



QA: QA

Mark T. Peters, Manager  
Science & Engineering Testing  
Bechtel SAIC Company, LLC  
1180 Town Center Drive  
Las Vegas, NV 89144

**BECHTEL SAIC COMPANY, LLC (BSC) QUALITY ASSURANCE (QA) SURVEILLANCE  
REPORT BSCQA-02-S-17 OF CONTROL OF MEASURING AND TEST EQUIPMENT  
(M&TE)**

Enclosed is the Surveillance Report BSCQA-02-S-17, conducted by BSC QA on 04/01-08/2002 at the Lawrence Livermore National Laboratory (LLNL) facilities in Livermore, California.

The purpose of the surveillance was to determine the adequacy and effectiveness of the work processes in the control of selected M&TE used for project work.

The surveillance identified two conditions adverse to quality relative to control of M&TE. The conditions are documented in Deficiency Report LLNL(B)-02-D-105 and Quality Observation LLNL(B)-02-O-004.

This surveillance is considered complete and closed as of the date of this letter. A response to this surveillance report is not required.

If you have any questions, please contact either Charlie Warren at (925) 423-6863 or Robert Hartstern at (702) 295-2675.

A handwritten signature in dark ink, appearing to read "D. T. Krishna".

Donald T. Krishna, Manager  
Quality Assurance

4/15/02

Date Signed

RFH:bw-0411022188

Enclosure:  
Surveillance Report BSCQA-02-S-17

*Wmsc9  
Warren*

April 15, 2002

Page 2

cc w/encl:

L. H. Barrett, DOE/HQ (RW-2) FORS  
G. K. Beall, BSC, Las Vegas, NV  
James Blaylock, BSC, Las Vegas, NV  
L. W. Bradshaw, Nye County, Pahrump, NV  
Margaret Chu, DOE/HQ (RW-1) FORS  
J. R. Dyer, DOE/YMSCO, Las Vegas, NV  
Leonard Fiorenzi, Eureka County, Eureka, NV  
Birdie Hamilton-Ray, DOE/YMSCO, Las Vegas, NV  
R. F. Hartstern, BSC, Las Vegas, NV  
K. G. Hess, BSC Las Vegas, NV  
Geneva Hollis, Nye County, Tonopah, NV  
D. G. Horton, DOE/YMSCO, Las Vegas, NV  
Alan Kalt, Churchill County, Fallon, NV  
D. T. Krisha, BSC, Las Vegas, NV  
Josie Larson, White Pine County, Ely, NV  
Robert Latta, NRC, Las Vegas, NV  
R. R. Loux, State of Nevada, Carson City, NV  
S. W. Lynch, State of Nevada, Carson City, NV  
George McCorkell, Esmeralda County, Goldfield, NV  
S. P. Mellington, DOE/YMSCO, Las Vegas, NV  
Mifflin and Associates, Las Vegas, NV  
Ram Murthy, DOE/OQA, Las Vegas, NV  
Irene Navis, Clark County, Las Vegas, NV  
Andrew Remus, County of Inyo, Independence, CA  
Judy Shankle, Mineral County, Hawthorne, NV  
N. K. Stablein, NRC, Rockville, MD  
Lola Stark, Lincoln County, Caliente, NV  
N. H. Williams, BSC, Las Vegas, NV  
B. L. Wilson, BSC, Las Vegas, NV  
Mickey Yarbrow, Lander County, Battle Mountain, NV

cc w/encl:

C. C. Warren, LLNL, Livermore, CA

## OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

QA: QA

ORIGINAL  
red

## QUALITY ASSURANCE SURVEILLANCE REPORT

Page 1 of 3

QA Surveillance Number:  
BSCQA-02-S-17

Complete only applicable items.

1. Organization/Location LLNL/Livermore, CA	2. Subject Control of Measuring and Test Equipment	3. Date(s) Performed 04/01-08/02
4. Surveillance Scope Review the control of selected M&TE used for project work to evaluate compliance to requirements.		
5. Requirement(s) (Procedure, Specification, Drawing, etc.) AP-12.1Q, Revision 0, ICN 2, Control of Measuring and Test Equipment and Calibration Standards		6. Originator C. C. Warren  Team Members None

## SURVEILLANCE RESULTS

## 7. Description/Details

This surveillance was performed by observing Measuring and Test Equipment (M&TE) that is being used in experiments or is available for use in experiments in four Waste Package Material Testing Laboratories where Yucca Mountain Project work is being conducted. The four laboratories are identified by LLNL building number and room number on the below "List of M&TE Evaluated."

