

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

WORK ORDER

CERTIFICATE # 22440 ASSET # 004993 DATE 8-21-96

ITEM DATA:

Manufacturer ERTCO Model K-166A
Description Thermometer Serial # C-96-397
Accessories _____

ACTION REQUESTED Calibration

CUSTODIAN Darryl Dunn DIV-20

Turned in by: Darryl Phone: 6396

CHARGE # 20-5908-593 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 interval
 - _____ Reliability code

ACTION TAKEN: (Calibration/Repair/Parts) collected per procedure.

22440

CAL ENVIRONMENT:
Temperature 78 °F Humidity 35 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure 61-9-30-5703
Date 26 Feb 96 Accuracy 10%
Cal Interval 6 mos Time to complete: [Signature]
Next Cal due 26 Feb 97 Cal 2.5 Repair _____
Standards used (Asset#) 219, 328

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

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

WORK ORDER

CERTIFICATE # 24355 ASSET # 002993 DATE 17 Feb 97

ITEM DATA:

Manufacturer Fluke Model 15166A
Description Thermistor Serial # C96-377
Accessories _____

ACTION REQUESTED Cal

CUSTODIAN Div. 20, Darrell Duma

Turned in by: _____ Phone _____

CHARGE # 205708.561 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
 - _____ Reliability code

ACTION TAKEN: (Calibration/Repair/Parts) Calibrated per procedure.
WUT
0.03°C 0.0°C

CAL ENVIRONMENT:
Temperature 80 °F Humidity 40 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure 41-9-30-5H03
Date 20 Feb 97 Accuracy ± 1.0°C
Cal Interval 6 Mo Time to complete:
Next Cal due 20 Aug 97 Cal 2.0 Repair _____
Standards used (Asset#) 219,325

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

24355

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

WORK ORDER

CERTIFICATE # 26588 ASSET # 004913 DATE 25 Aug 97

ITEM DATA:
Manufacturer T. S. Ho. brand / H. S. Inc Model 15-146A
Description Ther. Indicator Serial # 004-377
Accessories _____

ACTION REQUESTED MI

CUSTODIAN D. J. P. Small

Turned in by: _____ Phone 7070

CHARGE # 20.5708561 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 Rosemary
445
0.032°C 0.0°C

26588

CAL ENVIRONMENT:
Temperature 80°F Humidity 34%RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure WI-9-30-7403
Date 3 Aug 97 Accuracy ±1°C
Cal Interval 6 mos Reliability Code: 3
Next Cal due 3/14/98 Cal Time 1.5 Repair Time _____
Standards used (Asset#) 219, 325

DATE COMPLETED 3 Aug 97
DATE PICKED UP 9/10/97 PICKED UP BY [Signature]

ASTM E1

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

WORK ORDER

CERTIFICATE # 31709 ASSET # 004993 DATE 21 Oct 98

ITEM DATA:

Manufacturer Fisher Model 15-166A
Description Thermometer (Partial Immersion) Serial # 096377
Accessories _____

ACTION REQUESTED cal

CUSTODIAN Div. 20, Donald Dunn

Turned in by: _____ Phone 6090

CHARGE # 20-1108-S11 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 MMH Date 10-21-98

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) _____

CAL ENVIRONMENT:
Temperature 72°F Humidity 64%RH

CALIBRATED/REPAIRED:
By W. Hill Cal Procedure 33K5-4-42-1
Date 30 Oct 98 Accuracy _____
Cal Interval 6 m Reliability Code: 5
Next Cal due 30 APR 99 Cal Time 5 Repair Time _____
Standards used (Asset#) 219 328

DATE COMPLETED _____
DATE PICKED UP 11/4/98 PICKED UP BY [Signature]

31709

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

WORK ORDER

CERTIFICATE # 34400 ASSET # 004993 DATE 05 May 99

ITEM DATA:

Manufacturer Fisherbrand Model 15166A
Description Thermometer Serial # 096371
Accessories _____

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 MAD Date 05-05-99

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) collected by Danell Dunn

CAL ENVIRONMENT:
Temperature 71 °F Humidity 52 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure F.O. 3315-4-42-1, A-27
Date 12/21/99 Accuracy 1/2 deg
Cal Interval 6 mos Reliability Code: 5
Next Cal due 12/21/99 Cal Time 1.5 Repair Time _____
Standards used (Asset#) 5174, 7001

DATE COMPLETED 12/21/99
DATE PICKED UP 5/18/02 PICKED UP BY [Signature]

34400

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

WORK ORDER

WORK ORDER # 37054 ASSET # 004993 DATE 08 Dec 99

ITEM DATA:

Manufacturer Fisher Model 15-166A
Description Thermometer Serial # 196-377
Accessories _____

ACTION REQUESTED cal

CUSTODIAN D. S. Darrell Dunn

Turned in by: _____ Phone 6096

CHARGE # 20.011 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 WAG Date 18-08-99

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) cal

CAL ENVIRONMENT:
Temperature 70 °F Humidity 30 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure EL-9 MAY 99
Date 10 Dec 99 Accuracy 1/1 DE
Cal Interval 6 Reliability Code 5
Next Cal Due 10 JUN 00 Cal Time 1.3 Repair Time _____
Standards used (Asset #) 5174

DATE COMPLETED 10 Dec 99
DATE PICKED UP 12/14/99 PICKED UP BY [Signature]

37054



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

10 December 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: 70.0 Degrees Fahrenheit Humidity: 30 % RH


Calibration Date: 10 Dec 99 **Calibration Procedure:** CL-9 MAY 99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

