

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

WORK ORDER

CERTIFICATE # 24332 ASSET # 001893 DATE 17 FEB-97

ITEM DATA:  
Manufacturer Fisher Scientific Model 950  
Description Accumot pH/ION Meter Serial # 3340  
Accessories \_\_\_\_\_

ACTION REQUESTED Cal

CUSTODIAN Carroll Dunn, Div. 20

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
  - \_\_\_\_\_ Reliability code

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

CAL ENVIRONMENT:  
Temperature 74 °F Humidity 42 %RH

CALIBRATED/REPAIRED:  
By [Signature] Cal Procedure AFG. App. 1893  
Date 21 APR 97 Accuracy 4% spec.  
Cal Interval 12 Mo. Time to complete: \_\_\_\_\_  
Next Cal due 21 APR 98 Cal 2.5 Repair \_\_\_\_\_  
Standards used (Asset#) 182

DATE COMPLETED 21 APR 97  
DATE PICKED UP 4/22/97 PICKED UP BY [Signature]

24332



SOUTHWEST RESEARCH INSTITUTE  
Department of Quality Assurance  
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WORK ORDER

CERTIFICATE # 29656 ASSET # 001893 DATE 08 May 98

ITEM DATA:  
Manufacturer Fisher Scientific Model Accumet 950  
Description 1/2" Ion Meter Serial # 3346  
Accessories \_\_\_\_\_

ACTION REQUESTED MI

CUSTODIAN Du. No. Daniel Quinn

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

CHARGE # 20.1102 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 MMK Date 05-08-98

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) Accurate Repeatability  
Limited Calibration - Calibrated for MV use ONLY

CAL ENVIRONMENT:  
Temperature 74°F Humidity 46 %RH

CALIBRATED/REPAIRED:  
By V. Mowles Cal Procedure CLCP-PH-002  
Date 18 MAY 98 Accuracy MFS  
Cal Interval 12 Reliability Code: 5  
Next Cal due 18 MAR 99 Cal Time 2.0 Repair Time \_\_\_\_\_  
Standards used (Asset#) 182

DATE COMPLETED 18 MAY 98  
DATE PICKED UP 6/3/98 PICKED UP BY Walt Macintosh

29656

# CALIBRATION CHECK FORM

Date Calibrated 18 MAY 98 Work Order 29656  
 Technician J. Morales  
 Unit Under Test Accumet pH meter  
 Manufacturer Fisher Model 950 SN 3340 ASN 1893

STEP	FUNCTION OR RANGE	APPLIED	TOLERANCE		MEASURED VALUES		P/F
			MIN	MAX	AS FOUND	RELEASED	
		mVDC	mV		mV		
1	Input "A"	0	-0.2	0.2	0.0mV		Pass
		500.0	499.8	500.2	500.0mV		
		1000.0	999.8	1000.2	999.9mV		
		1400.0	1399.8	1400.2	1399.9mV		
		1700.0	1699.8	1700.2	1699.9mV		
		1998.0	1997.8	1998.2	1997.9mV		
		-500.0	-499.8	-500.2	-499.8mV		
		-1000.0	-999.8	-1000.2	-999.9mV		
		-1400.0	-1399.8	-1400.2	-1399.9mV		
		-1700.0	-1699.8	-1700.2	-1699.9mV		
		-1998.0	-1997.8	-1998.2	-1997.8mV		
2	Input "B"	0	-0.2	0.2	0V		
		500.0	499.8	500.2	499.8mV		
		1000.0	999.8	1000.2	999.9mV		
		1400.0	1399.8	1400.2	1399.9mV		
		1700.0	1699.8	1700.2	1699.9mV		
		1998.0	1997.8	1998.2	1997.8mV		
		-500.0	-499.8	-500.2	-500.0mV		
		-1000.0	-999.8	-1000.2	-1000.0mV		
		-1400.0	-1399.8	-1400.2	-1399.9mV		
		-1700.0	-1699.8	-1700.2	-1699.9mV		
		-1998.0	-1997.8	-1998.2	-1997.8mV		

SOUTHWEST RESEARCH INSTITUTE  
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WORK ORDER

CERTIFICATE # 34487 ASSET # 001893 DATE 13 May 99

ITEM DATA:  
Manufacturer Fisher Scientific Model 950  
Description ph/ion meter Serial # 3340  
Accessories \_\_\_\_\_

ACTION REQUESTED cal

CUSTODIAN DV.20 Darrell 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 MMH Date 05-13-99

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) Limited Cal - mv use only

CAL ENVIRONMENT:  
Temperature 72 °F Humidity 42 %RH

CALIBRATED/REPAIRED:  
By MMH Cal Procedure MFS P/N 1893  
Date 2 June 99 Accuracy MFS  
Cal Interval 12 Reliability Code: -1  
Next Cal due 2 June 00 Cal Time 2.0 Repair Time \_\_\_\_\_  
Standards used (Asset#) 7198

DATE COMPLETED 2 June 99  
DATE PICKED UP 6/7/99 PICKED UP BY [Signature]

34487



# WORK ORDER 39647

Date Received 7/6/00

Asset No. 001893 Manufacturer FISHER SCIENTIFIC Model ACCUMET 950  
Description PH/ION METER Serial Number 3340  
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  
Delivered By DARRELL DUNN Tel. 6090

