

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

WORK ORDER

CERTIFICATE # 22443 ASSET # 004776 DATE 21 Aug 96

ITEM DATA:

Manufacturer Fisher Model 15041C  
Description Thermometer Serial # 9253474  
Accessories \_\_\_\_\_

ACTION REQUESTED Cal

CUSTODIAN Darrell Dugg Dv20

Turned in by: \_\_\_\_\_ Phone \_\_\_\_\_

CHARGE # 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  
Yes  Calibration interval  
\_\_\_\_\_ Reliability code

ACTION TAKEN: (Calibration/Repair/Parts) Calibrated by Procedure.

CAL ENVIRONMENT:  
Temperature 78 °F Humidity 38 %RH

CALIBRATED/REPAIRED:  
By [Signature] Cal Procedure 411-9-30-7703  
Date 26 Aug 96 Accuracy 1% Spec.  
Cal Interval 6 mos Time to complete: \_\_\_\_\_  
Next Cal due 26 Feb 97 Cal 2.5 Repair \_\_\_\_\_  
Standards used (Asset#) 319, 328

DATE COMPLETED 26 Aug 96  
DATE PICKED UP 8/27/96 PICKED UP BY [Signature]

22443

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

WORK ORDER

CERTIFICATE # 26598 ASSET # 0001996 DATE 25 Aug 97

ITEM DATA:

Manufacturer Fisher Model 15041P  
Description Thermometer Serial # 9253121  
Accessories \_\_\_\_\_

ACTION REQUESTED 01

CUSTODIAN DW20, Small Damm

Turned in by: \_\_\_\_\_ Phone 6090

CHARGE # 20-5708501 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 by Procedure  
447 447  
36.97°C 37.00°C

CAL ENVIRONMENT:  
Temperature 74 °F Humidity 41 %RH

CALIBRATED/REPAIRED:  
By K. Williams Cal Procedure 41-9-30 5/103  
Date 4-Sep-97 Accuracy ±0.2°C  
Cal Interval 6 Mo Reliability Code: 3  
Next Cal due 4-Sep-98 Cal Time 1.5 Repair Time \_\_\_\_\_  
Standards used (Asset#) 219, 328

DATE COMPLETED 4-Sep-97  
DATE PICKED UP 9/10/97 PICKED UP BY [Signature]

26598

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

WORK ORDER

CERTIFICATE # 24344 ASSET # 004996 DATE 17 FEB. 97

ITEM DATA:  
Manufacturer Fisher Model 150412  
Description Thermometer Serial # 925 3474  
Accessories \_\_\_\_\_

ACTION REQUESTED Cal

CUSTODIAN Div. 20, David 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

24344

ACTION TAKEN: (Calibration/Repair/Parts)  
\_\_\_\_\_ 37.00°C 37.0°C  
\_\_\_\_\_

CAL ENVIRONMENT:  
Temperature 78°F Humidity 35%RH

CALIBRATED/REPAIRED:  
By [Signature] Cal Procedure 41-9-30-7103  
Date 26 Feb 97 Accuracy ± 0.2°C  
Cal Interval 6 Mo Time to complete:  
Next Cal due 26 Feb AUG 97 Cal 20 Repair \_\_\_\_\_  
Standards used (Asset#) 219, 328

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

# CALIBRATION CHECK FORM

Date Calibrated 20 OCT 98 Work Order 31637  
 Technician 8216 Cal. Procedure: ASTM E71-92  
 Unit Under Test TEMPERATURE  
 Manufacturer FISHER Model 15241C SN 9253474 ASN 4994

Rev. \_\_\_\_\_ Chg \_\_\_\_\_  
 Page 1 of 1

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P/F
			MIN	MAX	AS FOUND	RELEASED	
		$^{\circ}\text{C}$					
		100.00	+/- 0.2	$^{\circ}\text{C}$	99.6 $^{\circ}\text{C}$ *		P
*CORRECTION FACTOR - STEM = $(0.46^{\circ}\text{C}) + \text{As Found} = 100.06^{\circ}\text{C}$							