The following requirements of AP-12.1Q were examined for each piece of M&TE:

- Calibration stickers were attached
- Calibration stickers included required information
- Calibration documentation for equipment was consistent with sticker information
- Calibration documentation included required information
- The list of M&TE maintained by the M&TE Custodian accurately represented the calibration status of equipment
- The list of M&TE included all required information
- Calibration was current or if not current, M&TE was tagged and an Out of Calibration Report (OCR) was issued, as required

In addition, the surveillance followed up on resolution of scientific notebook review comments addressing the control of M&TE documented in Scientific Notebook LLNL-SCI-470-V1, Hydrogen Fluoride Laboratory Experiments.

(See Addendum 1)

8. Persons (and their organizations) Contacted Martha Kohler, CRWMS LLNL Manager Cynthia Palmer, LLNL Waste Package Material Testing Technical Area Lead Wunan Lin, LLNL Near-Field Environment & Engineered Barrier System Technical Area Lead (See Addendum 2)	9. CAQ/NCR/TE Issued <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Recommendation Issued <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (See Addendum 3)	CAQ/NCR/TE Number(s): LLNL(B)-02-D-105 & CIRS Number(s):
--	---	--

10. Surveillance Conclusions <input type="checkbox"/> SAT <input checked="" type="checkbox"/> UNSAT Overall, the Surveillance found effective implementation of AP-12.1Q with the exception of two unsatisfactory conditions adverse to quality as described below:
---

With exception of the below Condition Adverse to Quality (CAQ) that addresses incomplete documentation for user calibrations of reference electrodes, all 55 pieces of M&TE evaluated in the four Waste Package Material Testing Laboratories were found to be in compliance with the requirements of AP-12.1Q.

Four calibration data sheets documenting user calibrations of Ag/AgCl reference electrodes listed in this report did not include calibration due dates/intervals, the procedure used to perform the calibrations, specified tolerances and results of the calibrations including statements of acceptability. This condition was determined to be isolated, non significant, non impacting to test results and

(See Addendum 4)

11. Completed By (Originator) (Print Name) C. C. Warren Stephen R. Dana for	Signature 	Date 4/12/02
12. Reviewed By (Appropriate QA Manager) (Print Name) ROBERT P. KEELE	Signature 	Date 4/12/02
13. Approved By (QVM) (Print Name) Robert F. Hartsen	Signature 	Date 4/15/02

**Addendum 1**QUALITY ASSURANCE SURVEILLANCE REPORT ADDENDUM  
QA Surveillance Number: BSCQA-02-S-17 04/01-08/2002

Page 2 of 3

ORIGINAL  
red**BLOCK 7 Continued:  
LIST OF M&TE EVALUATED****Building 435, Room 1159, Electrochemical/Slow Strain Rate/Constant Strain Rate Lab**

M&TE Type	Unique Identifier	Calibration Date	Calibration Due Date	Comments
Thermocouple	AB 5727	05/14/01	05/14/02	
Thermocouple	AB 5728	05/14/01	05/14/02	
Thermocouple	AA 2185	02/08/01	02/08/02	Tagged, OCR 2002-015
Thermocouple	AA 2186	02/08/01	02/08/02	Tagged, OCR 2002-016
Flow Meter	AB 5686	05/22/01	05/22/02	
Flow Meter	AB 5687	05/22/01	05/22/02	
Flow Meter	993613	01/12/00	01/12/01	Tagged, OCR 2001-010
Flow Meter	993615	01/12/00	01/12/01	Tagged, OCR 2001-012
Fluke Hydra Series II	Y8065	05/11/00	05/11/01	Tagged, OCR 2001-032
Load Cell	UK 611	12/18/01	12/18/02	
Testing Machine	8562/H0712	12/18/01	12/18/02	
Load Cell	15046	09/21/01	09/21/02	
Testing Machine	8821S/H0257	09/18/01	09/18/02	
Load Cell	13340	12/20/01	12/18/02	
Testing Machine	8872/H2029	12/18/01	12/18/02	
COD Gauge	359	09/18/01	09/18/02	
Static Load Cell	UK 531	12/20/01	12/20/02	

**Building 435, Room 1153B, Electrochemical/Corrosion Potential Lab**

M&TE Type	Unique Identifier	Calibration Date	Calibration Due Date	Comments
Thermocouple	Y 5526	03/06/01	03/06/02	Tagged, OCR 2002-020
Thermocouple	Y 8061	05/10/00	05/10/01	Tagged, OCR 2001-020
Thermocouple	AA 9206	11/09/00	11/09/01	Tagged, OCR 2002-001
Thermocouple	Y 5528	03/06/01	03/06/02	Tagged, OCR 2002-019
Thermocouple	AB 5715	05/15/01	05/15/02	
Data Aquis. Unit	AA 2916	03/23/01	03/23/02	Tagged, OCR 2002-022
Data Aquis. Unit	AB 9823	10/31/01	10/31/02	
Data Aquis. Unit	AA 2917	03/28/01	03/28/02	Tagged, OCR 2002-021
Ag/AgCl Electrode	18	04/03/01	04/03/02	Tagged, OCR 2002-023
Ag/AgCl Electrode	19	04/03/01	04/03/02	Tagged, OCR 2002-024
Ag/AgCl Electrode	23	04/03/01	04/03/02	Tagged, OCR 2002-028
Ag/AgCl Electrode	24	04/03/01	04/03/02	Tagged, OCR 2002-032
Ag/AgCl Electrode	26	04/03/01	04/03/02	Tagged, OCR 2002-030

