



## Department of Energy

Washington, DC 20585

JUL 25 1997

QA: L

L. D. Foust, Technical Project Officer  
for Yucca Mountain Site  
Characterization Project  
TRW Environmental Safety Systems, Inc.  
1180 Town Center Drive, M/S 423  
Las Vegas, NV 89134

### ISSUANCE OF SURVEILLANCE RECORD SNL-SR-97-040 RESULTING FROM THE OFFICE OF QUALITY ASSURANCE (OQA) SURVEILLANCE OF SANDIA NATIONAL LABORATORIES (SNL)

Enclosed is the Quality Assurance Surveillance Record SNL-SR-97-040 conducted by the OQA  
of the SNL, in Albuquerque, New Mexico, from June 30 - July 2, 1997.

The purpose of the surveillance was to verify compliance to requirements specified in  
Implementing Documents related to control of Measuring and Test Equipment.

One Deficiency Report (DR) was issued as a result of the surveillance, DR YM-97-D-068, which  
addressed inadequate documentation requirements for calibration services.

This surveillance is considered completed and closed as of the date of this letter. A response to  
the surveillance record and any documented recommendations is not required; however, the open  
DR will continue to be tracked until it is closed to the satisfaction of the quality assurance  
representative and the Director, OQA.

If you have any questions, please contact either James Blaylock at (702) 794-1420 or  
Patrick V. Auer at (702) 794-1495.

*James Blaylock*  
Donald G. Horton, Director  
Office of Quality Assurance

OQA:JB-1978

Enclosure:  
Surveillance Record SNL-SR-97-040

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JUL 25 1997

cc w/encl:

L. H. Barrett, DOE/HQ (RW-1) FORS  
R. A. Milner, DOE/HQ (RW-2) FORS  
T. A. Wood, DOE/HQ (RW-55) FORS  
J. O. Thoma, NRC, Washington, DC  
W. L. Belke, NRC, Las Vegas, NV  
R. R. Loux, NWPO, Carson City, NV  
S. W. Zimmerman, NWPO, Carson City, NV  
Jim Regan, Churchill County Commission, Fallon, NV  
D. A. Bechtel, Clark County, Las Vegas, NV  
Susan Dudley, Esmeralda County, Goldfield, NV  
Sandy Green, Eureka County, Eureka, NV  
Tammy Manzini, Lander County, Austin, NV  
Kim Packard, Mineral County, Hawthorne, NV  
P. A. Niedzielski-Eichner, Nye County, Chantilly, VA  
Wayne Cameron, White Pine County, Ely, NV  
B. R. Mettam, County of Inyo, Independence, CA  
Mifflin and Associates, Las Vegas, NV  
T. H. Chaney, USGS, Denver, CO  
J. F. Graff, OQA/SNL, Albuquerque, NM, M/S 1325  
M. J. Clevenger, M&O/LANL, Los Alamos, NM  
D. C. Mangold, M&O/LBNL, Berkeley, CA  
R. E. Monks, M&O/LLNL, Livermore, CA  
F. J. Schelling, M&O/SNL, Albuquerque, NM, M/S 1325  
Andrew Orrell, M&O/SNL, Las Vegas, NV  
H. R. Cox, M&O, Las Vegas, NV  
L. R. Hayes, M&O, Las Vegas, NV  
R. A. Morgan, M&O, Las Vegas, NV  
R. W. Clark, DOE/OQA, Las Vegas, NV

OFFICE OF  
RADIOACTIVE WASTE MANAGEMENT  
U.S. DEPARTMENT OF ENERGY  
WASHINGTON, D.C.

QUALITY ASSURANCE SURVEILLANCE RECORD

SURVEILLANCE DATA

<sup>1</sup>ORGANIZATION/LOCATION:  
Sandia National Laboratories  
(SNL), Albuquerque, New  
Mexico

<sup>2</sup>SUBJECT:  
Control of Measuring and Test Equipment  
(M&TE)

<sup>3</sup>DATE:  
June 30 - July 2, 1997

<sup>4</sup>SURVEILLANCE OBJECTIVE:  
Verify compliance to requirements specified in implementing documents related to control of M&TE.

