

SOUTHWEST RESEARCH INSTITUTE
Department of Quality Assurance
Calibration Laboratory • 522-5215

WORK ORDER

CERTIFICATE # 22376 ASSET # 2467 DATE 14 Aug 96

ITEM DATA:

Manufacturer Fisher Model 14-983-10B
Description Thermometer Serial # 183301
Accessories _____

ACTION REQUESTED cal

CUSTODIAN Darrell Dunn Div 20

Turned in by: _____ Phone _____

CHARGE # 20-04 20-5708-573 Date Required _____

INSTRUMENT USED ON: NUCLEAR DOD NASA GLP SPPE
 OTHER _____

COPY OF CALIBRATION CERTIFICATE Yes No

CONDITION RECEIVED: _____ Out of tolerance, repaired to specifications
_____ In tolerance, minor adjustments/repairs made
 In tolerance, no adjustments/repairs
_____ Out of tolerance, adjusted to specifications
_____ Received into system, introduced or reactivated
_____ Calibration internal
_____ Reliability code

ACTION TAKEN: (Calibration/Repair/Parts) Collect per Procedure

CAL ENVIRONMENT:
Temperature 50 °F Humidity 33 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure 21-9-30-5703
Date 19 Aug 96 Accuracy ± 1°C
Cal Interval 6 Mos Time to complete:
Next Cal due 18 Feb 97 Cal 2.0 Repair _____
Standards used (Asset#) 219,328

DATE COMPLETED 19 Aug 96
DATE PICKED UP 8/21/96 PICKED UP BY [Signature]

22376

SOUTHWEST RESEARCH INSTITUTE
Department of Quality Assurance
Calibration Laboratory • 522-5215

WORK ORDER

CERTIFICATE # 24349 ASSET # 002467 DATE 17 Feb-97

ITEM DATA:

Manufacturer Fisher Brand Model 14-983-10B

Description Thermometer Serial # 183501

Accessories _____

ACTION REQUESTED Cal

CUSTODIAN Div. 20, Donell Dunn

Turned in by: _____ Phone _____

CHARGE # 20-5708-561 Date Required _____

INSTRUMENT USED ON: NUCLEAR DOD NASA GLP SPPE
 OTHER _____

COPY OF CALIBRATION CERTIFICATE Yes No

CONDITION RECEIVED: _____ Out of tolerance, repaired to specifications
_____ In tolerance, minor adjustments/repairs made
 In tolerance, no adjustments/repairs
_____ Out of tolerance, adjusted to specifications
_____ Received into system, introduced or reactivated
_____ Calibration internal
_____ Realibility code

ACTION TAKEN: (Calibration/Repair/Parts) Calibrated Per Procedure
447
0.02°C 0.0°C

CAL ENVIRONMENT:
Temperature 78°F Humidity 51 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure WI-9-30-7763
Date 20 Feb 97 Accuracy +/- 1°C
Cal Interval 6 mos Time to complete: _____
Next Cal due 20 Aug 97 Cal 2.0 Repair _____
Standards used (Asset#) 218, 328

DATE COMPLETED 21 Feb 97
DATE PICKED UP 2/26/97 PICKED UP BY [Signature]

24349

SOUTHWEST RESEARCH INSTITUTE
Department of Quality Assurance
Calibration Laboratory • 522-5215

WORK ORDER

CERTIFICATE # 26592 ASSET # 002467 DATE 25 Aug 97

ITEM DATA:
Manufacturer Fisher Model W. 105 103
Description 1/16" mm scale Serial # 19350
Accessories _____

ACTION REQUESTED cal

CUSTODIAN D.W. 201 Janell Janell

Turned in by: _____ Phone 6030

CHARGE # 70-5108-501 Date Required _____

INSTRUMENT USED ON: DOD/NASA NUCLEAR GLP SPPE ISO
 OTHER _____

COPY OF CALIBRATION CERTIFICATE Yes No

NEW WORK Yes No If yes, an evaluation shall be made to verify capabilities.
By _____ Date _____

