

# GEOSCIENCES AND ENGINEERING DIVISION NONCONFORMANCE REPORT

Project No. OHD20.131

NCR No. 2007-25

## PART 1: DESCRIPTION OF NONCONFORMANCE

Ertco ASTM 16C Thermometer, s/n 3110, AN011744 is out of tolerance per SwRI Cal. Lab. Unit failed at 200 °C test point.

Initiated by: Don Bannon

Date: 03Aug07

Action Required by: Xihua He

Response Due Date: 17Aug07

## PART 2: PROPOSED DISPOSITION AND CORRECTIVE ACTION

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

**Basis of Disposition:** As noted in the out of tolerance report, the out of tolerance condition was limited to the temperature of 195.36 °C. All other temperatures of the thermometer were in tolerance. At 195.36 °C the thermometer had measurement error of -2.4 °C versus a limit of +/- 0.5 °C. The error at 195.36 °C has no effect on previous measurements because no data were taken at temperatures above 150 °C using this thermometer. All the measurements at temperatures above 150 °C were taken by thermocouples.

**Action to Correct Nonconformance:** Because the thermometer will not be used for tests at temperatures above 150 °C, the calibration upper limit was lowered to 150 °C and the thermometer was returned to service. This thermometer will continue to be included on the calibration recall list.

Target date for completion: 8/8/07

Proposed by: Xihua He

Date: 8/13/07

## PART 3: APPROVAL

Manager: K. Aile

Date: Aug 13, 07

Director of QA: He

Date: 8/13/07

Comments/Instructions:

## PART 4: CLOSE OUT

Comments: No additional verification needed.

Verified by: He

Date: 8/13/07

### Distribution:

Original-CENTER QA Records

ORIGINATOR Bannon

PRINCIPAL INVESTIGATOR He

MANAGER He

ASSISTANT DIRECTOR Wohlschlag

Simpson

# **SOUTHWEST RESEARCH INSTITUTE**

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

**To:** Don Bannon, Div 20, Ext 5118  
**From:** Walt Hill, Metrology Group Leader  
Institute Calibration Laboratory

**Date:** Jul. 16, 2007  
**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:** Ertco **Model:** ASTM 16C  
**Description:** Thermometer **Serial Number:** 3110

**Asset Number:** 11744 **User ID Number:**

**Last Calibration:** Jul 5, 2006

**Date Received for Service:** Jul. 05, 2007 **Work Order Number:** 303075282

**Service Requested:** Scheduled calibration

**Remarks:** Out of tol at high end. See Measurement Report.

Southwest Research Institute  
Calibration Laboratory  
Measurement Report

Work Order:	303075282	Mfr:	Ertco	Technician:	blt
Asset No:	011744	Model:	ASTM16C		
Serial No:	3110	Type:	THERMOMETER	Cal Date:	16-Jul-07
Remarks:	Accuracy Reference ASTM E1 - 03a				

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Found
Temperature	°C	°C	°C	°C	°C	Result
30.0	30.05	30.0	-0.1	0.5	0.30	Pass
50.0	50.01	50.0	0.0	0.5	0.30	Pass
100.0	99.91	99.5	-0.4	0.5	0.30	Pass
150.0	150.00	149.5	-0.5	0.5	0.30	Pass
200.0	195.36	193.0	-2.4	0.5	0.30	Fail
END OF REPORT						

# Institute Calibration Laboratory Memorandum

July 16, 2007

**To:** Don Bannon  
Div 20 Ext 5118

**From:** Bob Trollinger  
Institute Calibration Laboratory

**Subject:** Review of Work Request Number 303075282

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The work you requested is pending your response. Please review the information provided and respond with your approval or further instructions for work to proceed. Return a signed copy via mail to Cal Lab Bldg 64, FAX (522-4834) or reply to this email. If you have questions please call extension 5215.

Unit Received: July 5, 2007	Description: Thermometer
Work Requested: Cal	Serial Number: 3110
Manufacturer: Ertco	Asset Number: 11744
Model: ASTM 16 C	User ID:
Cause of Review: Out of Tolerance at the high end. Over 2 °C out at 195 °C	

If no reply is received within 15-working days this unit will be returned as-is without further action.

Approved ( )      Disapproved return unit as-is ( )      Date: 26JULY2007 \_\_\_\_\_

Instructions ( ) \_\_\_\_\_

\_\_\_\_Bob—Please change the range over which calibration data is collected on assets 011744 through 011748. The current range is 30 – 200 degrees C. Please lower the upper limit to 150 degrees C.

\_\_\_\_\_  
Authorized by \_\_\_\_\_ DonBannon \_\_\_\_\_

\_\_\_\_\_  
Print or Type Name

\_\_\_\_\_  
Signature

Thank you for your timely response,

George Torres  
Institute Calibration Laboratory  
Ext.: 5215  
Fax: 522-4834  
Email: [gtorres@swri.org](mailto:gtorres@swri.org)



# SOUTHWEST RESEARCH INSTITUTE®

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



Calibration Laboratory  
Certificate #0972-01

## Certificate of Calibration

Submitted By: DIV20

Address: B57

Contact: DON BANNON

Manufacturer / Model: ERTCO / ASTM 16C

Description: THERMOMETER, GLASS

Serial No: 3110

Asset No: 011744

Procedure: THERMOMETERS, GLASS - 11 SEP 2006

Work Order: 303075282

Date Issued: Jul 26, 2007

Calibration Date: Jul 26, 2007

\*Calibration Due: Jul 26, 2008

Calibration Location: Bldg. 64

Environment: Temp. 73.0°F Hum. 40 %RH

\*\*Data Type: AS-LEFT

DivID/Location: N/A

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, 2005, 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: Limited Calibration - 30°C to 150°C

### Standards Used

Asset No.	Serial No.	Manufacturer	Model	Description	Cal Due
009137	A21208	HART SCIENTIFIC	1575	SUPER THERMOMETER	Dec 22, 07
010281	0421	HART SCIENTIFIC	5628	SPRT	Nov 30, 08

Reviewed by: ( ) wgh ( ) ssk ( ) jfg ( ) blt ( ) pwc  
Metrology Technician

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

Measurements by: Bob Trollinger  
Metrology Technician

Southwest Research Institute  
Calibration Laboratory  
Measurement Report

Work Order:	303075282	Mfr:	Ertco	Technician:	blt
Asset No:	011744	Model:	ASTM16C		
Serial No:	3110	Type:	THERMOMETER	Cal Date:	26-Jul-07
Remarks:	Accuracy Reference ASTM E1 - 03a Limited Calibration 30°C to 150°C				

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Left
Temperature	°C	°C	°C	°C	°C	Result
30.0	30.05	30.0	-0.1	0.5	0.30	Pass
50.0	50.01	50.0	0.0	0.5	0.30	Pass
100.0	99.91	99.5	-0.4	0.5	0.30	Pass
150.0	150.00	149.5	-0.5	0.5	0.30	Pass

END OF REPORT