

GEOSCIENCES AND ENGINEERING DIVISION NONCONFORMANCE REPORT

Project No. 20.OHD20.131

NCR No. 2006-13

PART 1: DESCRIPTION OF NONCONFORMANCE

Picoammeter (model: Keithley, s/n 509163, AN001437) was found to be out of tolerance per SwRI Cal. Lab. during scheduled calibration. Measurement difference was greater than ± 0.077 at 19 nA and greater than ± 0.0080 at 1.9 nA.

Initiated by: Don Bannon

Date: 25 May 2006

Action Required by: Xihua He

Response Due Date: 09 JUNE 2006

PART 2: PROPOSED DISPOSITION AND CORRECTIVE ACTION

Disposition: No measurements were affected by this out of tolerance condition.

Basis of Disposition: The picoammeter was found to be out of tolerance in nano-Amp range. At 19 nA and 1.9 nA the picoammeter had measurement errors of -0.126 nA and -0.0108 nA, respectively. The picoammeter was not used to collect data for Geosciences and Engineering Division projects since the last calibration.

Action to Correct Nonconformance: Picoammeter was adjusted to within tolerance by SwRI Calibration Lab. Instrument is placed into service. If the instrument is not used and continues fail calibration, it will be removed from the system.

Proposed by: Xihua He

Target date for completion: 09 JUNE 2006

Date: 6/1/06

PART 3: APPROVAL

Manager: [Signature]

Date: 6/1/06

Director of QA: [Signature]

Date: 6/1/06

Comments/Instructions:

PART 4: CLOSE OUT

Comments:

*no additional verification
is needed*

Verified by: [Signature]

Date: 6/1/06

Distribution:

Original-CENTER QA Records

ORIGINATOR

PRINCIPAL INVESTIGATOR X. He

MANAGER V. Jain

ASSISTANT DIRECTOR S. Mohanty

SOUTHWEST**RESEARCH****INSTITUTE**

6220 CULEBRA ROAD • POST OFFICE DRAWER 28510 • SAN ANTONIO, TEXAS, 78228-0510 • TEL (210) 522-5215 • FAX (210) 522-3699

To: Don Bannon, Div20, B57
From: Walt Hill, Metrology Group Leader
Institute Calibration Laboratory
Date: May 24, 2006
Subject: Out-of-tolerance Notice

The purpose of this notice is to alert you of a condition, which may have caused erroneous measurements affecting safety or the quality of products or services your organization provides. The attached as-found readings are provided for your evaluation to determine if the instrument listed below had an impact and if further action is required.

When the as-found results are near the specification limit, +/- a margin less than the measurement uncertainty, it is not possible to state in-tolerance or out-of-tolerance with a 95% level of confidence. It is the Institute Calibration Laboratory policy that the client is made aware of this situation because the end-user is taking some of the risk that the instrument listed below may not meet the end-user measurement requirements.

Your review/evaluation should be conducted in accordance with your organizational quality policy and procedural requirements. If we can be of further assistance, please contact the Calibration Laboratory at 522-5215.

Manufacturer: Keithley

Model: 485

Description: Picoammeter

Serial Number: 509163

Asset Number: 1437

User ID Number:

Last Calibration: June 8, 2005

Date Received for Service: May 23, 2006 **Work Order Number:** 303069439

Service Requested: Scheduled calibration

Remarks: Unit failed low-end ammeter checks.