SOUTHWEST RESEARCH INSTITUTE  
Department of Quality Assurance  
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WORK ORDER

CERTIFICATE # 31637 ASSET # 004996 DATE 19 OCT 98

ITEM DATA:

Manufacturer Fisher Model 15041C  
Description Thermometer Serial # 9253174  
Accessories \_\_\_\_\_

ACTION REQUESTED Cal

CUSTODIAN Du. 20, Darrel Dunn

Turned in by: \_\_\_\_\_ Phone 6090

CHARGE # 20-1400-571 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 AMEI 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) Collected Per Procedure

CAL ENVIRONMENT:  
Temperature 75 °F Humidity 57 %RH

CALIBRATED/REPAIRED:  
By [Signature] Cal Procedure ASTM E 77-92  
Date 20 Oct 98 Accuracy [Signature]  
Cal Interval 6 Mos Reliability Code: 5  
Next Cal due 20 Apr 99 Cal Time 1.0 Repair Time \_\_\_\_\_  
Standards used (Asset#) 219, 328, 4965

DATE COMPLETED 20 Oct 98  
DATE PICKED UP 10/22/98 PICKED UP BY [Signature]

31637

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

**WORK ORDER**

CERTIFICATE # 28934 ASSET # 001996 DATE 09 MAR 98

ITEM DATA:

Manufacturer Fisher Model 15041C  
Description 1 NOR MONITOR Serial # 9153474  
Accessories \_\_\_\_\_

ACTION REQUESTED MI

CUSTODIAN DV TO, Donnell Damm

Turned in by: \_\_\_\_\_ Phone 6090

CHARGE # 70-166-371 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 with  
37.00°C 37.1°C

CAL ENVIRONMENT: Temperature 74 °F Humidity 24 %RH

CALIBRATED/REPAIRED:  
By K. H. ... Cal Procedure WI-9-30 T#03  
Date 3/18/98 Accuracy ± 2°C  
Cal Interval 6 mo Reliability Code: 4  
Next Cal due 3/18/99 Cal Time 1.5 Repair Time \_\_\_\_\_  
Standards used (Asset#) 219 326

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

18944  
16686

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

WORK ORDER

CERTIFICATE # 34372 ASSET # 004996 DATE 04 May 99

ITEM DATA:

Manufacturer Fisher Model 15011C  
Description Thermometer Serial # 9253474  
Accessories Tube

ACTION REQUESTED Cal

CUSTODIAN Div. 20, Danell Dunn

Turned in by: \_\_\_\_\_ Phone 6096

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 me! 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 Per Procedure

CAL ENVIRONMENT:  
Temperature 76 °F Humidity 33 %RH

CALIBRATED/REPAIRED:  
By [Signature] Cal Procedure T.O. 338.5-4-42-1, 14 Apr 97  
Date 7/26/99 Accuracy 1/2% Span  
Cal Interval 6 mths Reliability Code: 6  
Next Cal due 7/26/99 Cal Time 1.5 Repair Time \_\_\_\_\_  
Standards used (Asset#) 5174, 7001

DATE COMPLETED 7/26/99  
DATE PICKED UP 5/18/99 PICKED UP BY [Signature]

34372

## CALIBRATION CHECK FORM

Date Calibrated 7/14/99      Work Order 34372      Cal By J 214

Procedure No./Date T.O. 3345-1-11-1, APR 97      Unit Under Test Thermometer

Mfg. Fisher Scientific      Model 15041C      SN 9253474AN 4596

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P/F
			MIN	MAX	AS FOUND	RELEASED	
	RANGE:	°C			°C		
	0°C to 100°C			± 0.2°C			
		0.0	-0.8	0.2	0.1		P
		20.0	19.8	20.2	20.1		P
		40.0	39.8	40.2	40.1		P
		60.0	59.8	60.2	60.1		P
		80.0	79.8	80.2	80.0		P
		<del>100.0</del> 98.0	97.8	98.2	97.9		P