CONDITION RECEIVED: _____ (F) Out of tolerance, repaired to specifications
_____ (G) In tolerance, minor adjustments/repairs made
 (J) In tolerance, no adjustments/repairs
_____ (K) Out of tolerance, adjusted to specifications
_____ (S) Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) Calibrated per procedure
RT 445
0.016°C 0.2°C

CAL ENVIRONMENT:
Temperature 80°F Humidity 34%RH

CALIBRATED/REPAIRED:
By Richard P Cal Procedure WI-9-30-7103
Date 3 Sept 97 Accuracy ±1°C
Cal Interval 6 mo Reliability Code: 7
Next Cal due 3 Sept 98 Cal Time 1.5 Repair Time _____
Standards used (Asset#) 219, 328

DATE COMPLETED 7 Sept 97
DATE PICKED UP 9/10/97 PICKED UP BY [Signature]

26592

SOUTHWEST RESEARCH INSTITUTE
 Department of Quality Assurance
 Calibration Laboratory • 522-5215

WORK ORDER

CERTIFICATE # 28929 ASSET # 002467 DATE 09 Mar 98

ITEM DATA:

Manufacturer Fisher Model 14-983-10B
 Description Thermometer Serial # 103501
 Accessories _____

ACTION REQUESTED Cal

CUSTODIAN D. W. Dunn

Turned in by: _____ Phone 6090

CHARGE # 20-1402-511 Date Required _____

INSTRUMENT USED ON: DOD/NASA NUCLEAR GLP SPPE ISO
 OTHER _____

COPY OF CALIBRATION CERTIFICATE Yes No

NEW WORK Yes No If yes, an evaluation shall be made to verify capabilities.
 By _____ Date _____

CONDITION RECEIVED: _____ (F) Out of tolerance, repaired to specifications
 _____ (G) In tolerance, minor adjustments/repairs made
 (J) In tolerance, no adjustments/repairs
 _____ (K) Out of tolerance, adjusted to specifications
 _____ (S) Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) _____
Cal std of UTT
0.004°C 0°C

CAL ENVIRONMENT: Temperature 72 °F Humidity 26 %RH

CALIBRATED/REPAIRED:
 By K. Hughes Cal Procedure W 9-30-T#03
 Date 10 Mar 98 Accuracy ±1°C
 Cal Interval 6 mon Reliability Code: 8
 Next Cal due 10 Sep 98 Cal Time 1.0 Repair Time _____
 Standards used (Asset#) 219, 328

DATE COMPLETED 10 Mar 98
 DATE PICKED UP 3/18/98 PICKED UP BY [Signature]

28929

SOUTHWEST RESEARCH INSTITUTE
Department of Quality Assurance
Calibration Laboratory • 522-5215

WORK ORDER

CERTIFICATE # 31647 ASSET # 002467 DATE 19 Oct 98

ITEM DATA:

Manufacturer Fisher Model 14-983-108
Description Thermometer Serial # 183301
Accessories _____

ACTION REQUESTED POI

CUSTODIAN Dr. J. O. Darrell Dunn

Turned in by: _____ Phone 6090

CHARGE # 20-1402-571 Date Required _____

INSTRUMENT USED ON: (DOD/NASA) (NUCLEAR) (GLP) (SPPE) (ISO)
 OTHER _____

COPY OF CALIBRATION CERTIFICATE (Yes) (No)

NEW WORK Yes No If yes, an evaluation shall be made to verify capabilities.

By MAR Date 10-19-98

Work involves proprietary/confidential information or equipment (Yes) (No)

CONDITION RECEIVED: _____ (F) Out of tolerance, repaired to specifications
_____ (G) In tolerance, minor adjustments/repairs made
 (J) In tolerance, no adjustments/repairs
_____ (K) Out of tolerance, adjusted to specifications
_____ (S) Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) Calibrated to Standard

CAL ENVIRONMENT:
Temperature 75 °F Humidity 54 %RH

CALIBRATED/REPAIRED:
By K. [Signature] Cal Procedure ASTM E77-92
Date 19 Oct 98 Accuracy 1/2
Cal Interval 6 mos Reliability Code: 9
Next Cal due 19 Apr 99 Cal Time 1.0 Repair Time _____
Standards used (Asset#) 219, 328