## WORK HISTORY

Date	Start Time	Stop Time	Notes

## PARTS

Part Name	Part Number	Cost	Failure Description

39647

## WORK SUMMARY

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

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

Cal Procedure Orion 950 5520A 1yr July 2000 Temp 94 F Hum 42 %

Tech Vincent Morales Cal Hrs. 1.0 Repair Hrs. \_\_\_\_\_ Part Cost \_\_\_\_\_

Action Taken Calibrated

Standards Used 6413

Date Cal 20 July 2000 Int. 12 Mo. Date Due 20 July 2001 Reliability Code \_\_\_\_\_

Date Picked Up 7/31/2000 Picked Up By \_\_\_\_\_

# Calibration Results

## SwRI Calibration Laboratory

UUT: FISHER SCIENTIFIC ACCUMET 950  
 PH/ION METER  
 Serial No: 3340  
 Asset No. 001893

Result: **PASS**  
 Performed on: 7/20/00 at 14:28:55  
 Performed by: Mark Anthony Romero  
 Environment: Temp. 74.0°F Humid. 42 %  
 Condition F/L: FOUND-LEFT  
 Procedure Completed: YES

Notes: LIMITED CALIBRATION: MV USE ONLY.

### Standards Used

Asset	Mfg	Model	Description	Cal. Date	Due Date
006413	FLUKE	5520A	MULTI-PRODUCT CALIBRATOR	14-Oct-99	14-Oct-00

### Test Data

TEST#	STD PARAMETER	TRUE VALUE	UNIT UNDER TEST			ERROR in (% of Tol)	NOTIFY TUR USER
			READING	TOLERANCE	UUT ERROR		
DC millivolts INPUT 1							
1	0.0mV		0.0	500uV	0V	0	
2	1000.0mV		1000.0	1mV	0V	0	
3	-1000.0mV		-1000.0	1mV	0V	0	
DC millivolts INPUT B							
4	0.0mV		0.1	500uV	100uV	20	
5	1000.0mV		1000.0	1mV	0V	0	
6	-1000.0mV		-1000.0	1mV	0V	0	

End of Test Data



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

20 July 2000

**Issued to:** DARRELL DUNN DIV20 B57  
**Manufacturer/Model:** FISHER SCIENTIFIC ACCUMET 950  
**Description:** PH/ION METER  
**Serial Number:** 3340  
**Asset Number:** 001893

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: 74.0 Degrees Fahrenheit Humidity: 42 % RH

**Calibration Date:** 20 Jul 00 **Calibration Procedure:** ORION 950 5520A 1YR JULY 2000

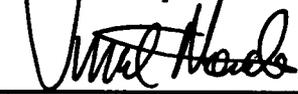
**Condition as Received:** WITHIN LIMITED CALIBRATIONS REQUIREMENTS

**Remarks:** LIMITED CALIBRATION: MV USE ONLY.

Approved by:

  
\_\_\_\_\_  
Jim Patterson, Supervisor, or Walt Hill, Metrologist

Measurements performed by:

  
\_\_\_\_\_  
Vince Morales, Technician

# SOUTHWEST RESEARCH INSTITUTE

## Calibration Laboratory

### WORK ORDER

Processed by RCRUZ at 3:14:42PM on 7/20/01

1 10011 0011 0011 0011 0011 0011 0011

**Work Order 44404496**

Arrived 7/20/01

Asset No. 001893 Manufacturer FISHER SCIENTIFIC

Model ACCUMET 950

Instrument Type/Class PH/ION METER

Serial No. 3340

Accessory No. \_\_\_\_\_ Calibration Procedure \_\_\_\_\_

Location B57

Div/Client DIV20

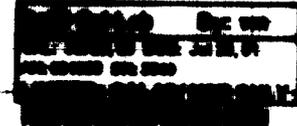
Custodian DARRELL DUNN

Mail Stop B57

Tel. 6090

Charge/Project No. 00751.006

Delivered By / Telephone \_\_\_\_\_



**IN4CAL**

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

### WORK NOTES

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

### REPAIR PARTS

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

### WORK SUMMARY

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

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

Calibration Procedure \_\_\_\_\_

Temp 72 F

Hum. 38 %

Tech Anthony Roman

Totals

Cal Hours 1.0

Repair Hours \_\_\_\_\_

Parts Cost \_\_\_\_\_

Standards Used 6413

Date Picked Up 7/31/01

Picked Up By [Signature]

44496



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

24 July 2001

**Issued to:** DARRELL DUNN DIV20 B57  
**Manufacturer/Model:** FISHER SCIENTIFIC ACCUMET 950  
**Description:** PH/ION METER  
**Serial Number:** 3340  
**Asset Number:** 001893  
**Work Order Number:** 444044496

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: 72.0 Degrees Fahrenheit Humidity: 38 % RH

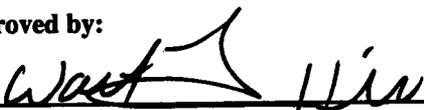
**Calibration Date:** 24 Jul 01 **Calibration Procedure:** CL-38, MAY 99

**Condition as Received:** LIMITED CALIBRATION

**Condition as Released:** LIMITED CALIBRATION

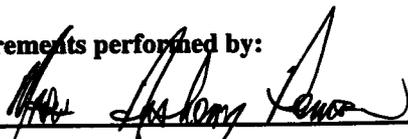
**Remarks:** LIMITED CALIBRATION: CALIBRATE MILLIVOLT USE ONLY.

**Approved by:**

  
\_\_\_\_\_

Walt Hill, Supervisor  
Institute Calibration Laboratory

**Measurements performed by:**

  
\_\_\_\_\_

Mark Romero, Technician