<sup>5</sup>SURVEILLANCE SCOPE:  
Selected M&TE used by SNL in performing scientific investigations (Q-work)  
associated with Yucca Mountain Site Characterization.

<sup>6</sup>SURVEILLANCE TEAM:  
Team Leader:

Patrick V. Auer  
Additional Team Members:  
N/A

NOTE: This is part of a series of surveillances of Control of M&TE at the Labs/  
U.S. Geological Survey. When the series of surveillances are complete, there will  
be a summary report issued.

<sup>7</sup>PREPARED BY:  
Patrick V. Auer 6/5/97  
Surveillance Team Leader Date

<sup>8</sup>CONCURRENCE:  
Donald G. Horton 6/11/97  
Director, OQA Date

SURVEILLANCE RESULTS

<sup>9</sup>BASIS OF EVALUATION/DESCRIPTION OF OBSERVATIONS:

On June 30 through July 2, a surveillance was conducted at SNL facilities in Albuquerque, New Mexico, to assess the implementation of SNL Quality Assurance Implementing Procedures (QAIP) as they relate to the control of M&TE. The Yucca Mountain Site was not visited during this surveillance, since M&TE control at the Site was addressed during Office of Quality Assurance (OQA) Surveillance SNL-SR-97-032. However, procurement related activities for field instrumentation not evaluated during SNL-SR-97-032 were evaluated during this surveillance.

See Pages 2-4

<sup>10</sup>SURVEILLANCE CONCLUSIONS:

Based on document reviews and personnel interviews, it has been determined that the overall effectiveness and adequacy of M&TE control is in accordance with the Office of Civilian Radioactive Waste Management and SNL quality assurance procedures, and is considered satisfactory. One deficiency and one recommendation were generated as a result of this surveillance.

See Page 5

<sup>11</sup>COMPLETED BY:  
Patrick V. Auer 7/9/97  
Surveillance Team Leader Date

<sup>12</sup>APPROVED BY:  
Donald G. Horton 7/25/97  
Director, OQA Date

ENCLOSURE

**9. BASIS OF EVALUATION/DESCRIPTION OF OBSERVATIONS: (continued)**

**SNL QAIP 12-1, Revision 5 Measuring and Test Equipment Control**

**1. Specific calibration procedures have been established and adequately address the following topics:**

- type of calibration
- intervals of calibration (including one-time-only)
- required material and equipment
- required accuracy
- calibration standards
- acceptance criteria
- documentation of results
- technical manuals
- software evaluation
- commercial devices

Technical procedures (TP) reviewed include the following:

TP-201, Rev. 0, ICN 1	Calibration of Mechanical and Electrical Measuring Equipment
TP-202, Rev. 1	Measurement of Thermal Conductivity of Geologic Specimens Using the Guarded Heat-Flow Method
TP-203, Rev. 2	Measurement of Thermal Expansion of Geologic Samples
TP-207, Rev. 1	Calibration of Temperature Sensors Used for Thermal Properties
TP-215, Rev. 1	Calibration of Lawson Board Systems

**2. Documentation of M&TE calibration includes the following information as required by the procedure:**

- The name and serial number identity of the device calibrated;
- The date of the calibration;
- Identification of the calibration procedure and revision used;
- Calibration data: standards values versus device readings;
- Identification of the calibration equipment and measurement standards used;
- A quantitative statement of the accuracy of the device, including results of the calibration and a statement of acceptability;
- The date the next calibration check is due; and
- The identification of the person responsible for the calibration function or who performed the calibration.

Calibration documentation for the following items was reviewed and found to satisfactorily address the above topics:

Thermocouple	Omega Type K	TDA/97/02/12-3
Thermocouple	Omega Type K	TDA/97/02/12-7
System Calibration	Holometrix TCHM-LT	TCA200LT, 2.0" diameter
System Calibration	Holometrix TCHM-LT	TCA200LT, 1.5" diameter
Transducer	LVDT	3518
Transducer	LVDT Pair	1124/1209

**3. Calibration and use of M&TE is in accordance with the requirements of the procedure for the following items:**

- Calibration is performed at prescribed intervals or prior to use;
- Calibration is performed by trained personnel; and
- Use of M&TE is documented.