**Building 435, Room 1006, Electrochemical Lab**

M&TE Type	Unique Identifier	Calibration Date	Calibration Due Date	Comments
Potentiostat	14103	02/14/02	02/14/03	
Potentiostat	16120	02/14/02	02/14/03	
Potentiostat	15108	10/24/01	10/24/02	
Potentiostat	15110	10/24/01	10/24/02	
Potentiostat	14105	07/31/01	07/31/02	
Multimeter	Z 6450	10/31/01	10/31/02	
Thermocouple	AB 5709	05/14/01	05/14/02	
Thermocouple Module	Y 8051	05/10/01	05/10/02	
Ag/AgCl Electrode	21	04/03/01	04/03/02	Tagged, OCR 2002-033
Ag/AgCl Electrode	42	01/07/02	01/07/03	
Ag/AgCl Electrode	45	01/07/02	01/07/03	
Ag/AgCl Electrode	50	01/07/02	01/07/03	
Optical Comparator	TB12061861	04/08/02	04/08/03	

ADDENDUM 1 BLOCK 7 Continued:

Building 435, Room 1153A and Building 446, Room 101, Microbiologically Influenced Corrosion Labs

M&TE Type	Unique Identifier	Calibration Date	Calibration Due Date	Comments
Incubator, Shaker	090420328	02/04/02	08/04/02	
Incubator, Top	0100597	02/04/02	08/04/02	
Incubator, Bottom	0100597	02/04/02	08/04/02	
Incubator, Low Temp	0303401	02/06/02	08/06/02	
Balance, PB 302	1115402374	06/12/01	06/12/02	
Balance, AB 204	1117342843	06/12/01	06/12/02	
Pipette	K15417H	12/28/01	06/28/02	
Pipette	Horn 30	03/28/02	09/28/02	
Pipette	Horn 35	03/28/02	09/28/02	
Pipette	Horn 5	02/06/02	08/06/02	
Pipette	Horn 13	02/06/02	08/06/02	
Thermometer	B99-132	09/14/01	09/14/02	

Addendum 2

BLOCK 8 Continued:

John Estill, LLNL Waste Package Material Testing Deputy  
Technical Area Lead  
Tanya Reshel, LLNL M&TE Custodian  
Joanne Horn, LLNL Principal Investigator  
Carl Steefel, LLNL Principal Investigator  
Ken Evans, LLNL Chemist  
Victoria Dias, LLNL Microbiologist  
Celena Carrillo, LLNL Microbiologist  
Steve Gordon, LLNL Technologist

Addendum 3

BLOCK 9 Continued:

LLNL(B)-02-O-004

Addendum 4

not to require a cause determination or action to preclude recurrence. Accordingly, this condition was documented on

BLOCK 10 Continued:

OCRWM Quality Observation LLNL(B)-02-O-004. Remedial action for this condition was completed during the surveillance by the person that originally completed the data sheets adding required information.

A follow-up on resolution of M&TE related comments to Scientific Notebook LLNL-SCI-470-V1, Hydrogen Fluoride Laboratory Experiments on the Origin of HF Gas in the DST, indicated that comments had not been resolved. Notably, non-calibrated M&TE had been used to perform work and this M&TE had not been documented on Out-of-Calibration Reports (OCRs) so that impacts to data and the need for corrective action could be evaluated and documented. As a result, OCRWM Deficiency Report (DR) LLNL(B)-02-D-105 has been issued to identify the CAQs summarized below.

- M&TE used in experiments was not calibrated at established intervals or prior to use against reference calibration standards having traceability to nationally recognized standards.
- M&TE used in experiments was not maintained on the LLNL list of M&TE.
- Out-of-calibration conditions for M&TE used in experiments were not documented on OCRs so that impact to data taken with M&TE could be determined.

Because four of the five laboratories/experiments evaluated were found to be in compliance with selected procedural requirements, it has been determined that overall, LLNL has effectively implemented the requirements of AP-12.1Q for calibration and control of M&TE. Implementation of AP-12.1Q for Laboratory Experiments on the Origin of HF GAS in the DFT was found not to be effective.