DATE COMPLETED 19 Oct 98
DATE PICKED UP 10/22/98 PICKED UP BY [Signature]

31647

CALIBRATION CHECK FORM

Date Calibrated 19/07/98 Work Order 31647
 Technician SZB Cal. Procedure: ASTM E77-92
 Unit Under Test TEMPERATURE
 Manufacturer FISHER BRAND Model 14-583-100 SN 189351 ASN 2967

Rev _____ Chg _____
 Page 1 of 1

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P/P
			MIN	MAX	AS FOUND	RELEASED	
		$^{\circ}\text{C}$	± 1.0	$^{\circ}\text{C}$	$^{\circ}\text{C}$		
		0.00			0.0		

SOUTHWEST RESEARCH INSTITUTE
Department of Quality Assurance
Calibration Laboratory • 522-5215

WORK ORDER

CERTIFICATE # 34374 ASSET # 052467 DATE 04 May 99

ITEM DATA:

Manufacturer Fisher Brand Model 14-983-108
Description thermometer Serial # 183301
Accessories tube

ACTION REQUESTED cal

CUSTODIAN Div. 20, Danell Dunn

Turned in by: _____ Phone 6090

CHARGE # 20-04 Date Required _____

INSTRUMENT USED ON: (DOD/NASA) (NUCLEAR) (GLP) (SPPE) (ISO)
 OTHER _____

COPY OF CALIBRATION CERTIFICATE (Yes) (No)

NEW WORK Yes No If yes, an evaluation shall be made to verify capabilities.

By MAJ Date 05-04-99

Work involves proprietary/confidential information or equipment (Yes) (No)

CONDITION RECEIVED: _____ (F) Out of tolerance, repaired to specifications
_____ (G) In tolerance, minor adjustments/repairs made
 (J) In tolerance, no adjustments/repairs
_____ (K) Out of tolerance, adjusted to specifications
_____ (S) Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) calibrated to spec

CAL ENVIRONMENT:
Temperature 74 °F Humidity 33 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure T.O. 33X3-4-42-1, Apr 97
Date 7/27/99 Accuracy [Signature]
Cal Interval 6 mths Reliability Code: _____
Next Cal due 2/26/99 Cal Time 1.5 Repair Time _____
Standards used (Asset#) 5174, 7001

DATE COMPLETED 7/27/99
DATE PICKED UP 5/13/99 PICKED UP BY [Signature]

34374

SOUTHWEST RESEARCH INSTITUTE

Department of Quality Assurance

Calibration Laboratory • 522-5215

WORK ORDER

WORK ORDER # 36857 ASSET # 002467 DATE 17 Nov 99

ITEM DATA:

Manufacturer Fisher Model 14-783-106
Description 1 hormone for Serial # 193301
Accessories _____

ACTION REQUESTED cal

CUSTODIAN M. D. Darrell Dunn

Turned in by: _____ Phone 6090

CHARGE # 20 off Date Required _____

INSTRUMENT USED ON: (DOD/NASA) (NUCLEAR) (GLP) (SPPE) (ISO)
 OTHER _____

COPY OF CALIBRATION CERTIFICATE (Yes) (No)

NEW WORK Yes No If yes, an evaluation shall be made to verify capabilities.

By WADT Date 11-17-99

Work involves proprietary/confidential information or equipment (Yes) (No)

CONDITION RECEIVED: _____ Out of tolerance
 In tolerance
_____ Damaged (Contact customer)
_____ Contact _____ Date _____
_____ Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) Calibrate for customer

CAL ENVIRONMENT: Temperature 74 °F Humidity 49 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure CL-9, 11/17/99
Date 19 Nov 99 Accuracy 10% span
Cal Interval 6 mos Reliability Code 11
Next Cal Due 19 May 00 Cal Time 2 Repair Time _____
Standards used (Asset #) 5243, 5174

