

S O U T H W E S T R E S E A R C H I N S T I T U T E

Department of Quality Assurance
Calibration Laboratory

CERTIFICATE OF CALIBRATION

Issued to: DIV20 B51 KRISTI MEYER

Device No: 2865

Manufacturer: MOORE

Model: 60 PSI

Nomenclature: PRESSURE GAUGE

Serial Number: 356301

SwRI No: NONE

Cal interval 12 Mo.

Remarks

Accuracy: +/- .5 PSI

Procedure: SWRI

ENVIRONMENT

Temperature:

Humidity:

Location: SWRI BLDG. 145

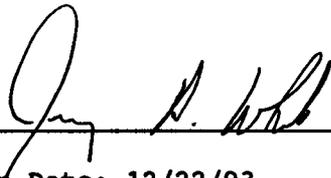
CONCLUSION

Tolerance/Remarks: Received into the system, introduced or reactivated

Room Temperature.

Calibration was in accord with requirements of MIL-STD-45662A. Measurements are traceable to the National Institute of Standards and Technology. Inspection and test data are on file and available for inspection.

Signed



Calibration Date: 12/22/93

Cal interval: 12 Months

Record Number: 00013022

Next Calibration Due: 12/22/94

S O U T H W E S T R E S E A R C H I N S T I T U T E

Department of Quality Assurance
Calibration Laboratory

Device Serial No: 356301

Calibration Date: 12/22/93

STANDARDS

Standard No: 1554 Manufacturer: AMETEK

Model: RK-300

Nomenclature: DEADWEIGHT TESTER

Serial No: 82167

Cal.Due: 03/26/94

Cal.Rec.No: 00010846

SOUTHWEST RESEARCH INSTITUTE

**Department of Quality Assurance
Calibration Laboratory**

**CERTIFICATE OF CALIBRATION
12/19/94**

Issued to: KRISTI MEYER
Manufacturer: MOORE
Nomenclature: PRESSURE GAUGE
Serial Number: 356301

DIV20 ,B51

Asset Number: 002865
Model Number: 60 PSI
SwRI Capital Number:

ENVIRONMENTAL CONDITIONS

Temperature: 69.0F

Relative Humidity: 75 %

CALIBRATION INFORMATION

Location: B184
Procedure Number: SWRI
Remarks: 20PSI READ 20.1, 40PSI READ 40.1, 60PSI
READ 59.9.

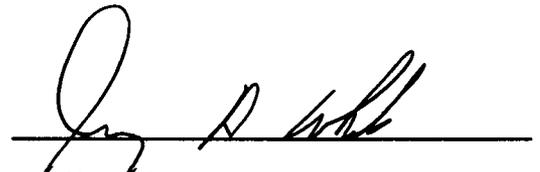
Technician: 7213
Accuracy: +/- .5 PSI
Received IN Tolerance

Calibration was in accordance with requirements of MIL-STD-45662A.
Measurements are traceable to the National Institute of Standards and Tech-
nology. Inspection and test data are on file and available for inspection.

STANDARDS USED FOR CERTIFICATION

Asset #	Serial #	Mfg	Model #	Nomenclature	Cal Date	Int.	Cal Due
001554	82167	AMETE	RK-300	DEADWEIGHT TESTER	02/18/94	12	02/18/95

Certified by :



Certificate#: 16024

Calibration Date: 12/16/94
Interval: 12 months
Next Calibration Due: 12/16/95

SOUTHWEST RESEARCH INSTITUTE

**Department of Quality Assurance
Calibration Laboratory**

**CERTIFICATE OF CALIBRATION
02/14/96**

Issued to: RON GREEN DIV20 ,B57
Manufacturer/Model: MOORE/60 PSI
Nomenclature: PRESSURE GAUGE
Serial Number: 356301
Asset Number: 002865
Notes:

ENVIRONMENTAL CONDITIONS

Temperature: 72.0F

Relative Humidity: 22%

CALIBRATION INFORMATION

Procedure Number: SWRI
Remarks: SEE ATTACHED DATA SHEET

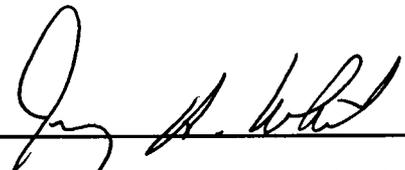
Accuracy: +/- .5 PSI
Received IN Tolerance

**Calibration was in accordance with requirements of MIL-STD-45662A.
Measurements are traceable to the National Institute of Standards and Tech-
nology. Inspection and test data are on file and available for inspection.**

STANDARDS USED FOR CERTIFICATION

Asset #	Serial #	Mfg	Model #	Nomenclature	Cal Date	Int.	Cal Due
004163	340119	MENSO	5000	FIELD PRESSURE STANDARD	12/06/95	3	03/06/96

Certified by :



Calibration Date: 02/12/96
Interval: 12 months
Next Calibration Due: 02/12/97

Certificate#: 20200

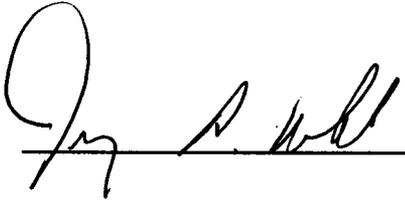
CALIBRATION CONTINUATION SHEET

Cert. #: 20200

REMARKS

Dial reading	Pressure increasing	Pressure decreasing
60 psi	59.900	xxxx
50	49.670	49.749
40	39.600	39.660
30	29.700	29.701
20	19.655	19.660
10	9.667	9.755

Page 2 of 2 Pages

Certified by: 

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

WORK ORDER

CERTIFICATE # 24261 ASSET # 002865 DATE 07 FEB. 97

ITEM DATA:
Manufacturer Macro Products Co. Model 0-60 PSI
Description Pressure Gauge Serial # 356301
Accessories _____

ACTION REQUESTED Cal

CUSTODIAN Dir. 20, Ron Green

Turned in by: Melissa Phone 2012

CHARGE # 10-99801 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

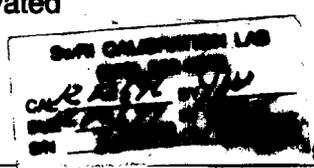
ACTION TAKEN: (Calibration/Repair/Parts) 5 point Cal

CAL ENVIRONMENT:
Temperature 70°F Humidity 37%RH

CALIBRATED/REPAIRED:
By AM Wood Cal Procedure T033K6-4-427-1
Date 2-10-97 Accuracy Grade A 1% - 2%
Cal Interval 12mo Time to complete: _____
Next Cal due 2-10-98 Cal 1.5hr Repair _____
Standards used (Asset#) 4163 5242

DATE COMPLETED 2-10-97
DATE PICKED UP 14/2/97 PICKED UP BY Melissa Fieo

24261



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

WORK ORDER

CERTIFICATE # 28583 ASSET # 00865 DATE 11 Feb 98

ITEM DATA:

Manufacturer Mooir Model 9251 0.60 ps
Description PROSSUO 00119P Serial # 356301
Accessories _____

ACTION REQUESTED Cal

CUSTODIAN Dr. J. Ron Green

Turned in by: Melissa Hill Phone 7012

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 _____ 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) 5 Point Cal

28583

SWRI CALIBRATION LAB
(210) 522-5215
CAL 2-10-97 BY CML
DUE 2-10-98 ID 2865
SN 356301

CAL ENVIRONMENT:
Temperature 72°F Humidity 42%RH

CALIBRATED/REPAIRED: CML/Ward
By _____ Cal Procedure CLCP-PI-001
Date 2-16-98 Accuracy Grade A (1% - 2%)
Cal Interval 12 mo Reliability Code: _____
Next Cal due 2-16-99 Cal Time 1.5 Repair Time _____
Standards used (Asset#) 4163

