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

A2LA ACCREDITED
Calibration Laboratory
Certificate #0972-01

Cost Center / Customer: DIV20 / DON BANNON
Mail Stop: B57
Manufacturer/Model: ERTCO / ASTM 1C
Description: THERMOMETER, GLASS
Serial Number: E98-273
Asset Number: 007303
Procedure: THERMOMETERS - 26 MAR 09

Work Order: 303100031
Date Issued: 3-Mar-2011
Date Calibrated: 2-Mar-2011
*** Date Due :** 2-Sep-2011
**** Results:** FOUND-LEFT
Temperature: 76.0 °F
Humidity: 39 %RH
Barometer: 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. **Data type found in this certificate or attached measurement report must be interpreted as: Found-left - adjustment and/or repair was not performed, As-found - data is before unit is adjusted and/or repaired, As-left - data is after adjusted and/or repaired was performed. The customer has sole responsibility for determination of in-/out-of-tolerance or compliance/noncompliance.

Measurement uncertainty calculated in accordance with the method described in the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM), for a confidence level of approximately 95 percent using a coverage factor of $k=2$.

Remarks: ASTM 1C limits ±0.5 °C

Standards Used

Asset #	Manufacturer	Model	Description	Cal Date	Due Date
009137	HART SCIENTIFIC	1575	SUPER THERMOMETER	10-Jan-2011	10-Jul-2011
013908	HART SCIENTIFIC	5628	SPRT	3-Feb-2011	3-Feb-2012

Walt Hill
Laboratory Manager

Mark Romero
Metrology Technician

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Southwest Research Institute
Calibration Laboratory
Measurement Report

Work Order:	303100031	Mfr.:	Fisher Scientific	Technician:	Mark Romero
Asset No.:	007303	Model:	15-166A	Type Data:	Found-left
Serial No.:	E98-273	Type:	Thermometer	Cal Date:	2-Mar-11
Remarks:					

Function/Range	Test Point	TI Reading	Difference	+/- Limit	+/- Uncertainty	Result	% Limit
Temperature	°C	°C	°C	°C	°C		
	-19.8	-20.1	-0.3	0.5	0.14	Pass	60%
	0.2	0.0	-0.2			Pass	40%
	50.0	50.1	0.1			Pass	20%
	99.9	100.0	0.1			Pass	20%
	150.0	149.7	-0.3			Pass	60%

END OF REPORT