DATE COMPLETED 19 Nov 99

DATE PICKED UP 11/23/99 PICKED UP BY [Signature]

36857

CALIBRATION WORKSHEET

Date Calibrated 19 Nov 99 Work Order 96857 Cal By 8214

Procedure No./Date CL-9, May 99 Unit Under Test Thermometer

Mfg. Fisher Brand Model 14-983-100 SN 183301 AN 2467

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P/F
			MIN	MAX	AS FOUND	RELEASED	
		°C			°C		
	20% Range	6.00	± 1°C		6		P
	40% Range	32.00			32		P
	60% Range	58.00			58		P
	80% Range	84.00			84		P
	100% (-1.2°C)	109.0			109		P



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

Accredited



Certificate #
0972-01

Certificate of Calibration

19 November 1999

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FISHER SCIENTIFIC 14-983-10B
Description: THERMOMETER
Serial Number: 183301
Asset Number: 002467

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: 74.0 Degrees Fahrenheit Humidity: 49 % RH

Calibration Date: 19 Nov 99 **Calibration Procedure:** CL-9, MAY99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

Jim Patterson, Supervisor or Walt Hill, Metrologist

Certificate # 36857

m:\a2la.rpt Rev date 10 Mar 99

Measurements performed by:

Ken Harp, Technician

Page 1 of 1

WORK ORDER 39217

Date Received 5/25/00

Asset No. 002467 Manufacturer FISHER SCIENTIFIC Model 14-983-10B
Description THERMOMETER Serial Number 183301
Accessory Received/Required NONE
Div/CC ID NONE Accessory to Asset No. N/A
Div/CC DIV20 Location B57 Custodian DARRELL DUNN Tel. 6090
Charge/Project No. 20.00751.006 Proprietary/Confidential N Date Required ROUTINE
Work Requested CALIBRATION
Receiving Inspection O.K.
Delivered By DARRELL DUNN Tel. 6090

WORK HISTORY

Date	Start Time	Stop Time	Notes

PARTS

Part Name	Part Number	Cost	Failure Description

WORK SUMMARY

Failure Description _____
Repair Action _____
Cal Procedure CL-9, MAY99 Temp 76 F Hum 47 %
Tech JW Cal Hrs. .7 Repair Hrs. _____ Part Cost _____
Action Taken OK
Standards Used 215 5174
Date Cal JUN 2000 Int. 6 Mo. Date Due 1 Dec 2000 Reliability Code 7
Date Picked Up 6/2/00 Picked Up By [Signature]

39217

CALIBRATION CHECK FORM

5.

Date Calibrated 1 JUN 2000 Work Order 39217 Cal By QW

Procedure No./Date : CL-9, May99 Unit Under Test Thermometer.

Mfg. F15/L Model 14.983-10B SN 183301 AN 2467

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P/F
			MIN	MAX	AS FOUND	RELEASED	
4.1	Temperatre Calibration						
	Lowest value of Range + 2 Div.	15.91			18.5		
	20% Range	4.96			5.1		
	40% Range	30.14			30.2		
	60% Range	54.94			55.6		
	80% Range	80.08			81.0		
	Highest value of Range -2 Div.	109.00			110.5		



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Department of Quality Assurance
Calibration Laboratory

Accredited



Certificate #
0972-01

Certificate of Calibration

1 June 2000

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FISHER SCIENTIFIC 14-983-10B
Description: THERMOMETER
Serial Number: 183301
Asset Number: 002467

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NC SL Z540-1-1994. The results of this calibration relate only to the individual item as described above. 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 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: 76.0 Degrees Fahrenheit Humidity: 47 % RH

Calibration Date: 1 Jun 00 **Calibration Procedure:** CL-9, MAY99

Condition as Received: In Tolerance

Remarks:

Approved by:

Jim Patterson, Supervisor, or Walt Hill, Metrologist

Certificate # 39217

m:\a2la.rpt Rev date 22 May 00

Measurements performed by:

Jerry White, Technician

Page 1 of 1

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

Processed by RCRUZ at 3:56:28PM on 12/14/00

1 0000 0000 0000 0000 0000 0000

Work Order 444041750

Arrived 12/14/00

Asset No. 002467

Manufacturer FISHER SCIENTIFIC

Model 14-983-10B

Instrument Type/Class THERMOMETER

Serial No. 183301

Accessory No.