SOUTHWEST RESEARCH INSTITUTE  
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**WORK ORDER**

WORK ORDER # 36855 ASSET # 004996 DATE 17 Nov. 99

ITEM DATA:

Manufacturer Fisher Model 150410  
Description Thermometer Serial # 9253474  
Accessories (w/o tube)

ACTION REQUESTED Cal

CUSTODIAN Dir. Jo. Daniel 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 [Signature] 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) calibrated by procedure

CAL ENVIRONMENT:

Temperature 74 °F Humidity 49 %RH

CALIBRATED/REPAIRED:

By [Signature] Cal Procedure CL-9, May 99  
Date 19 Nov 99 Accuracy [Signature]  
Cal Interval 6 mos Reliability Code 1  
Next Cal Due 19 May 00 Cal Time 2 Repair Time \_\_\_\_\_  
Standards used (Asset #) 5273, 5174

DATE COMPLETED 19 Nov 99

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

36855

# CALIBRATION WORKSHEET

Date Calibrated 19 Nov 99 Work Order 36855 Cal By 8216

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

Mfg. Fisher Model 1504C SN 9253474AN 4996

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P/F
			MIN	MAX	AS FOUND	RELEASED	
		°C	$\pm 1.0^\circ\text{C}$		°C		
	20% Range	19.00	$\pm 0.2^\circ\text{C}$		19.2		P
	40% Range	39.00			39.0		P
	60% Range	59.00			59		P
	80% Range	79.00			79		P
	100% (-1.2%)	100.80			100.8		P



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

19 November 1999

**Issued to:** DARRELL DUNN DIV20 B57  
**Manufacturer/Model:** FISHER SCIENTIFIC 15041C  
**Description:** THERMOMETER  
**Serial Number:** 9253474  
**Asset Number:** 004996

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 of Walt Hill, Metrologist

Certificate # 36855

m:\a2la.rpt Rev date 10 Mar 99

**Measurements performed by:**

  
Ken Harp, Technician

Page 1 of 1

# SOUTHWEST RESEARCH INSTITUTE

## Calibration Laboratory

### WORK ORDER

Processed by RCRUZ at 8:44:40AM on 10/24/00

I4213

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

Work Order No 444041089

Arrived 10/24/00

Asset No. 004996 Manufacturer FISHER SCIENTIFIC

Model 15041C

Instrument Type/Class THERMOMETER

Serial No. 9253474

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 DARRELL DUNN

**IN4CAL**

Special Instructions \_\_\_\_\_

### WORK NOTES

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

South Cal Lab By: lh  
CAL: 10/24/00 DUE: 01/15/01  
AN: 004996 SN: 9253474  
| \_\_\_\_\_ |

### REPAIR PARTS

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

### WORK SUMMARY

Failure Description \_\_\_\_\_

Repair Action \_\_\_\_\_

Calibration Procedure CL-9 Temp 75 F Hum. 48 %

Tech [Signature] Totals Cal Hours 2 Repair Hours \_\_\_\_\_ Parts Cost \_\_\_\_\_

Standards Used D01219

Date Picked Up 12/14/2000

Picked Up By [Signature]

**41089**

# CALIBRATION CHECK FORM

Date Calibrated 11-13-00      Work Order 444041089      Cal By *[Signature]*

Procedure No./Date: CL-9, 5/99      Unit Under Test: THERMOMETER

Mfg.: Fisher      Model: 15041C      SN 9253474      AN 4996

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P/ F
			MIN	MAX	AS FOUND	RELEASED	
	<i>Temp</i>						
	0°	0.294°C			0.52°C	0.23°C	
	20% RANGE	20.264°C			20.41°C	0.15°C	
	40% RANGE	40.165°C			40.40°C	0.18°C	
	60% RANGE	60.093°C			60.27°C	0.24°C	
	80% RANGE	80.049°C			80.28°C	0.31°C	
	100% (-1°)	95.022°C			95.33°C	0.31°C	



