

S O U T H W E S T R E S E A R C H I N S T I T U T E

Department of Quality Assurance
Calibration Laboratory

CERTIFICATE OF CALIBRATION

Issued to: DIV20 B57 NARASI SRIDHAR

Device No: 2313

Manufacturer: FISHER

Model: ASTM 82C

Nomenclature: THERMOMETER

Serial Number: 924 3195

SwRI No: NONE

Remarks

Accuracy:

Procedure: SWRI

ENVIRONMENT

Temperature: 74 Humidity: 52 Location: SWRI BLDG.145

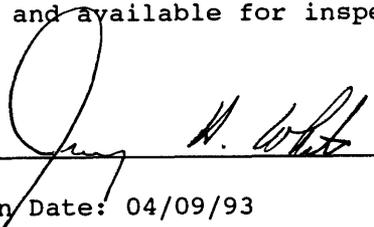
CONCLUSION

Tolerance/Remarks: Received into the system, introduced or reactivated

Standard	Reading:
Ice Point (0 deg. C.)	0 deg
25 deg. C.	25 deg. C.
50 deg. C.	50 deg. C.
75 deg. C.	75 deg. C.
100 deg. C.	100 deg. C.
-10 deg. C.	-10 deg. C.

Calibration was in accord with requirements of MIL-STD-45662A. Measurements are traceable to the National Institute of Standards and Technology. Inspection and test data are on file and available for inspection.

Signed



Calibration Date: 04/09/93

Record Number: 00011032

Next Calibration Due: 04/09/94

S O U T H W E S T R E S E A R C H I N S T I T U T E

Department of Quality Assurance
Calibration Laboratory

Device Serial No: 924 3195

Calibration Date: 04/09/93

STANDARDS

Standard No: 219	Manufacturer: AZONIX	Model: A1011
Nomenclature: RTD THERMOMETER		
Serial No: T1587-2078	Cal.Due: 02/12/94	Cal.Rec.No: 00010541

Standard No: 328	Manufacturer: AZONIX	Model: A12001
Nomenclature: RTD TEMPERATURE PROBE		
Serial No: 351477	Cal.Due: 02/12/94	Cal.Rec.No: 00010540

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Department of Quality Assurance
Calibration Laboratory

CERTIFICATE OF CALIBRATION

Issued to: DIV20 B57 NARASI SRIDHAR

Device No: 2310

Manufacturer: FISHER

Model: ASTM 82C

Nomenclature: THERMOMETER

Serial Number: 924 3196

SwRI No: NONE

Remarks

Accuracy:

Procedure: SWRI

ENVIRONMENT

Temperature: 74 Humidity: 52 Location: SWRI BLDG. 145

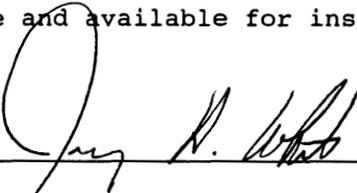
CONCLUSION

Tolerance/Remarks: Received into the system, introduced or reactivated

Standard	Reading:
Ice Point (0 deg. C.)	0 deg
25 deg. C.	25 deg. C.
50 deg. C.	50 deg. C.
75 deg. C.	75 deg. C.
100 deg. C.	100 deg. C.
-10 deg. C.	-10 deg. C.

Calibration was in accord with requirements of MIL-STD-45662A. Measurements are traceable to the National Institute of Standards and Technology. Inspection and test data are on file and available for inspection.

Signed



Calibration Date: 04/09/93

Record Number: 00011035

Next Calibration Due: 04/09/94

S O U T H W E S T R E S E A R C H I N S T I T U T E

Department of Quality Assurance
Calibration Laboratory

Device Serial No: 924 3196

Calibration Date: 04/09/93

STANDARDS

Standard No: 219	Manufacturer: AZONIX	Model: A1011
Nomenclature: RTD THERMOMETER		
Serial No: T1587-2078	Cal.Due: 02/12/94	Cal.Rec.No: 00010541
Standard No: 328	Manufacturer: AZONIX	Model: A12001
Nomenclature: RTD TEMPERATURE PROBE		
Serial No: 351477	Cal.Due: 02/12/94	Cal.Rec.No: 00010540

S O U T H W E S T R E S E A R C H I N S T I T U T E

Department of Quality Assurance
Calibration Laboratory

CERTIFICATE OF CALIBRATION

Issued to: DIV20 B57 NARASI SRIDHAR

Device No: 2313

Manufacturer: FISHER

Model: ASTM 82C

Nomenclature: THERMOMETER

Serial Number: 924 3195

SwRI No: NONE

Cal interval 12 Mo.