Calibration Procedure CL-9, MAY99

Location B57

Div/Client DIV20

Custodian DARRELL DUNN

Mail Stop B57

Tel. 6090

Charge/Project No. 20.00751.006

Delivered By / Telephone

IN4CAL

Special Instructions _____

WORK NOTES

Date	Hours	Remarks/Notes
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

REPAIR PARTS

Date	Hours	Part Name	Part Number	Failure Description	Cost
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

WORK SUMMARY

Failure Description _____

Repair Action _____

Calibration Procedure _____ Temp 69 F Hum. 40 %

Tech QNW Totals Cal Hours 1 Repair Hours _____ Parts Cost _____

Standards Used 219

Date Picked Up 1/9/2001

Picked Up By Darrell Dunn

444041750

CALIBRATION CHECK FORM

Date Calibrated 21 DEC 2000 Work Order 41750 Cal By JM

Procedure No./Date: CL-9 MAY 99 Unit Under Test: _____

Mfg.: FISHER Model: 14-983-10B SN 1P3301 AN 2467

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P/ F
			MIN	MAX	AS FOUND	RELEASED	
	THERMOMETER CAL	-20°C	+/- 1°C		-19.5		P
		0°C			+0.1		P
		+40°C			+40.1		P
		+80°C			+80.8		P
		+110°C			+111.0		P



Southwest Research Institute
6220 Culebra Road
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Department of Quality Assurance
Calibration Laboratory



Certificate #
0972-01

Certificate of Calibration

22 December 2000

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FISHER SCIENTIFIC 14-983-10B
Description: THERMOMETER
Serial Number: 183301
Asset Number: 002467

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCSL Z540-1-1994. The results of this calibration relate only to the individual item as described above. 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 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: 69.0 Degrees Fahrenheit Humidity: 40 % RH

Calibration Date: 21 Dec 00 **Calibration Procedure:** CL-9, MAY99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

Jim Patterson, Supervisor, or Walt Hill, Metrologist

Certificate # 444041750

mAa2la.rpt Rev date 22 May 00

Measurements performed by:

Jerry White, Technician

Page 1 of 1

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

Processed by RCRUZ at 2:43:41PM on 6/22/01

||||| ||||| ||||| ||||| ||||| ||||| ||||| |||||

Work Order 444044159

Arrived 6/22/01

Asset No. 002467

Manufacturer FISHER SCIENTIFIC

Model 14-983-10B

Instrument Type/Class THERMOMETER

Serial No. 183301

Accessory No.

Calibration Procedure CL-9, MAY99

Location B57

Div/Client DIV20

Custodian DARRELL DUNN

Mail Stop B57

Tel. 6090

Charge/Project No. 00751.006 1.20

Delivered By / Telephone

IN4CAL

Special Instructions _____

WORK NOTES

Date	Hours	Remarks/Notes
<u>6/25</u>	<u>.5</u>	<u>Cal</u>
<u>6/26</u>	<u>.5</u>	<u>Cal</u>

REPAIR PARTS

Date	Hours	Part Name	Part Number	Failure Description	Cost

WORK SUMMARY

Failure Description N/A

Repair Action N/A

Calibration Procedure CL-9, 5/99 Temp 75F Hum. 50%

Tech R Dykstra Totals Cal Hours 1.0 Repair Hours _____ Parts Cost _____

Standards Used 0219

Date Picked Up 7/9/01

Picked Up By [Signature]

