

Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
(210) 522-5215
Department of Quality Assurance
Calibration Laboratory

Certificate of Calibration

11 July 2002

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FISHER SCIENTIFIC 15-166A
Description: THERMOMETER
Serial Number: H96-1090
Asset Number: 007666
Work Order Number: 444049284

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Standards used in this calibration, described in the referenced calibration procedure with associated uncertainties or tolerances, are traceable to the National Institute of Standards and Technology (NIST). Supporting documentation relative to traceability is on file and is available for examination upon request. This certificate is not to be reproduced, except in full, without the written approval of the Southwest Research Institute Department of Quality Assurance Calibration Laboratory.

The uncertainty of the calibration was sufficient to determine that the item met the manufacturer's published specifications unless stated otherwise below.

Ambient Conditions: Temperature: 81.0 Degrees Fahrenheit Humidity: 42 % RH


Calibration Date: 9 Jul 02 **Calibration Procedure:** CL-9, MAY99

Condition as Received: IN TOLERANCE

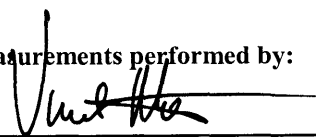
Condition as Returned: IN TOLERANCE

Remarks:

Approved by:


Walt Hill, Metrology Group Leader
Institute Calibration Laboratory

Measurements performed by:


Vince Morales, Technician

Southwest Research Institute
Calibration laboratory
Calibration Sheet.

Work Order:	444049284	Mfr.	Fisher Scientific	Technician	V.Morales
Asset No.	7666	Model	15-166A	Procedure	CL-9 5/99
Serial No.	H96-1090	Type.	THERMOMETER	Cal Date	7/9/02

Function/Range	Standard	TI Reading	Difference (1)	Test Limits+/-	Results
Temperature	Deg. C	Deg. C	Deg. C	Deg. C	
-20	-19.83	-20.00	-0.17	1.00	Pass
0	0.10	0.20	0.10	1.00	Pass
50	49.99	50.00	0.01	1.00	Pass
100	99.95	100.00	0.05	1.00	Pass
150	149.92	149.50	-0.42	1.00	Pass
0	-0.15	0.20	0.35	1.00	Pass



SOUTHWEST RESEARCH INSTITUTE™

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

Certificate of Calibration

Submitted By: DIV20

Address: B57

Contact: DARRELL DUNN

Manufacturer Model: FISHER SCIENTIFIC 15-166A

Description: THERMOMETER

Serial No: H96-1090

Asset No: 007666

Procedure: CL-9, 5/99

Work Order: 444051762

Date Issued: Jan 13, 2003

Calibration Date: Jan 13, 2003

****Calibration Due:** Jul 13, 2003

Calibration Location: N/A

Environment: Temp. 76.0°F Hum. 30 %RH

***As Found:** IN TOLERANCE

***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/NC SL 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	17660-A-120-6-W	PLATINUM RTD	Jul 06, 03
009137	HART SCIENTIFIC, INC	1575	THERMOMETER	Jul 06, 03

Approved by: Walt Hill
Metrology Group Leader
m:\Nona21a1.rpt Rev date 15, August 02

Measurements by: Vince Morales
Metrology Technician

Southwest Research Institute
Calibration laboratory
Measurement Record

Work Order:	444051762	Mfr.	FISHER SCIENTIFIC	Technician	V Morales
Asset No.	7666	Model	15-166A	Rev Level	0, 02-JUL-02
Serial No.	H96-1090	Type.	THERMOMETER	Cal Date.	13-Jan-03
Remarks:					

Function/Range	Test Point	TI Reading	Difference	Test Limits+/-	Uncertainty	Found/Left
Temperature	Deg C	Deg C	Deg C	Deg C	Deg C	Results
-20	-19.85	-19.90	-0.05	0.50	1.2	Pass
0	0.00	0.10	0.10	0.50	1.2	Pass
50	49.98	50.00	0.02	0.50	1.2	Pass
100	99.92	100.00	0.08	0.50	1.2	Pass
150	150.06	150.00	-0.06	0.50	1.2	Pass