Remarks

Accuracy:

Procedure: SWRI

ENVIRONMENT

Temperature: 76

Humidity: 40

Location: SWRI DIV04 BLDG. 145

CONCLUSION

Tolerance/Remarks: Received in tolerance, no adjustments made

Calibration was in accord with requirements of MIL-STD-45662A. Measurements are traceable to the National Institute of Standards and Technology. Inspection and test data are on file and available for inspection.

Signed



Calibration Date: 04/12/94

Cal interval: 12 Months

Record Number: 00013822

Next Calibration Due: 04/12/95

S O U T H W E S T R E S E A R C H I N S T I T U T E

Department of Quality Assurance
Calibration Laboratory

Device Serial No: 924 3195

Calibration Date: 04/12/94

STANDARDS

Standard No: 219	Manufacturer: AZONIX	Model: A1011
Nomenclature: RTD THERMOMETER		
Serial No: T1587-2078	Cal.Due: 03/10/95	Cal.Rec.No: 00013377
Standard No: 328	Manufacturer: AZONIX	Model: A12001
Nomenclature: RTD TEMPERATURE PROBE		
Serial No: 351477	Cal.Due: 03/10/95	Cal.Rec.No: 00013378

SOUTHWEST RESEARCH INSTITUTE
Department of Quality Assurance
Calibration Laboratory

CERTIFICATE OF CALIBRATION
04/18/95

Issued to: DARRELL DUNN DIV20 ,B57
Manufacturer: FISHE
Nomenclature: THERMOMETER
Serial Number: 924 3195

Asset Number: 002313
Model Number: ASTM 82C

SwRI/Div. I.D. #:

ENVIRONMENTAL CONDITIONS

Temperature: 72.0F

Relative Humidity: 66%

CALIBRATION INFORMATION

Procedure Number: WI-9-30-TH03
Remarks:

Accuracy: +/-1DEG.C
Received IN Tolerance

Calibration was in accordance with requirements of MIL-STD-45662A.
Measurements are traceable to the National Institute of Standards and Tech-
nology. Inspection and test data are on file and available for inspection.

STANDARDS USED FOR CERTIFICATION

Asset #	Serial #	Mfg	Model #	Nomenclature	Cal Date	Int.	Cal Due
000219	T1587-2078	AZONI	A1011	RTD THERMOMETER	03/06/95	12	03/06/96
000328	351477	AZONI	A12001	RTD TEMPERATURE PROBE	03/06/95	12	03/06/96

Certified by : _____



Calibration Date: 04/17/95
Interval: 12 months
Next Calibration Due: 04/17/96

Certificate#: 17107

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

Certificate of Calibration

25 April 1996

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: KESSLER ASTM 82C
Description: THERMOMETER
Serial Number: 9243195
Asset Number: 002313

Environmental Conditions

Temperature: 84.0

Humidity: 30%

Calibration Information

Calibration Date: 24 Apr 96

Calibration Procedure: WI-9-30-TH03

Interval: 12 months

Accuracy: +/-1DEG.C

Next Calibration Due: 24 Apr 97

Received: In Tolerance

Remarks:

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.

