide Ion (Br) Ion Tracer Water Sampling and Testing*  
LP-2.1Q-M&O, Revision 0, ICN 0, *Control and Reporting of Tracers, Fluids, and Materials used in Reclamation Activities*  
LP-OM-027Q-BSC, Revision 0, ICN 1, *Exploratory Studies Facility Equipment/Hydrocarbon Leak Inspection and Reporting*  
NWI-ESF-055Q, Revision 0, ICN 0, *Release Readiness, Cleanup and Reporting*  
BAB000000-01717-2200-0005, Revision 7, ICN 3, "Determination of Importance Evaluation for the Subsurface Exploratory Studies Facility "  
BAB00000-01717-2200-00106, Revision 3, ICN 2, "Determination of Importance Evaluation for the Surface Exploratory Studies Facility"  
BABEAF000-01717-2100-40361, Revision 00, CN 1 "ECRB Refuge Station General Arrangement and Details" Drawing 6  
BABEAF000-01717-2200-00011, Revision 04, ICN 03. "Determination of Importance Evaluation for the ESF Enhanced Characterization of the Repository Block Cross Drift"  
BABEE0000-01717-6300-02165, Revision 00, SCN 1, "Rockbolts, Accessories and Associated Ground Support Material"  
BABEE0000-01717-6300-02341, Revision 00, SCN 1, "ESF Ground Support Structural Steel"  
FWP-ESF-02-01, Revision 1, "Geotechnical Rock Properties"  
Work Order #13663, "Fabricate and install platforms, ceramic fire blankets and weld anchor pins-bulkhead; fabricate and install platforms on both side of ECRB bulkhead at 17+63; wood anchor pins (studs) onto existing bulkhead plates and install ceramic fire blanks"

### Site Construction Organization

The Site Construction organization is responsible for all construction related TFM use and reporting thereof at the YMS. The SA group reviews and approves all TFMs utilized for construction prior to use in the ESF surface and subsurface environments. Permanently emplaced TFMs, such as rockbolts, steel set components and welded wire fabric are considered permanently installed and are required to be reported as per AP-2.17Q. During the reporting phase, submitted construction records such as RockBolt and Accessory Installation Reports and Non-Quality Affecting Materials Installation Logs for installed rockbolts and ground support are reviewed and reported on TFM reports. The surveillance team reviewed Non-Quality Affecting Installation Logs, dated 07/05/01, 07/03/01, and 06/25/01 for Super Swellex Rockbolts installed in the ESF and Enhanced Characterization of the Repository Block (ECRB). The team also reviewed Rockbolt and Accessories Installation Reports, dated 08/02/01, and 08/22/01 for Super Swellex and Splitset Rockbolts installed in the ESF and ECRB. Verified that these items were included in the Quarterly TFM Report for the Exploratory Studies Facility, dated 10/11/01.

## 9. Basis for Evaluation/Description of Observations: (Continued)

These reports have been submitted to the SA group on a quarterly basis. Memorandum, R. L Johnson to J. Hollins, dated 10/11/01, verified that his function was satisfactorily performed. These Actual Usage Reports are reviewed by the SA and are subsequently submitted to the Records Processing Center. The surveillance team reviewed records packages, MOL.20020117.0244 and MOY-0201181-01, to verify these reports are submitted. A review of these reports revealed that, while allowed by procedure, the forms referenced the obsolete term Job Package (JP) in the introductory section of the form. During the surveillance, Document Action Request (DAR) 1815 was submitted to AP-2.17Q to remove the JP nomenclature in the procedure.

Temporarily emplaced items are not required to be reported as per AP-2.17Q, if at a later date, these temporary items are determined as permanently emplaced, they are required to be reported. The question was asked how are materials emplaced for the ECRB Refuge Chamber described in drawing BABEAF000-01717-2100-40361 captured and reported if decided to be permanently emplaced. Title III Design and TFM reporting personnel replied that materials utilized are described and listed on the approved drawing and any changes thereto are redlined. As-builts of the drawings are then submitted to records and on file for future reference.