44159

Southwest Research Institute
 Calibration Laboratory
 Calibration Data Sheet

Work Order 444044159	Mfr. Fisher Scientific		Technician R Dykstra		
Asset No. 002467	Model 14-983-10B		Procedure CL-9, 5/99		
Serial No. 183301	Type Thermometer		Cal Date Jun. 26, 01		
Remarks: Full Immersion Thermometer. Does not meet ANSI/SAMA Specification Of Maximum Scale Error Of +/- 0.5 Degree C. UUT was calibrated to +/- 1 Degree C per conversation with Custodian.					
Parameter	Applied Value	As Found	Instrument Error	Limits	Result
Temperature Degree C	-19.916 Degree C	-19.4 Degree C	0.516 Degree C	+/- 1.0 Degree C	Passed
	-0.358 Degree C	0.0 Degree C	0.358 Degree C	+/- 1.0 Degree C	Passed
	30.072 Degree C	30.4 Degree C	0.328 Degree C	+/- 1.0 Degree C	Passed
	69.981 Degree C	70.8 Degree C	0.809 Degree C	+/- 1.0 Degree C	Passed
	100.0 Degree C	101.0 Degree C	1.0 Degree C	+/- 1.0 Degree C	Passed



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



Certificate #
0972-01

Certificate of Calibration

27 June 2001

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FISHER SCIENTIFIC 14-983-10B
Description: THERMOMETER
Serial Number: 183301
Asset Number: 002467
Work Order Number: 444044159

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCSL Z540-1-1994. The results of this calibration relate only to the individual item as described above. 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 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: 75.0 Degrees Fahrenheit Humidity: 50 % RH

Calibration Date: 26 Jun 01 **Calibration Procedure:** CL-9, MAY99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE


Remarks:

Approved by:



Walt Hill, Supervisor
Institute Calibration Laboratory

Measurements performed by:



Roger Dykstra, Technician

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

Received by RCRUZ, 12/6/01 2:25:38PM

||||| ||||| ||||| ||||| ||||| ||||| |||||

Arrived 12/6/01

Work Order **444046370**

Asset No. 002467 Manufacturer FISHER SCIENTIFIC

Model 14-983-10B

Equipment Type THERMOMETER

Serial No. 183301

Accessory No.

Interval 6 M

Calibration Procedure CL-9, MAY99

Location B57

Div/Client DIV20

Custodian DARRELL DUNN

Mail Stop B57

Tel 6090

IN4CAL

Special Instructions _____

Notify before adjustments or repairs. (Provide data with certificate (Certificate Typ. _____

Charge/Project No. 00751.006 1.20

Requester / Telephone _____

This information is correct for the work requested.

WORK NOTES

Date	Hours	Remarks/Notes
<u>12/11</u>	<u>1.0</u>	<u>Cal</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Date	Hours	Part Name	Part Number	Failure Description	Cost
<u>n/a</u>	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Failure Description n/a

Repair Action n/a

Tech R Dyksh Cal Hrs. 1.0 Repair Hrs _____ Parts Cost _____ Temp 75 F Hum. 36 %

Standards Used 0219

Date Picked Up 12/18/01

Picked Up By Darrell Dunn

46370

Southwest Research Institute
 Calibration Laboratory
 Calibration data sheet

Work Order: 444046370	Mfr. Fisher Scientific	Technician Roger Dykstra
Asset No. 002467	Model 14-983-10B	Procedure CL-9, 5/99
Serial No. 183301	Type. Thermometer	Cal Date. 12/10/01

Remarks: The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$, which provides a level of confidence of approximately 95 %.

Parameter	Test Point	As Found / As left	Error	Test Limits	Uncertainty
Temperature	-17.88	-17.4	0.48		1.2
Degree C	5.09	5.2	0.12		1.2
	30.04	30.0	-0.04		1.2
	55.07	55.6	0.53		1.2
	79.92	80.8	0.88		1.2
	107.96	109.4	1.44		1.2



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

Certificate of Calibration

11 December 2001

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FISHER SCIENTIFIC 14-983-10B
Description: THERMOMETER
Serial Number: 183301
Asset Number: 002467
Work Order Number: 444046370

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: 75.0 Degrees Fahrenheit Humidity: 36 % RH


Calibration Date: 11 Dec 01 **Calibration Procedure:** CL-9, MAY99

Condition as Received: SEE ATTACHED DATA

Condition as Returned: SEE ATTACHED DATA

Remarks: SEE ATTACHED DATA SHEET FOR DATA AND UNCERTAINTY.

