CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

NONCONFORMANCE REPORT

Project No. 20.06002.01.081 **NCR No.** 2004-05

PART 1: DESCRIPTION OF NONCONFORMANCE
Thermometer Model #15-166A (Serial Number A2000-130, Asset number 008109) was found to be out of tolerance during a normally scheduled calibration.

Initiated by: Darrell S. Dunn **Date:** 6/4/2004

PART 2: PROPOSED DISPOSITION AND CORRECTIVE ACTION

Disposition:
Accept data obtained in tests using this thermometer as is.

Basis of Disposition:
The thermometer had an error less than 1.0 degrees at 50, 100 and 150 °C. The thermometer should be accurate within 0.5 degrees. Thermometer was within calibration for the temperature range from -19 to 0 °C. Tests conducted with the thermometer were conducted in the range of 20 to 95 °C. Over this temperature range, the instrument error was less than 1degree. An error in test temperatures of less than 2 °C will not adversely affect the parameters measured during testing.

Action to Correct Nonconformance:
Mercury separation that caused thermometer to be out of tolerance was corrected and the thermometer was returned in tolerance.

Target date for completion: 6/11/2004

Proposed by: Darrell S. Dunn **Date:** 6/4/2004

PART 3: APPROVAL

Element Manager: _____ **Date:** 6/4/04

Director of QA: _____ **Date:** 6/4/04

Comments/Instructions:

PART 4: CLOSE OUT

Comments:
No further action required.

Verified by: _____ **Date:** 6/11/04

Distribution: D. Dunn
V. Jain
B. Sagar

SOUTHWEST RESEARCH INSTITUTE™

6220 Culebra Road, P.O. Drawer 28510
Institute Quality Systems
Institute Calibration Laboratory
Phone: 210-522-5215 Fax 210-522-3692

ACCREDITED
Certificate #
0972-01

Certificate of Calibration

Submitted By:	DIV20	**Work Order:**	444056809
Address:	B57	**Date Issued:**	Jan 8, 2004
Contact:	DARRELL DUNN	**Calibration Date:**	Jan 8, 2004
Manufacturer Model:	FISHER SCIENTIFIC 15-166A	****Calibration Due:**	Jul 8, 2004
Description:	THERMOMETER	**Calibration Location:**	Bldg. 64
Serial No:	A2000-130	**Environment:**	Temp. 76.0°F Hum. 33 %RH
Asset No:	008109	***As Found:**	OUT OF TOLERANCE
Procedure:	TEMPERATURE, MAY/03	***As Left:**	IN TOLERANCE

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 and ANSI/NCSL Z540-1-1994 which are equivalent to relevant requirements of the ISO 9000-1994 series of standards. This certificate may not be reproduced, except in full, without the written approval of the Southwest Research Institute Calibration Laboratory. The results of this calibration relate only to the individual instrument described above. This certificate shall not be used to claim product endorsement by the American Association for Laboratory Accreditation (A2LA) or any agency of the U. S. Government.

Uncertainty evaluation includes the item under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM). The uncertainty represents an expanded uncertainty using a coverage factor of k=2 to approximate a 95% confidence level. The calibration process provides a Test Uncertainty Ratio (TUR) of less than or equal to 25% (4:1) of the test limit unless otherwise stated in remarks or an attachment.

*The client has sole responsibility for determination of in/out of tolerance or compliance/noncompliance. An in/out of tolerance opinion is provided for your convenience based only on the Test Instrument (TI) reading(s) and limits as reported. The reported uncertainty relates only to the results at the time of calibration and does not imply any short or long term stability of the TI.

**Calibration interval is determined by the client and does not assure the instrument will remain within tolerance until this date. Any number of factors may cause the instrument to be out of tolerance before the next calibration date.

Remarks: None

Standards Used

Asset	Manufacturer	Model	Description	Cal Due
008920	HART SCIENTIFIC, INC	5614-17660-A-12	PLATINUM RTD	Feb 07, 04
009137	HART SCIENTIFIC, INC	1575	THERMOMETER	Feb 05, 04

Approved by: Walt Hill
Metrology Group Leader

Measurements by: Mark Romero
Metrology Technician

Southwest Research Institute
Calibration laboratory
Caibration Report

Work Order:	444056809	Mfr.	Fisher-Scientific	Technician	Mark Romero
Asset No.	008109	Model	15-166A		
Serial No.	A2000-130	Type.	THERMOMETER	Cal Date.	08-Jan-04
Remarks:	Corrected previous mercury seperation, which caused out of tolerance readings.				

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Left
Temperature	Deg C	Deg C	Deg C	Deg C	Deg C	Result
	-20.1	-19.9	0.2	0.5	0.6	Pass
	0.1	0.3	0.2	0.5	0.6	Pass
	50.0	49.9	-0.1	0.5	0.6	Pass
	100.0	99.8	-0.2	0.5	0.6	Pass
	150.0	149.8	-0.2	0.5	0.6	Pass

END OF REPORT

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA ROAD • POST OFFICE DRAWER 28510 • SAN ANTONIO, TEXAS, 78228-0510 • TEL (210) 522-5215 • FAX (210) 522-3692

To: Darrell Dunn, Div. 20/ Bldg. 57

From: Walt Hill, Metrology Group Leader
Institute Calibration Laboratory

Date: Jan. 07, 2004

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: Fisher-Scientific **Model:** 15-166A

Description: Thermometer **Serial Number:** A2000-130

Asset Number: 8109 **User ID Number:** None

Last Calibration: Jun. 03, 2003

Date Received for Service: Jan. 06, 2004 Work Order Number: 444056809

Service Requested: Scheduled calibration

Remarks: Out of tolerance readings caused by mercury seperation. See attached data.

Southwest Research Institute
Calibration laboratory
Caibration Report

Work Order:	444056809	Mfr.	Fisher-Scientific	Technician	Mark Romero
Asset No.	008109	Model	15-166A		
Serial No.	A2000-130	Type.	THERMOMETER	Cal Date.	07-Jan-04
Remarks:					

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Found
Temperature	Deg C	Deg C	Deg C	Deg C	Deg C	Result
	-19.9	-20.1	-0.2	0.5	0.6	Pass
	0.1	-0.2	-0.3	0.5	0.6	Pass
	50.0	49.3	-0.7	0.5	0.6	Fail
	100.0	99.1	-0.9	0.5	0.6	Fail
	149.9	149.0	-0.9	0.5	0.6	Fail

END OF REPORT