Craft personnel at both ESF North and South Portals monitor all TFMs entering the ESF in accordance with LP-OM-04Q-BSC. Incoming materials to the ESF are checked against the List of Approved TFMs that are located at the Portal facilities and also on file at the Project Engineer's office. Conversation with portal control and reporting personnel reveal that material that has reached the Portal in the past, and was found not to be on the approved list, was sent back to the yard until it has been verified as approved. Verified List of Approved Tracers, Fluids and Materials dated 11/28/01 both at the North Portal Pad and Project Engineer's office facilities. Verified that the following TFMs are contained on the approved TFM list dated 11/28/01 and Determination of Importance Evaluation (DIE) BABEAF000-01717-2200-00011 for the following:

Type H Cleaner/Degreaser, Sulfur Hexafluoride, PVC Rheobuild 1000 cement dispersing agent, Silica sand, Windex glass cleaner, Bentonite Clay, and Burke Non-ferrous Non-Shrink Grout.

A review of NWI-ESF-037 revealed that, prior to use, refrigerants are required to be reviewed by SA. A review of the Hazardous Materials Inventory Document Database and interviews with Environmental Field Support personnel reveals that this material has been on location since 8/01 without having the required SA review and approval as required by NWI-ESF-037. (See Deficiency Report (DR) BSC-02-D-067)

### Technical Coordination Office

The TCO reports TFM usage for scientific investigation performed in the ESF/ECRB in accordance with the Field Work Process (FWP) process. On January 8, 2002, the surveillance team observed geotechnical drilling and coring operations in the ESF Main Drift at borehole ESF-GTEC-C5-5800-07. TFM reporting is performed via the requirements of FWP-ESF-02-01. The team observed that water was being properly metered from the ESF main water line with calibrated meter # Y12253 (calibration due 8/22/02) and reported on daily drilling and operations reports. Verified that the drill rig was isolated with liners from the invert to preclude spills. No spills have occurred since drilling and coring operations commenced. Conversations with project engineers reveal that no spills or pneumatic oil usage have occurred/reported as per NWI-ESF-036Q and LP-OM-027Q-BSC.

Recent TFM usage reporting by the TCO has been limited to Lithium Bromide construction water used during drilling and other underground operations. Water is sampled and tested by Quality Control (QC) personnel prior to use in accordance with LP-QC-015Q-OCRWM. Verified Tracer Water Test Reports for Bromide dated 12/19/01, 5/01/01, 8/02/01, 6/01/01, and 1/09/02 performed by QC. All reports indicated Bromide was in the acceptable range of 9.2 to 27.6 PPM. In addition, verified TCO generated and SA accepted Tracer Fluids and Materials Reports for construction water used for the month of November 2001 and GE Silicone Siliglaze II for 1/09/02.

## 9. Basis for Evaluation/Description of Observations: (Continued)

### Safety Assurance

The SA group is responsible for DIE generation and the evaluation, approval and reporting of TFMs. DIEs are generated, reviewed, and approved in accordance with NLP-2-0 after incorporating upper-tier requirements such as the *Exploratory Studies Facility Design Requirements Document* and the *Surface Based Testing Facilities Requirements Document*. All DIEs incorporate selected requirements of these upper-tier documents. These requirements documents are of a static nature and have not been revised for several years and have had no effect on the existing in place DIEs. During the surveillance, DIE BAB000000-01717-2200-00005 was examined against the requirements of the NLP-2-0 for procedural compliance and was determined acceptable. An examination of this DIE and other approved DIEs reveal that after their approval, implementing documents (e.g., specifications and drawings) are to be review by the SA group to ensure that applicable DIE requirements have been properly integrated. A review of selected specifications and drawings indicate that the SA group, as required by the DIEs, has not reviewed these documents. (See DR BSC-02-D-066)

