Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
Department of Quality Assurance
Calibration Laboratory

Certificate of Calibration

27 August 1996

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: ERTCO 15-166A
Description: THERMOMETER
Serial Number: C96-377
Asset Number: 004993

Environmental Conditions

Temperature: 78.0 **Humidity:** 38%

Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

Calibration Date: 26 Aug 96 **Calibration Procedure:** WI-9-30-TH03

Interval: 6 months **Accuracy:** MFGR

Next Calibration Due: 26 Feb 97 **Received:** In Tolerance

Remarks:

Certificate # 22440 **Signed:**

LAST PAGE OF REPORT
Total Pages Printed: 1

Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
Department of Quality Assurance
Calibration Laboratory

Certificate of Calibration

21 February 1997

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: ERTCO 15-166A
Description: THERMOMETER
Serial Number: C96-377
Asset Number: 004993

Environmental Conditions

Temperature: 80.0 Deg. F **Humidity:** 40%

Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

Calibration Date: 20 Feb 97 **Calibration Procedure:** WI-9-30-TH03

Interval: 6 months **Accuracy:** +/-1 DEG.C

Next Calibration Due: 20 Aug 97 **Received:** In Tolerance

Remarks:

Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
000328	AZONI	A12001	RTD TEMPERATURE PROB	351477	12 Mar 97
000219	AZONI	A1011	RTD THERMOMETER	T1587-2078	12 Mar 97

Certificate # 24335 **Signed:**

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Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
Department of Quality Assurance
Calibration Laboratory

Certificate of Calibration

4 September 1997

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FISHERBRAND/ERTCO 15-166A
Description: THERMOMETER
Serial Number: C96-377
Asset Number: 004993

Environmental Conditions

Temperature: 80.0 Deg. F **Humidity:** 34%

Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

Calibration Date: 3 Sep 97 **Calibration Procedure:** WI-9-30-TH03

Interval: 6 months **Accuracy:** +/-1 DEG.C

Next Calibration Due: 3 Mar 98 **Received:** In Tolerance

Remarks:

Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
000219	AZONIX	A1011	RTD THERMOMETER	T1587-2078	24 Mar 98
000328	AZONIX	A12001	RTD TEMPERATURE PROB	351477	3 Apr 98

Certificate # 26588 **Signed:**

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Total Pages Printed: 1

Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
Department of Quality Assurance
Calibration Laboratory

Certificate of Calibration

10 March 1998

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FISHERBRAND/ERTCO 15-166A
Description: THERMOMETER
Serial Number: C96-377
Asset Number: 004993

Environmental Conditions

Temperature: 66.00 Deg. F **Humidity:** 26 % RH

Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

The uncertainty of the calibration was sufficient to determine that the instrument met the manufacturer's specifications.

Calibration Date: 10 Mar 98 **Calibration Procedure:** WI 9-30-TH03

Interval: 6 months

Next Calibration Due: 10 Sep 98 **Received:** In Tolerance

Remarks:

Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
000219	AZONIX	A1011	RTD THERMOMETER	T1587-2078	24 Mar 98
000328	AZONIX	A12001	RTD TEMPERATURE PROBE	351477	3 Apr 98

Signed:

Title:

LAST PAGE OF REPORT
Total Pages Printed: 1

Certificate # 28926

Southwest Research Institute
6220 Culebra Road
San Antonio, TX 78238
Department of Quality Assurance
Calibration Laboratory

ACCREDITED

Certificate # 0972-01

Certificate of Calibration

30 October 1998

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FISHERBRAND/ERTCO 15-166A
Description: THERMOMETER
Serial Number: C96-377
Asset Number: 004993

Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSL Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this calibration certificate have been determined in accordance with the laboratory's terms of accreditation unless stated otherwise in the report. The uncertainty of the calibration was sufficient to determine that the instrument met the manufacturer's specifications.

Temperature: 72.0 Deg. F
Humidity: 64 % RH
Calibration Date: 30 Oct 98
Calibration Procedure: 33K5-4-42-1 30 APR 97
Interval: 6 months
Received: IN TOLERANCE
Next Calibration Due: 30 Apr 99
Remarks:

Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
000219	AZONIX	A1011	RTD THERMOMETER	T1587-2078	16 Apr 99
000328	AZONIX	A12001	RTD TEMPERATURE PROBE	351477	27 Apr 99

Signed: Walt Stiles
Title: Cal Tech

LAST PAGE OF REPORT
Total Pages Printed: 1

Certificate # 31709

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

Accredited

Certificate # 0972-01

Certificate of Calibration

12 May 1999

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FISHER SCIENTIFIC 15-166A
Description: THERMOMETER
Serial Number: C96-377
Asset Number: 004993

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.

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results of this calibration certificate were determined in accordance with the terms of accreditation unless stated otherwise below.