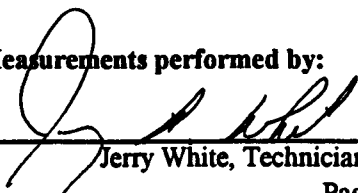


Jim Patterson, Supervisor or Walt Hill, Metrologist

Certificate # 37054

m:\a2la.rpt Rev date 10 Mar 99

Measurements performed by:



Jerry White, Technician

Page 1 of 1

WORK ORDER 39330

Date Received 6/5/00

Asset No. 004993 Manufacturer FISHER SCIENTIFIC Model 15-166A
 Description THERMOMETER Serial Number C96-377
 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 MAY 99 Temp 23 F Hum 54 %

Tech JW Cal Hrs. 2 Repair Hrs. _____ Part Cost _____

Action Taken enL

Standards Used 5243 5174

Date Cal 9 JUN 2000 Int. 6 Mo. Date Due DEC 2000 Reliability Code 7

Date Picked Up 6/14/00 Picked Up By Melissa Nugent

6/29/2000

39330



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

9 June 2000

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/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.

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Ambient Conditions: Temperature: 73.0 Degrees Fahrenheit Humidity: 54 % RH

Calibration Date: 9 Jun 00 **Calibration Procedure:** CL-9 MAY 99

Condition as Received: In Tolerance

Remarks:

Approved by:

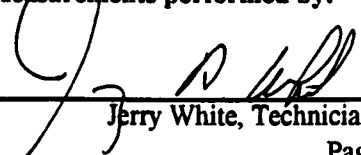


Jim Patterson, Supervisor, or Walt Hill, Metrologist

Certificate # 39330

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 10000 0000 0000 0000 0000 0000 0000

Work Order 444041751

Arrived 12/14/00

Asset No. 004993

Manufacturer FISHER SCIENTIFIC

Model 15-166A

Instrument Type/Class THERMOMETER

Serial No. C96-377

Accessory No.

Calibration Procedure CL-9 MAY 99

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 65F

Hum. 40 %

Tech QNW

Totals

Cal Hours 1

Repair Hours _____

Parts Cost _____

Standards Used 219

Date Picked Up 1/9/2001

Picked Up By [Signature]

444041751



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

22 December 2000

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/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.

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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 MAY 99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

Jim Patterson, Supervisor, or Walt Hill, Metrologist

Certificate # 444041751

m:\a2la.rpt Rev date 22 May 00

Measurements performed by:

Jerry White, Technician

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

Processed by RCRUZ at 2:39:01PM on 7/9/01

1 0001 0011 0011 0011 0011 0011 0011 0011

Work Order **444044289**

Arrived 7/9/01

Asset No. 004993 Manufacturer FISHER SCIENTIFIC Model 15-166A

Instrument Type/Class THERMOMETER Serial No. C96-377

Accessory No. Calibration Procedure CL-9 MAY 99 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>2/16</u>	<u>2.0</u>	<u>Calibration</u>

REPAIR PARTS

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/A

Repair Action N/A

Calibration Procedure CL-9, 5/99 Temp 78F Hum. 46 %

Tech R. J. K. S. T. V. Totals Cal Hours 2.0 Repair Hours Parts Cost

Standards Used 0215

Date Picked Up 7/20/01

Picked Up By Darrell Dunn

44289

n	Act	Std	
-20	-20 °C	-19.959 °C	0.023
0	0.2 °C	6.071 °C	0.022 +/- 1.0 °C
50	50.2 °C	50.165 °C	
100	100.0 °C	99.945 °C	0.026
150	149.6 °C	149.830 °C	+1.5 °C

0.039

41751

-19.959
 -20.0

 .041

28522



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

16 July 2001

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FISHER SCIENTIFIC 15-166A
Description: THERMOMETER
Serial Number: C96-377
Asset Number: 004993
Work Order Number: 444044289

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: 78.0 Degrees Fahrenheit Humidity: 46 % RH

Calibration Date: 16 Jul 01 **Calibration Procedure:** CL-9 MAY 99

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 JIBARRA, 1/8/02 11:36:03AM

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

Arrived 1/8/02

Work Order **444046679**

Asset No. 004993 Manufacturer FISHER SCIENTIFIC

Model 15-166A

Equipment Type THERMOMETER

Serial No. C96-377

Accessory No.

Interval 6 M

Calibration Procedure CL-9 MAY 99

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

DARRELL DUNN/ X6090

This information is correct for the work requested.

WORK NOTES

Date	Hours	Remarks/Notes
<u>1/10/02</u>	<u>1.0</u>	<u>Cal</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

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

WORK SUMMARY

Failure Description n/a

Repair Action n/a

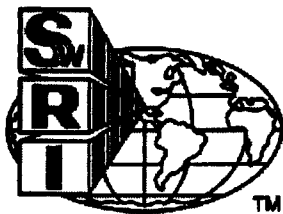
Tech R. Daksh Cal Hrs. 1.0 Repair Hrs. _____ Parts Cost _____ Temp 76 F Hum. 42 %

Standards Used 0219

Date Picked Up 1/11/02

Picked Up By Darrell Dunn

444046679



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

Certificate of Calibration

10 January 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: 444046679

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: 42 % RH


Calibration Date: 10 Jan 02 **Calibration Procedure:** CL-9 MAY 99

Condition as Received: IN TOLERANCE

Condition as Returned: IN TOLERANCE

Remarks:

Approved by:


Walt Hill, Supervisor
Institute Calibration Laboratory

Measurements performed by:


Roger Dykstra, Technician