### Personnel Contacted during the Surveillance

William Distel, Safety Assurance/BSC  
Asha Kahlia, Safety Assurance/BSC  
James Hollins, Lead, Safety Assurance/Los Alamos National Laboratory (LANL)  
Steve Goodin, Safety Assurance/BSC  
Steve Smth, Project Engineer, Environmental Field Support/BSC  
Errol Gardiner, Site Facilities Manager/BSC  
Mike Pitterele, Senior Geologist Sample Management Facility/BSC  
Chuck Garrett, Title III Design Supervisor/BSC  
Mike Sparks, Site Manager/BSC  
Mark Peters, Manager, Science and Engineering Testing/LANL  
Greg Fasino, Manager Permitting and Regulated Materials Management/BSC  
Kathleen Thomson, Records Services/BSC  
Rudy Johnson, Project Field Engineer/BSC  
Henry Bartollio, ESF North Portal Controller/BSC  
William Johnson, Quality Control Inspector/BSC  
John Martin, Manager Quality Control/BSC  
Ken Gilkerson, Quality Specialist Quality Assurance Engineering/BSC  
Alan Mitchell, Project Engineer, ESF/ECRB Testing/LANL  
Mark Esp, Project Engineer, Surface Based Testing and Monitoring/BSC  
Mike Moore, Driller/BSC  
John Williamson, Environmental Field Support/BSC

## 10. SURVEILLANCE CONCLUSIONS: (Continued)

The surveillance revealed that based on personnel interviews and review of documentation, BSC is adequate and effective in the control and reporting of TFM with the exceptions noted below.

### DR BSC-02-D-066

BAB000000-01717-2200-00005, paragraph 3.0, Methodology states in part: ". . . After approval of this DIE, the Safety Assurance (SA) department will review implementing documents (e.g., design specifications and design drawings). These reviews are conducted to:

- 1) Ensure that the original basis for the evaluation (i.e., best available design information) adequately bounds the final scope of activities to be conducted in the Subsurface Exploratory Studies Facility (ESF)";

Contrary to the above requirement, a review of specifications: BABEE0000-01717-6300-02165, BABEE0000-01717-6300-02341, Drawing BABEAF000-01717-2100-40361, and Work Order #13663 reveal that they have not undergone SA reviews as required by the governing DIE.

## 10. SURVEILLANCE CONCLUSIONS: (Continued)

### DR BSC-02-D-067

NWI-ESF-037, paragraph 3.1.4 states: "Safety Assurance Department - Receive request for use of refrigerants to be used within the conceptual design area and process and approved use in accordance with YAP-2.8Q, *Tracers, Fluids, and Materials Data Reporting and Management.*"

In addition, paragraph 3.1.10 states: "Requestor - When the need for use of a refrigerant is recognized, a request must be submitted to the EPD for processing in accordance with PRO-TS-007; if use is within the conceptual design area, submit request to the Safety Assurance Department."

Contrary to the above requirements, a review of the Hazardous Materials Inventory Document and conversations with the Safety Assurance Personnel, reveals that Hot Shot R 414B, a refrigerant, has not been evaluated and approved for use in the conceptual design area by the SA group.

### Recommendations

There are numerous lists of inventory and itemized materials related to the ESF: e.g. List of Approved Tracers and Materials and Fluids, Hazardous Material Inventory List, and a "K List" (a materials inventory relic of the Kiewit/Parsons Brinkeroff era, but nonetheless functional and a user friendly classification to craft personnel). These three lists are unique and owned by three different organizations that may or may not interface with each other. In the spirit of Integrated Safety Management, it is recommended that these lists be combined into one user friendly database. The database would provide an all inclusive list of materials that have undergone both an Environmental Compliance and SA review. This would preclude duplication of efforts and the chance of material not getting the proper regulatory or safety review.