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: 71.0 Degrees Fahrenheit Humidity: 50 % RH

Calibration Date: 12 May 99 **Calibration Procedure:** T.O.33K5-4-42-1, APR97

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

Jim Patterson, Supervisor or Walt Hill, Metrologist

Measurements performed by:

Ken Harp, Technician

Certificate # 34400

m:\a2la.rpt Rev date 10 Mar 99

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:	C96-377
Asset Number:	004993
Work Order Number:	444049286

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 MAY 99

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:	**444049286**	**Mfr.**	Fisher Scientific	**Technician**	V.Morales
Asset No.	**4993**	**Model**	15-166A	**Procedure**	CL-9 5/99
Serial No.	**C96-377**	**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**	**0.30**	0.20	1.00	Pass
50	**50.01**	**50.00**	-0.01	1.00	Pass
100	**99.95**	**100.00**	0.05	1.00	Pass
150	**149.92**	**149.90**	-0.02	1.00	Pass
0	**-0.04**	**0.30**	0.34	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	**Work Order:**	444051766
Address:	B57	**Date Issued:**	Jan 13, 2003
Contact:	DARRELL DUNN	**Calibration Date:**	Jan 13, 2003
Manufacturer Model:	FISHER SCIENTIFIC 15-166A	****Calibration Due:**	Jul 13, 2003
Description:	THERMOMETER	**Calibration Location:**	N/A
Serial No:	C96-377	**Environment:**	Temp. 76.0°F Hum. 30 %RH
Asset No:	004993	***As Found:**	IN TOLERANCE
Procedure:	CL-9, 5/99	***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	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:\Nona2la1.rpt Rev date 15, August 02

Measurements by: Vince Morales
Metrology Technician

Southwest Research Institute
Calibration laboratory
Measurement Record

Work Order:	444051766	Mfr.	FISHER SCIENTIFIC	Technician	V Morales
Asset No.	4993	Model	15-166A	Rev Level	0, 02-JUL-02
Serial No.	C96-377	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	-19.80	0.05	0.50	1.2	Pass
0	0.00	0.00	0.00	0.50	1.2	Pass
50	49.98	49.90	-0.08	0.50	1.2	Pass
100	99.92	99.90	-0.02	0.50	1.2	Pass
150	150.06	150.00	-0.06	0.50	1.2	Pass

SOUTHWEST RESEARCH INSTITUTE™

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Institute Quality Systems
Institute Calibration Laboratory
Phone: 210-522-5215 Fax 210-522-3692

Certificate of Calibration

Submitted By:	DIV20	**Work Order:**	444054469
Address:	B57	**Date Issued:**	Jul 16, 2003
Contact:	DARRELL DUNN	**Calibration Date:**	Jul 15, 2003
Manufacturer Model:	FISHER SCIENTIFIC 15-166A	****Calibration Due:**	Jan 15, 2004
Description:	THERMOMETER	**Calibration Location:**	Bldg. 64
Serial No:	C96-377	**Environment:**	Temp. 77.0°F Hum. 47 %RH
Asset No:	004993	***As Found:**	IN 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.

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**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
009137	HART SCIENTIFIC, INC	1575	THERMOMETER	Jul 30, 03
008920	HART SCIENTIFIC, INC	17660-A-120-6-W	PLATINUM RTD	Jul 30, 03

Approved by: Walt Hill
Metrology Group Leader

Measurements by: Mark Romero
Metrology Technician

m:\Nona2la1.rpt Rev date 15, August 02

Southwest Research Institute
Calibration laboratory
Caibration Report

Work Order:	444054469	Mfr.	Fisher Scientific	Technician	Mark Romero
Asset No.	004993	Model	15-166A		
Serial No.	C96-377	Type.	THERMOMETER	Cal Date.	15-Jul-03
Remarks:					

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Found/Left
Temperature	Deg C	Deg C	Deg C	Deg C	Deg C	Results
	-19.9	-20.1	-0.2	0.5	0.6	Pass
	0.1	-0.2	-0.3	0.5	0.6	Pass
	50.0	49.5	-0.5	0.5	0.6	Pass
	99.5	100.0	0.5	0.5	0.6	Pass
	150.1	150.0	-0.1	0.5	0.6	Pass

END OF REPORT

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Institute Calibration Laboratory
Phone: 210-522-5215 Fax 210-522-3692

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Certificate #
0972-01

Certificate of Calibration

Submitted By:	DIV20	**Work Order:**	444056973
Address:	B57	**Date Issued:**	Jan 16, 2004
Contact:	DARRELL DUNN	**Calibration Date:**	Jan 15, 2004
Manufacturer Model:	FISHER SCIENTIFIC 15-166A	****Calibration Due:**	Jul 15, 2004
Description:	THERMOMETER	**Calibration Location:**	Bldg. 64
Serial No:	C96-377	**Environment:**	Temp. 79.0°F Hum. 45 %RH
Asset No:	004993	***As Found:**	IN 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.