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

13 November 2000

**Issued to:** DARRELL DUNN DIV20 B57  
**Manufacturer/Model:** FISHER SCIENTIFIC 15041C  
**Description:** THERMOMETER  
**Serial Number:** 9253474  
**Asset Number:** 004996

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: 48 % RH

**Calibration Date:** 13 Nov 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 # 444041089

m:a2la.rpt Rev date 22 May 00

**Measurements performed by:**

Mack Wood, Technician

# SOUTHWEST RESEARCH INSTITUTE

## Calibration Laboratory

### WORK ORDER

Processed by JIBARRA at 2:53:41PM on 5/21/01

XXXXXXXXXXXXXXXXXXXXXXXXXXXX

Work Order **444043744**

Arrived 5/21/01

Asset No. 004996

Manufacturer FISHER SCIENTIFIC

Model 15041C

Instrument Type/Class THERMOMETER

Serial No. 9253474

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 DARRELL DUNN/ X6090

**IN4CAL**

Special Instructions 20.00751.006

### WORK NOTES

Date	Hours	Remarks/Notes
<u>5/23</u>	<u>2.0</u>	<u>Calibrate</u>

### REPAIR PARTS

Date	Hours	Part Name	Part Number	Failure Description	Cost
<u>N/A</u>	<u>→</u>				

### WORK SUMMARY

Failure Description N/A

Repair Action N/A

Calibration Procedure CL-9, 5/99 Temp 77F Hum. 36%

Tech R Dykstra Totals Cal Hours 2.0 Repair Hours   Parts Cost  

Standards Used 8612, 0219

Date Picked Up 6/1/2001

Picked Up By Darrell Dunn

**43744**







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

23 May 2001

**Issued to:** DARRELL DUNN DIV20 B57  
**Manufacturer/Model:** FISHER SCIENTIFIC 15041C  
**Description:** THERMOMETER  
**Serial Number:** 9253474  
**Asset Number:** 004996  
**Work Order Number:** 444043744

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: 77.0 Degrees Fahrenheit Humidity: 36 % RH

**Calibration Date:** 23 May 01 **Calibration Procedure:** CL-9, MAY99

**Condition as Received:** SEE ATTACHED DATA

**Condition as Released:** SEE ATTACHED DATA

**Remarks:** SEE ATTACHED DATA SHEET FOR CORRECTION FACTORS AND TEST UNCERTAINTY.

Approved by:

Walt Hill, Supervisor  
Institute Calibration Laboratory

Measurements performed by:

Roger Dykstra, Technician

# SOUTHWEST RESEARCH INSTITUTE

## Calibration Laboratory

### WORK ORDER

Received by WHILL, 11/16/01 12:38:23PM

Arrived 11/16/01

Work Order **444046131**

Asset No. 004996 Manufacturer FISHER SCIENTIFIC

Model 15041C

Equipment Type THERMOMETER

Serial No. 9253474

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 20.00751.006

Notify before adjustments or repairs. ( ) Provide data with certificate ( ) Certificate Type \_\_\_\_\_

Charge/Project No. 00751.006.1.20

Requester / Telephone BRIAN/

This information is correct for the work requested. B. EDW

### WORK NOTES

Date	Hours	Remarks/Notes
<u>11/20</u>	<u>1.0</u>	<u>Cal</u>

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

### WORK SUMMARY

Failure Description n/n

Repair Action n/a

Tech RD/KSM Cal Hrs. 1.0 Repair Hrs   Parts Cost   Temp 76 F Hum. 29

Standards Used 000219

Date Picked Up 12/4/01

Picked Up By Darrell Dunn

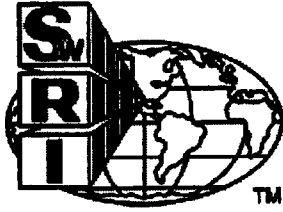
444046131

Southwest Research Institute  
 Calibration Laboratory  
 Calibration data sheet

Work Order:	444046131	Mfr.	Fisher Scientific	Technician	Roger Dykstra
Asset No.	004996	Model	15041C	Procedure	CL-9, 5/99
Serial No.	9253474	Type	Thermometer	Cal Date.	11/20/01

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 %. The test limits are specified in the procedure.