DATE COMPLETED _____
DATE PICKED UP 02/16/98 PICKED UP BY Melissa Hill

PRESSURE CALIBRATION CHECK FORM

Date 2-16-98 Work Order 28583 Technician JM Went
 Inst Cust. Ron Green Ext _____ Charge # 20-0751-006 time 1.5 hr

A) Unit Under Test Moore Pressure Gage
 Model _____ Serial No. 356301 Asset No. 301 2865
 Range 0-60 Uncertainty Grade A (1% - 2%) Std Unc _____
(rect)

B) Calibration Standard (1) Mensor Dig ind
 Model 5014 Serial No. 4163 Asset No. 4163
 Uncertainty ±0.03 psi (rect) 3401194 Std Unc _____

C) Calibration Standard (2) N/A
 Model _____ Serial No. _____ Asset No. _____
 Uncertainty _____ Std Unc _____
 Comb Unc (rss B&C) 0.03 psi TUR (A Unc/Comb Unc) 20/1

If less than 4:1, Total combined calibration Unc (kXrss) _____
 k= _____ Explanation _____
 Env: Room Temp. 72°F Humidity 42% Baro Press. 29.14" Hg
 Conversion Factor(s) N/A

STANDARD	INCREASING	DECREASING	TOLERANCE: ±0.6/1.2	
UNITS: PSIG	UNITS: PSIG	UNITS: PSIG	UNITS: PSIG	
AS FOUND			MIN	MAX
12	12.1	12.1	10.8	13.2
24	24.4	24.5	23.4	24.6
36	36.4	36.4	35.4	36.6
48	48.1	48.1	46.8	49.2
60	60.0 →		58.8	61.2
AS DELIVERED	N/A			

NOTES:



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

Certificate of Calibration

18 February 1998

Issued to: RON GREEN DIV20 B57
Manufacturer/Model: MOORE PRODUCTS CO. 0-60 PSI
Description: PRESSURE GAUGE
Serial Number: 356301
Asset Number: 002865

Environmental Conditions

Temperature: 72.00 Deg. F

Humidity: 42 % RH

Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSS Z540-1-1994. Measurements are traceable to the National Institute of Standards and Technology (NIST). This report may not be reproduced except in full without written approval of the originator. Inspection and test data are on file and available for inspection.

The uncertainty of the calibration was sufficient to determine that the instrument met the manufacturer's specifications.

Calibration Date: 16 Feb 98

Calibration Procedure: CLCP-PI-001

Interval: 12 months

Next Calibration Due: 16 Feb 99

Received: In Tolerance

Remarks:

Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
004163	MENSOR	5014	FIELD PRESSURE STANDARD (3	340119A	18 Mar 98

Signed: 

Title: 

LAST PAGE OF REPORT
Total Pages Printed: 1

Certificate # 28583

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

WORK ORDER

CERTIFICATE # 33157 ASSET # 2865 DATE 03 FEB 99

ITEM DATA:

Manufacturer MOORE PRODUCTS Model 0-60 PSI
Description PRESSURE GAUGE Serial # 356301
Accessories _____

ACTION REQUESTED _____

CUSTODIAN DIV RO RON GREEN

Turned in by: _____ Phone 2012

CHARGE # RD-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 _____ Date _____

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) 5 Point cal

2-16-98

SWRI CALIBRATION LAB
(710) 522-5215
CAL 2-16-98 BY gsk
DUE 2-16-99 ID 2865
SN 356301

CAL ENVIRONMENT:
Temperature 68 °F Humidity 42 %RH

CALIBRATED/REPAIRED:
By AM Wood Cal Procedure CCCP-91-00
Date 2-4-99 Accuracy Grade A
Cal Interval 12mo Reliability Code: _____
Next Cal due 2-4-00 Cal Time 1.5 Repair Time _____
Standards used (Asset#) 4163

DATE COMPLETED 2-4-99

DATE PICKED UP 2/4/99 PICKED UP BY Adrian Hill

33157

PRESSURE CALIBRATION CHECK FORM

Date ^{am} 2-4-99 Work Order 33157 Technician JM Wood
 Inst Cust. Ron Green Ext _____ Charge # 20-0751-006 time 1.5