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**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
009137	HART SCIENTIFIC, INC	1575	THERMOMETER	Feb 05, 04
008920	HART SCIENTIFIC, INC	5614-17660-A-12	PLATINUM RTD	Feb 07, 04

Approved by: Walt Hill
Metrology Group Leader

Measurements by: Mark Romero
Metrology Technician

m:\a2la1.rpt Rev date 15, August 02

Southwest Research Institute
Calibration laboratory
Caibration Report

Work Order:	444056973	Mfr.	Fisher-Scientific	Technician	Mark Romero
Asset No.	004993	Model	15-166A		
Serial No.	C96-377	Type.	THERMOMETER	Cal Date.	15-Jan-04
Remarks:					

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Found/Left
Temperature	Deg C	Deg C	Deg C	Deg C	Deg C	Result
	-19.9	-20.2	-0.3	0.5	0.6	Pass
	0.1	0.0	-0.1	0.5	0.6	Pass
	50.0	49.9	-0.1	0.5	0.6	Pass
	100.0	99.9	-0.1	0.5	0.6	Pass
	149.9	149.6	-0.3	0.5	0.6	Pass

END OF REPORT

SOUTHWEST RESEARCH INSTITUTE™

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Institute Quality Systems
Institute Calibration Laboratory
Phone: 210-522-5215 Fax 210-522-3692

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Certificate #
0972-01

Certificate of Calibration

Submitted By:	DIV20	**Work Order:**	444059849
Address:	B57	**Date Issued:**	Jul 16, 2004
Contact:	DARRELL DUNN	**Calibration Date:**	Jul 14, 2004
Manufacturer Model:	FISHER SCIENTIFIC 15-166A	****Calibration Due:**	Jan 14, 2005
Description:	THERMOMETER	**Calibration Location:**	Bldg. 64
Serial No:	C96-377	**Environment:**	Temp. 77.0°F Hum. 48 %RH
Asset No:	004993	***As Found:**	IN TOLERANCE
Procedure:	TEMPERATURE, JAN/04	***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. See Remarks or attached Calibration Report with the same Work Order number for calibration data.

*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	5614-17660-A-12	PLATINUM RTD	Sep 09, 04
009137	HART SCIENTIFIC	1575	THERMOMETER	Sep 05, 04

Approved by: Walt Hill
Metrology Group Leader

Measurements by: Mark Romero
Metrology Technician

m:\a2la1.rpt Rev date 11, May 04

Southwest Research Institute
Calibration Laboratory
Caibration Report

Work Order:	444059849	Mfr.	Fisher Scientific	Technician	Mark Romero
Asset No.	004993	Model	15-166A		
Serial No.	C96-377	Type.	THERMOMETER	Cal Date.	14-Jul-04
Remarks:					

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Found/Left
Temperature	Deg C	Deg C	Deg C	Deg C	Deg C	Result
-20	-19.8	-20.2	-0.4	0.5	0.58	Pass
0	0.1	0.0	-0.1	0.5	0.58	Pass
50	50.0	50.0	0.0	0.5	0.58	Pass
100	100.0	100.0	0.0	0.5	0.58	Pass
150	150.0	150.0	0.0	0.5	0.58	Pass

END OF REPORT

SOUTHWEST RESEARCH INSTITUTE™

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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:**	444062197
Address:	B57	**Date Issued:**	Jan 10, 2005
Contact:	DARRELL DUNN	**Calibration Date:**	Jan 10, 2005
Manufacturer Model:	FISHER SCIENTIFIC 15-166A	****Calibration Due:**	Jul 10, 2005
Description:	THERMOMETER	**Calibration Location:**	Bldg. 64
Serial No:	C96-377	**Environment:**	Temp. 73.0°F Hum. 40 %RH
Asset No:	004993	***As Found:**	IN TOLERANCE
Procedure:	TEMPERATURE, JAN/04	***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. See Remarks or attached Calibration Report with the same Work Order number for calibration data.

*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
009414	HART SCIENTIFIC	1502A	TEMPERATURE READOUT	Mar 30, 05
010692	HART SCIENTIFIC	5618	PLATINUM RTD	Feb 16, 05

Approved by: Walt Hill
Metrology Group Leader

Measurements by: Bob Trollinger
Metrology Technician

Southwest Research Institute
Calibration Laboratory
Measurement Report

Work Order:	444062197	Mfr.	Fisher-Scientific	Technician	blt
Asset No.	004993	Model	15-166A (ASTM 1C)		
Serial No.	C96-377	Type.	THERMOMETER	Cal Date.	10-Jan-05
Remarks:	Accuracy Referecnce ANSI Z236.1-1983				

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Found/Left
Temperature	°C	°C	°C	°C	°C	Result
	-18.9	-19.0	-0.1	0.5	0.12	Pass
	0.1	0.1	0.0	0.5	0.12	Pass
	50.0	50.0	0.0	0.5	0.12	Pass
	99.9	99.9	0.0	0.5	0.12	Pass
	150.1	150.1	0.0	0.5	0.12	Pass

END OF REPORT