

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

WORK ORDER

CERTIFICATE # 22432 ASSET # 004987 DATE 8-21-96

ITEM DATA:

Manufacturer ETCO Model 15-166A
Description Thermometer Serial # C 96-616
Accessories _____

ACTION REQUESTED cal

CUSTODIAN Darryl Dunn, Div 20

Turned in by: Darryl Phone 6090

CHARGE # 20-5078-573 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
6 mos Calibration interval
_____ Reliability code

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

CAL ENVIRONMENT:
Temperature 78 °F Humidity 38 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure WI-9-31-TA03
Date 26 Feb 96 Accuracy 0.5% spec.
Cal Interval 6 mos Time to complete: _____
Next Cal due 26 FEB 97 Cal 2.5 Repair _____
Standards used (Asset#) 219, 328

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

22432

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

WORK ORDER

CERTIFICATE # 24340 ASSET # 004987 DATE 17 Feb 97

ITEM DATA:

Manufacturer Er-100 Model 15 166A
Description Thermometer Serial # C96-616
Accessories _____

ACTION REQUESTED Cal

CUSTODIAN Div 20, Daniel Dunn

Turned in by: _____ Phone _____

CHARGE # 20-5708-501 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

24340

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

CAL ENVIRONMENT:
Temperature 74 °F Humidity 35% RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure WI-9-30-9705
Date 25 Feb 97 Accuracy ±1°C
Cal Interval 6 mos Time to complete: _____
Next Cal due 25 Aug 97 Cal 2.0 Repair _____
Standards used (Asset#) 319, 328

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

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

WORK ORDER

CERTIFICATE # 26586 ASSET # 00498-7 DATE 25 Aug. 97

ITEM DATA:

Manufacturer Iskra Brann H. Inc Model 15-106A
Description 1/2" monitor Serial # 001-016
Accessories _____

ACTION REQUESTED cal

CUSTODIAN Dr. 20, Darrell Damm

Turned in by: _____ Phone 6090

CHARGE # 20.508.561 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
401 405
0.019°C 0.0°C

26586

CAL ENVIRONMENT:
Temperature 72 °F Humidity 49 %RH

CALIBRATED/REPAIRED:
By TK Cal Procedure WI-9-30-7463
Date 3 Sep 97 Accuracy +/- 1°C
Cal Interval 6 mths Reliability Code: 3
Next Cal due 3 Apr 98 Cal Time 1.5 Repair Time _____
Standards used (Asset#) 218, 328

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

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

WORK ORDER

CERTIFICATE # 28724 ASSET # 004987 DATE 01 Mar 98

ITEM DATA:
Manufacturer Taylor Model 15-166A
Description 110, 110, 110, 110 Serial # 017-166
Accessories _____

ACTION REQUESTED 191

CUSTODIAN D. W. Dunn, Paul Dunn

Turned in by: _____ Phone 6090

CHARGE # 10-1160-571 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 _____ 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 unt
0.06 °C 0 °C

CAL ENVIRONMENT: Temperature 66 °F Humidity 26 %RH

CALIBRATED/REPAIRED:
By K. Hughes Cal Procedure WI-9-30-7603
Date 10 Mar 98 Accuracy ± 1 °C
Cal Interval 6 mths Reliability Code: 4
Next Cal due 10 Sep 98 Cal Time 1.0 Repair Time _____
Standards used (Asset#) 29, 328

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

28724

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

WORK ORDER

CERTIFICATE # 31646 ASSET # 004987 DATE 19 Oct 98

ITEM DATA:

Manufacturer Fisher Model 15-100A
Description Thermometer Serial # 896 616
Accessories _____

ACTION REQUESTED Cal

CUSTODIAN Dr. S. J. Howell Dunn

Turned in by: _____ Phone 6090

CHARGE # 20-1102-571 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 AME 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

31646

ACTION TAKEN: (Calibration/Repair/Parts) Calibrated Per Procedure

CAL ENVIRONMENT:
Temperature 75°F Humidity 44%RH

CALIBRATED/REPAIRED:
By R. [Signature] Cal Procedure ASME E77-92
Date 19 Oct 98 Accuracy 1/2% Spec
Cal Interval 6 mos Reliability Code: 5
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]

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

WORK ORDER

CERTIFICATE # 34398 ASSET # 004987 DATE 05 May 99

ITEM DATA:

Manufacturer Fisher brand Model 15-166A
Description Thermometer Serial # C96-616
Accessories tube

ACTION REQUESTED cal

CUSTODIAN Div. 20, 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 MAJ 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) Calibrated by [Signature]

CAL ENVIRONMENT:
Temperature 71 °F Humidity 50 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure 7.0.33K5-4-42-1, A4291
Date 12 Nov 99 Accuracy [Signature]
Cal Interval 6 mths Reliability Code: F
Next Cal due 12 Nov 99 Cal Time 1.5 Repair Time _____
Standards used (Asset#) 5174, 7001

DATE COMPLETED 12 Nov 99
DATE PICKED UP 5/13/00 PICKED UP BY [Signature]