The following test documentation included adequate description of the M&TE used:

**Specimen Data Sheet Sample Identification Number**

- ESF-SDM-MPBX3-85.3-C
- ESF-SDM-MPBX3-72.0-C
- ESF-SDM-MPBX1-62.0-C

**Vacuum Saturation Data Sheet**

- ESF-SDM-MPBX3-85.3-C
- ESF-SDM-MPBX3-72.0-C
- ESF-SDM-MPBX1-62.0-C

4. M&TE identification and labeling are in accordance with the procedure requirements for the following items:

- Is uniquely identified
- Is labeled, tagged, or otherwise suitably marked or documented to indicate due date or interval of the next calibration.

The following instruments were checked and were satisfactorily identified and labeled:

<u>ID number</u>	<u>Instrument Name</u>
234546	Mettler PM400 Balance
23551	Mettler PN200 Balance
211	MTS Load Cell
SNLA-775	LVDT Calibrator
Z18222	Gage Blocks
SNLA-513	Weight Set
3518	Transducer
22851	Thermocouple
SNL-2338	Vernier Calipers
23500	Thermocouple

5. The Deficiency Report (DR) process (AP-16.1Q) is used when M&TE is found to be out of calibration. The evaluations are to address the validity of previous results obtained or data gathered since the last calibration of the device(s). No implementation of this process was observed.
6. Documentation of calibrations performed by suppliers address the following topics:
- Calibration services are performed by vendors on the Qualified Suppliers List;
  - Purchase documents specify appropriate calibration documentation information, except as noted in DR YM-97-D-068;
  - Completeness of calibration documentation, except as noted in DR YM-97-D-068; and
  - SNL review and acceptability statement, except as noted in DR YM-97-D-068.

Review of procurement documentation and calibration documentation verified that the above topics had been satisfactorily addressed, except as noted, for the following suppliers of calibration services:

Geokon, Inc.  
Bechtel Nevada  
Primary Standards Laboratory (SNL)

### **SNL QAIP 6-1, Revision 3, Document Control System**

Technical procedures are controlled in accordance with procedure requirements for the following topic:

- Availability at work location.

Review of the following work activity locations verified the requirements of the above topic had been satisfactorily performed:

- Geomechanical Laboratory
- Thermal Conductivity Laboratory
- Thermal Expansion Laboratory.

### **SNL QAIP 20-1, Revision 5, Technical Procedures**

Technical procedures were prepared in accordance with requirements of the procedure for the following topics:

- Use of references
- Description of methods
- Identification of equipment
- Independent technical review
- Quality assurance review.

Procedures reviewed included:

- SNL TP-202, Revision 1
- SNL TP-203, Revision 2
- SNL TP-215, Revision 1
- SNL TP-257, Revision 0

### **SNL QAIP 2-5, Revision 4, Training**

Personnel have completed training to procedure QAIP 12-1, Revision 5, and applicable technical procedures for M&TE calibration. Review of training records verified that the following personnel had completed required training:

G. T. Barker	N. S. Brodsky
L. S. Costin	R. D. Hardy

### **Personnel contacted during the course of the surveillance:**

Ron Price, Senior Technical Staff, SNL  
Joe Schelling, Engineering Assurance, SNL  
Tim George, Technical Staff, SNL  
Robert Hardy, Geomechanics Laboratory, SNL  
Lawrence Carlson, Geomechanics Laboratory, SNL  
Larry Costin, Laboratory Supervisor, SNL  
Glenn Barker, Thermal Laboratory, SNL  
Jim Graff, OQA/SNL

**10. SURVEILLANCE CONCLUSIONS: (continued)**

**DEFICIENCY: (YM-97-D-068)**

- Purchase order number AT-9239, issued to Geokon, Inc., did not contain an adequate description of documentation requirements for M&TE calibration services.
- Standards Laboratory Reports (Recall Nos. SNLA-775, Z1822, SNLA-513, test dates 2/1/96, 2/6/97, 2/7/97) issued to SNL by the Primary Standards Laboratory (PSL) do not contain reference to the implementing document used to perform the calibration.
- Documentation of acceptance was not available to verify acceptance of calibration services provided by the PSL.

**RECOMMENDATION:**

Recommend obtaining calibration documentation related to YMP calibrations being maintained by PSL and incorporating them into the test documentation along with the other calibration documentation.