OUT OF TOLERANCE

Southwest Research Institute
Calibration Laboratory
Measurement Report

Work Order:	303069439	Mfr:	Keithley	Technician:	PRD
Asset No:	001437	Model:	485		
Serial No:	509163	Type:	Picoammeter	Cal Date:	24-May-06
Remarks:					

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Found
DC Current	mAmp	mAmp	mAmp	mAmp	mAmp	Result
	1.9000	1.9002	0.0002	0.0020	0.00012	Pass
	uAmp	uAmp	uAmp	uAmp	uAmp	
	190.00	190.04	0.04	0.20	0.013	Pass
	19.000	19.003	0.003	0.020	0.0013	Pass
	1.9000	1.9005	0.0005	0.0030	0.00013	Pass
	nAmp	nAmp	nAmp	nAmp	nAmp	
	190.00	190.07	0.07	0.39	0.012	Pass
	19.000	18.874	-0.126	0.077	0.0018	Fail
	1.9000	1.8892	-0.0108	0.0080	0.0014	Fail

END OF REPORT



SOUTHWEST RESEARCH INSTITUTE®

6220 Culebra Road, P.O. Drawer 28510
Institute Quality Systems
Institute Calibration Laboratory
Phone: 210-522-5215 Fax 210-522-4834



Certificate of Calibration

Submitted By: DIV20

Address: B57

Contact: DON BANNON

Manufacturer Model: KEITHLEY 485

Description: PICOAMMETER

Serial No: 509163

Asset No: 001437

Procedure: KEITHLEY 485 - 23 MAY 2006

Work Order: 303069439

Date Issued: May 24, 2006

Calibration Date: May 24, 2006

*Calibration Due: May 24, 2007

Calibration Location: Bldg. 64

Environment: Temp. 74.0°F Hum. 42 %RH

**Data Type: AS-LEFT

This certificate documents traceability to the National Institute of Standards and Technology (NIST) and the International System of Units (SI). The Laboratory quality system conforms to ISO/IEC 17025, 1999, ANSI/NCSL Z540-1-1994 and relevant requirements of the ISO 9000-2000 standard. This certificate shall not be reproduced, except in full, without the written approval of the Southwest Research Institute Calibration Laboratory. This certificate shall not be used to claim product endorsement by Southwest Research Institute, American Association for Laboratory Accreditation (A2LA) or any agency of the U. S. Government. Results of this calibration relate only to the instrument described above at the time of calibration and does not imply any long term stability of the instrument.

*Determined by the customer, does not imply the instrument will remain within tolerance as any number of factors may cause an out-of-tolerance condition before this date. **Found/Left = adjustment and/or repair was not required, As Left = adjusted and/or repaired was required. The client has sole responsibility for determination of in-/out-of-tolerance or compliance/noncompliance. See Remarks or attached Measurement Report with the same Work Order number for data.

Reported uncertainty calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM) and represents an expanded uncertainty with a coverage factor of k=2 to approximate a 95% confidence level.

Remarks: None

Standards Used

Asset No.	Serial No.	Manufacturer	Model	Description	Cal Due
000101	86052	BIDDLE	72-5346-1	DECADE RESISTOR	Jan 05, 07
000182	5200003	FLUKE	5700A/EP	CALIBRATOR	Jun 15, 06

Reviewed by: blt () jrg () pwc () wgh ()

Metrology Technician

m:\a2la1.rpt Rev date August 15, 2005

Measurements by: Paul Depmore

Metrology Technician

Southwest Research Institute
Calibration Laboratory
Measurement Report

Work Order:	303069439	Mfr:	Keithley	Technician:	PRD
Asset No:	001437	Model:	485		
Serial No:	509163	Type:	Picoammeter	Cal Date:	24-May-06
Remarks:					

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Left
DC Current	mAmp	mAmp	mAmp	mAmp	mAmp	Result
	1.9000	1.9002	0.0002	0.0020	0.00012	Pass
	uAmp	uAmp	uAmp	uAmp	uAmp	
	190.00	190.04	0.04	0.20	0.013	Pass
	19.000	19.003	0.003	0.020	0.0013	Pass
	1.9000	1.9005	0.0005	0.0030	0.00013	Pass
	nAmp	nAmp	nAmp	nAmp	nAmp	
	190.00	190.07	0.07	0.39	0.012	Pass
	19.000	19.000	0.000	0.077	0.0018	Pass
	1.9000	1.9009	0.0009	0.0080	0.0014	Pass

END OF REPORT