Certificate # 21018

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

15 April 1997

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: KESSLER ASTM 82C
Description: THERMOMETER
Serial Number: 9243195
Asset Number: 002313

Environmental Conditions

Temperature: 70.0 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: 15 Apr 97 Calibration Procedure: WI-9-30-TH03
Interval: 12 months Accuracy: +/-1DEG.C
Next Calibration Due: 15 Apr 98 Received: In Tolerance

Remarks:

Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
000106	FLUKE	8506A	THERMAL RMS DIGITAL M	4180021	31 Jan 98
005174	AZONIX	A12001	PRECISION RTD TEMPERA	438295	11 Nov 97

Certificate # 25034

Signed: 

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San Antonio, TX 78238
Department of Quality Assurance
Calibration Laboratory



Certificate of Calibration

11 May 1998

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: KESSLER ASTM 82C
Description: THERMOMETER
Serial Number: 9243195
Asset Number: 002313

Environmental Conditions

Temperature: 78.00 Deg. F

Humidity: 37 % 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: 11 May 98

Calibration Procedure: ASTM E77-89

Interval: 12 months

Next Calibration Due: 11 May 99

Received: In Tolerance

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: 

Title: 

LAST PAGE OF REPORT
Total Pages Printed: 1

Certificate # 29654



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



Certificate #
0972-01

Certificate of Calibration

14 June 1999

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: KESSLER ASTM 82C
Description: THERMOMETER
Serial Number: 9243195
Asset Number: 002313

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCCL 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: 72.0 Degrees Fahrenheit Humidity: 45 % RH

Calibration Date: 14 Jun 99 **Calibration Procedure:** CL-9 MAY 99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

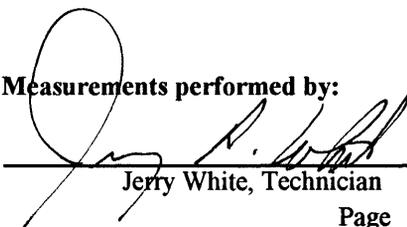


Jim Patterson, Supervisor or Walt Hill, Metrologist

Certificate # 34805

m:\a2la.rpt Rev date 10 Mar 99

Measurements performed by:



Jerry White, Technician

Page 1 of 1



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

Certificate of Calibration

15 July 2002

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: KESSLER ASTM 82C
Description: THERMOMETER
Serial Number: 9243195
Asset Number: 002313
Work Order Number: 444049283

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: 74.0 Degrees Fahrenheit Humidity: 54 % RH

Calibration Date: 15 Jul 02 **Calibration Procedure:** CL-9, 5/99

Condition as Received: IN TOLERANCE

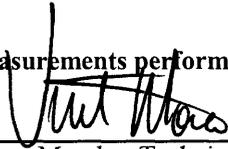
Condition as Returned: IN TOLERANCE

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:	444049283	Mfr.	KESSLER	Technician	V.Morales
Asset No.	2313	Model	ASTM 82C	Procedure	CL-9 5/99
Serial No.	9243195	Type.	THERMOMETER	Cal Date.	July 15, 2002

Function/Range	Standard	TI Reading	Difference (1)	Test Limits+/-	Uncertainty (2)
Temperature	Deg. C	Deg. C	Deg. C	Deg. C	Deg. C
0	0.00	0.00	0.00	1.00	0.03
50	50.10	50.00	-0.10	1.00	0.03
100	100.10	102.00	1.90	2.00	0.03



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: KESSLER ASTM 82C

Description: THERMOMETER

Serial No: 9243195

Asset No: 002313

Procedure: TEMPERATURE, MAY/03

Work Order: 444054470

Date Issued: Jul 16, 2003

Calibration Date: Jul 16, 2003

****Calibration Due:** Jul 16, 2004

Calibration Location: Bldg. 64

Environment: Temp. 77.0°F Hum. 45 %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
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

m:\Nona21a1.rpt Rev date 15, August 02

Measurements by: Mark Romero

Metrology Technician

Southwest Research Institute
 Calibration laboratory
 Caibration Report

Work Order:	444054470	Mfr.	Kessler	Technician	Mark Romero
Asset No.	002313	Model	ASTM 82C		
Serial No.	9243195	Type.	THERMOMETER	Cal Date.	16-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
	0.1	-0.5	-0.6	1.0	0.6	Pass
	50.0	50.5	0.5	1.0	0.6	Pass
	100.0	99.0	-1.0	1.0	0.6	Pass
END OF REPORT						