Approved by:


Walt Hill, Supervisor
Institute Calibration Laboratory

Measurements performed by:


Roger Dykstra, Technician

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

Received by AANDERSON, 6/6/02 9:11:09AM

Arrived 6/6/02

Work Order **444048916**

Asset No. 002467 Manufacturer FISHER SCIENTIFIC

Model 14-983-10B

Equipment Type THERMOMETER

Serial No. 183301

Accessory No.

Interval 6 M

Calibration Procedure CL-9, MAY99

Location B57

Div/Client DIV20

Custodian DARRELL DUNN

Mail Stop B57

Tel 6090

IN LINE

Special Instructions _____

Notify before adjustments or repairs. () Provide data with certificate () Certificate Typ _____

Charge/Project No. 00751.006 1.20

Requester/Telephone DARRELL DUNN

This information is correct for the work requested. *Darrell Dunn*

WORK NOTES

Date	Hours	Remarks/Notes
<u>4/14/02</u>	<u>.5</u>	<u>cal</u>
<u>6/11/02</u>	<u>.5</u>	<u>cal</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

Date	Hours	Part Name	Part Number	Failure Description	Cost
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

48916

WORK SUMMARY

Failure Description _____

Repair Action _____

Tech R. D. Keston Cal Hrs. 1.0 Repair Hrs _____ Parts Cost _____ Temp 74 F Hum. 55 %

Standards Used 9A1A, 5174, 9137, 8920

Date Picked Up 6/24/02

Picked Up By *Darrell Dunn*

Southwest Research Institute
Calibration Laboratory
Calibration Data Sheet

Workorder 444048916
Asset #: 002467
Serial #: 183301

Mfr. Fisher Scientific
Model 14-983-10B
Type Thermometer

Technician R Dykstra
Procedure CL-9, 5/99
Cal Date 6/10/02

Ambient Conditions:

Temperature 74 Degree F
Humidity 55 % R.H.
Baro. Pressure N/A PSIA

Data sheet Revision:

Revision 0 2/21/02

Standards used:

Asset #	Due Date	Nomenclature
9414.00	12/06/02	H.P. 34420A Digital Multi-Meter
005174	12/06/02	RTD probe
009137	12/10/02	Hart Super Thermometer
008920	12/07/02	RTD probe

Is statement of compliance to a specification requested. Yes
(if statement is required, print yes otherwise leave blank)

Tolerance 1.00 Degree C Range -20 to 110 Degree C
(if not required leave blank)

Degree C	Degree C	Degree C	Degree C	Degree C	
Std Reading	TI Reading	Error	Test Limits	Uncertainty	Results
-19.85	-19.4	0.45	1	0.35	Pass
12.14	12.4	0.26	1	0.35	Pass
44.11	44.4	0.29	1	0.35	Pass
75.97	76.6	0.63	1	0.35	Pass
108.94	110.0	1.06	1	0.35	

Remarks:

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, which provides a level of confidence of approximately 95%.

If compliance testing to a specification is requested. The results can be pass, fail, or if blank "Not determinable". If results are not determinable it is to end user to determine if results meet their needs.

If compliance testing to a specification is not requested, only data and uncertainty will be given on data sheet.



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

Certificate of Calibration

11 June 2002

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FISHER SCIENTIFIC 14-983-10B
Description: THERMOMETER
Serial Number: 183301
Asset Number: 002467
Work Order Number: 444048916

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: 68.0 Degrees Fahrenheit Humidity: 36 % RH


Calibration Date: 11 Jun 02 **Calibration Procedure:** CL-9, MAY99

Condition as Received: SEE ATTACHED DATA

Condition as Returned: SEE ATTACHED DATA

Remarks:

Approved by:


Walt Hill, Metrology Group Leader
Institute Calibration Laboratory

Measurements performed by:


Roger Dykstra, Technician