A) Unit Under Test Moore Press Gage
 Model _____ Serial No. 356307 Asset No. 2865
 Range 60 psi Uncertainty Grade A Std Unc _____

B) Calibration Standard (1) Mensor
 Model 5014 Serial No. 340119A Asset No. 4163
 Uncertainty ±0.03 psi Std Unc _____

C) Calibration Standard (2) N/A
 Model _____ Serial No. _____ Asset No. _____
 Uncertainty _____ Std Unc _____
 Comb Unc (rss B&C) 0.03 psi TUR (A Unc/Comb Unc) (20/1)

If less than 4:1, Total combined calibration Unc (kXrss) _____
 k = _____ Explanation _____
 Env: Room Temp. 68°F Humidity 42% Baro Press. 28.97" Hg
 Conversion Factor(s) N/A

STANDARD	INCREASING	DECREASING	TOLERANCE: ± 0.6/1.2	
			MIN	MAX
UNITS: PSI	UNITS: PSI	UNITS: PSI	UNITS: PSI	
AS FOUND				
12	12.2	12.2	10.8	13.2
24	24.3	24.3	23.4	24.6
36	36.2	36.2	35.4	36.6
48	48.1	48.1	46.8	49.2
60	60.0	7	58.8	61.2
	<u>Int'l</u>			
AS DELIVERED				



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

4 February 1999

Issued to: RON GREEN DIV20 B57
Manufacturer/Model: MOORE PRODUCTS 0-60 PSI
Description: PRESSURE GAUGE
Serial Number: 356301
Asset Number: 002865

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: 68. Degrees Fahrenheit Humidity: 42 % RH

Calibration Date: 4 Feb 99 **Calibration Procedure:** CLCP-PI-001 1997

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Mack Wood / Technician

WORK ORDER 39530

Date Received 6/21/00

Asset No. 002865 Manufacturer MOORE PRODUCTS Model 0-60 PSI
Description PRESSURE GAUGE Serial Number 356301
Accessory Received/Required NONE
Div/CC ID NONE Accessory to Asset No. N/A
Div/CC DIV20 Location B57 Custodian RON GREEN Tel. 5305
Charge/Project No. 20.00751.006 Proprietary/Confidential N Date Required ROUTINE
Work Requested CALIBRATION
Receiving Inspection O.K.
Delivered By TROY MAXWELL Tel. 2012

WORK HISTORY

Date	Start Time	Stop Time	Notes

Smith Cal Lab BY: MMW
CAL: 0004700 DUE: 02/04/00
ASN: 000005 SN: 356301
LEARN FROM THESE WORK ORDER SHEETS

39530

PARTS

Part Name	Part Number	Cost	Failure Description

WORK SUMMARY

Failure Description _____
Repair Action _____
Cal Procedure CLCP-PI-001, 6/99 Temp 68 F Hum 46 %
Tech [Signature] Cal Hrs. 1.5 Repair Hrs. _____ Part Cost _____
Action Taken Cal
Standards Used 4163
Date Cal 6-28-00 Int. 12 Mo. Date Due 6-28-01 Reliability Code _____
Date Picked Up 6-30-00 Picked Up By [Signature]
workreq.rpt Rev 30 Jan 00



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

28 June 2000

Issued to: RON GREEN DIV20 B57
Manufacturer/Model: MOORE PRODUCTS 0-60 PSI
Description: PRESSURE GAUGE
Serial Number: 356301
Asset Number: 002865

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: 68.0 Degrees Fahrenheit Humidity: 46 % RH

Calibration Date: 28 Jun 00 **Calibration Procedure:** CLCP-PI-001, 6/99

Condition as Received: In Tolerance

Remarks:

Approved by:



Jim Patterson, Supervisor, or Walt Hill, Metrologist

Certificate # 39530
m:\a2la\pt Rev-date 22 May 00

Measurements performed by:



Mack Wood, Technician

Page 1 of 1