34398

CALIBRATION CHECK FORM

Date Calibrated 12 May 99 Work Order 34398
 Technician 8216 Calibration Procedure T.O. 3345-1-42-1, AM97
 Unit Under Test Thermometer
 Manufacturer Fisher Scientific Model 15-166A SN C96-616 ASN 4987

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P/F
			MIN	MAX	AS FOUND	RELEASED	
	<u>RANGE: -20°C TO 150°C</u>	<u>0°C</u>		<u>±1°C</u>	<u>0</u>		<u>P P P P P P</u>
		<u>-18.0</u>			<u>-18</u>		
		<u>14.0</u>			<u>14</u>		
		<u>48.0</u>			<u>48</u>		
		<u>82.0</u>			<u>82</u>		
		<u>116.0</u>			<u>116</u>		
		<u>145.0</u>			<u>145</u>		

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

WORK ORDER

WORK ORDER # 36847 ASSET # 004997 DATE 17 Nov 99

ITEM DATA:

Manufacturer Fisher brand/ teco Model 15-166A
Description 1000 microammeter Serial # 096-016
Accessories _____

ACTION REQUESTED CAL

CUSTODIAN D.L. 20, Carroll 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 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 per procedure

CAL ENVIRONMENT:
Temperature 75 °F Humidity 52 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure CL-9, May 99
Date 22 Nov 99 Accuracy [Signature]
Cal Interval 6 mos Reliability Code 7
Next Cal Due 22 May 00 Cal Time 12 Repair Time _____
Standards used (Asset #) 5243, 5174

DATE COMPLETED 22 Nov 99
DATE PICKED UP 11/23/99 PICKED UP BY [Signature]

36847



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 November 1999

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FISHER SCIENTIFIC 15-166A
Description: THERMOMETER
Serial Number: C96-616
Asset Number: 004987

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: 75.0 Degrees Fahrenheit Humidity: 52 % RH


Calibration Date: 22 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 # 36847

m:\a2la.rpt Rev date 10 Mar 99

Measurements performed by:



Ken Harp, Technician

Page 1 of 1

WORK ORDER 39220

Date Received 5/25/00

Asset No. 004987 Manufacturer FISHER SCIENTIFIC Model 15-166A
 Description THERMOMETER Serial Number C96-616
 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

39220

WORK SUMMARY

Failure Description _____
 Repair Action _____
 Cal Procedure CL-9, MAY99 Temp 76 F Hum 47 %
 Tech JMS Cal Hrs. .7 Repair Hrs. _____ Part Cost _____
 Action Taken eh2
 Standards Used 219 5174
 Date Cal 15 JUN 2000 Int. 6 Mo. Date Due 1 DEC 2000 Reliability Code 8
 Date Picked Up 6/2/00 Picked Up By [Signature]

CALIBRATION CHECK FORM

Date Calibrated 1 JUN 2000 Work Order 39220 Cal By Q M

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

Mfg. FISHER Model 75-16LA SNC96-616 AN 4987

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.	-19.98			-20.0		
	20% Range	15.10			15.4		
	40% Range	45.72			49.8		
	60% Range	85.06			85.3		
	80% Range	119.97			119.9 120.2		
	Highest value of Range -2 Div.	149.93			150.0		
		25			25.5		



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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 15-166A
Description: THERMOMETER
Serial Number: C96-616
Asset Number: 004987

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSINCSSL 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: 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:

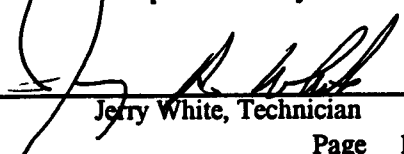


Jim Patterson, Supervisor, or Walt Hill, Metrologist

Certificate # 39220

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 444041762

Arrived 12/14/00

Asset No. 004987

Manufacturer FISHER SCIENTIFIC

Model 15-166A

Instrument Type/Class THERMOMETER

Serial No. C96-616

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 Jpw

Totals

Cal Hours 1

Repair Hours _____

Parts Cost _____

Standards Used 219

Date Picked Up 1/9/2001

Picked Up By Darrell Dunn



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: C96-616
Asset Number: 004987

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 # 444041762

mAa21a.rpt Rev date 22 May 00

Measurements performed by:

Jerry White, Technician

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

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

1 0000 0000 0000 0000 0000 0000

Work Order **444044162**

Arrived 6/22/01

Asset No. 004987 Manufacturer FISHER SCIENTIFIC

Model 15-166A

Instrument Type/Class THERMOMETER

Serial No. C96-616

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>Calibrate</u>
<u>6/26</u>	<u>.5</u>	<u>Calibrate</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. Dijkstra Totals Cal Hours 1.0 Repair Hours _____ Parts Cost _____

Standards Used 0219

Date Picked Up 7/9/01

Picked Up By B. C. [Signature]

444044162



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



Certificate #
0972-01

Certificate of Calibration

26 June 2001

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FISHER SCIENTIFIC 15-166A
Description: THERMOMETER
Serial Number: C96-616
Asset Number: 004987
Work Order Number: 444044162

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