Parameter	Test Point	As Found / As left	Error	Test Limits	Uncertainty
Temperature	0.09	0.4	0.27	1	0.1
Degree C	20.06	20.2	0.14	1	0.1
	40.05	40.4	0.31	1	0.1
	60.00	60.2	0.20	1	0.1
	79.98	80.3	0.30	1	0.1
	100.00	99.9	-0.05	1	0.1



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

## Certificate of Calibration

20 November 2001

**Issued to:** DARRELL DUNN DIV20 B57  
**Manufacturer/Model:** FISHER SCIENTIFIC 15041C  
**Description:** THERMOMETER  
**Serial Number:** 9253474  
**Asset Number:** 004996  
**Work Order Number:** 444046131

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: 76.0 Degrees Fahrenheit Humidity: 29 % RH

**Calibration Date:** 20 Nov 01 **Calibration Procedure:** CL-9, MAY99

**Condition as Received:** IN TOLERANCE

**Condition as Received:** 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 AANDERSON, 6/6/02 9:11:09AM

Arrived 6/6/02

Work Order **444048918**

Asset No. 004996 Manufacturer FISHER SCIENTIFIC

Model 15041C

Equipment Type THERMOMETER

Serial No. 9253474

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 20.00751.006

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 D*

### WORK NOTES

Date	Hours	Remarks/Notes
<u>6/12/02</u>	<u>.5</u>	<u>and</u>
<u>6/13/02</u>	<u>.5</u>	<u>and</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____

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

### WORK SUMMARY

Failure Description n/a

Repair Action n/a

Tech RD/ks Cal Hrs. 1.0 Repair Hrs \_\_\_\_\_ Parts Cost \_\_\_\_\_ Temp 74 F Hum. 54 %

Standards Used SA 9137, 8920

Date Picked Up 6/24/02

Picked Up By *Darrell D*

**48998**

-10

-9.932

-9.4

57

56.99

58

125

124.93

123.6

193

210.67

210.2

260

250.31

251.4

27787

Southwest Research Institute  
Calibration Laboratory  
Calibration Data Sheet

Workorder 444048918  
Asset #. 004996  
Serial #. 9253474

Mfr. Fisher Scientific  
Model 15041C  
Type Thermometer

Technician R Dykstra  
Procedure CL-9, 5/99  
Cal Date 6/13/02

**Ambient Conditions:**

Temperature 74 Degree F  
Humidity 56 % R.H.  
Baro. Pressure N/A PSIA

**Data sheet Revision:**

Revision 0 2/21/02

**Standards used:**

Asset #	Due Date	Nomenclature
009137	12/06/02	Hart Super thermometer
008920	02/07/02	RTD probe

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

Tolerance 2.00 Degree C Range -10 to 260 Degree C  
(if not required leave blank)

Degree C	Degree C	Degree C	Degree C	Degree C	
	As Found				
Std Reading	TI Reading	Error	Test Limits	Uncertainty	Results
-9.93	-9.4	0.53	2	0.23	Pass
56.99	58.0	1.01	2	0.23	Pass
124.93	123.6	-1.33	2	0.23	Pass
210.07	210.2	0.13	2	0.23	Pass
250.31	251.4	1.09	2	0.23	Pass

**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

13 June 2002

**Issued to:** DARRELL DUNN DIV20 B57  
**Manufacturer/Model:** FISHER SCIENTIFIC 15041C  
**Description:** THERMOMETER  
**Serial Number:** 9253474  
**Asset Number:** 004996  
**Work Order Number:** 444048918

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:** 13 Jun 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:**

  
Roger Dykstra, Technician