

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 B57 NARASI SRIDHAR

Device No: 2185

Manufacturer: FOWLER

Model: 8"

Nomenclature: FOWLER DIAL CALIPERS

Serial Number: 20-8C-1

SwRI No: NONE

Cal interval 6 Mo.

Remarks

Accuracy: .001

Procedure: SWRI #6

ENVIRONMENT

Temperature: 70

Humidity: 65

Location: BLDG 162 MACHINE SHOP B162

CONCLUSION

Tolerance/Remarks: Received in tolerance, no adjustments made

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: 06/03/93

Cal interval: 6 Months

Record Number: 00011476

Next Calibration Due: 12/03/93

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: 20-8C-1

Calibration Date: 06/03/93

STANDARDS

Standard No: 2171 Manufacturer: DOALL

Model:

Nomenclature: GAGE BLOCK SET

Serial No: 88-R-4482

Cal.Due: 02/11/94

Cal.Rec.No: 00000000

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 B57 NARASI SRIDHAR

Device No: 2185

Manufacturer: FOWLER

Model: 8"

Nomenclature: FOWLER DIAL CALIPERS

Serial Number: 20-8C-1

SwRI No: NONE

Cal interval 6 Mo.

Remarks

Accuracy: .001

Procedure: SWRI #6

ENVIRONMENT

Temperature: 70

Humidity: 45

Location: SWRI MACHINE SHOP BLDG. 162

CONCLUSION

Tolerance/Remarks: Received in tolerance, no adjustments made

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: 12/07/93

Cal interval: 6 Months

Record Number: 00012958

Next Calibration Due: 06/07/94

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: 20-8C-1

Calibration Date: 12/07/93

STANDARDS

Standard No: 2171 Manufacturer: DOALL

Model:

Nomenclature: GAGE BLOCK SET

Serial No: 88-R-4482

Cal.Due: 02/11/94

Cal.Rec.No: 00000000

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: 20-8C-1

Calibration Date: 06/09/94

STANDARDS

Standard No: 2171 Manufacturer: DOALL

Model:

Nomenclature: GAGE BLOCK SET

Serial No: 88-R-4482

Cal.Due: 02/11/97

Cal.Rec.No: 00013286

SOUTHWEST RESEARCH INSTITUTE

**Department of Quality Assurance
Calibration Laboratory**

**CERTIFICATE OF CALIBRATION
12/14/94**

Issued to: NARASI SRIDHAR DIV20 ,B57
Manufacturer: FOWLE
Nomenclature: FOWLER DIAL CALIPERS
Serial Number: 20-8C-1

Asset Number: 002185
Model Number: 8"

SwRI Capital Number: NONE

ENVIRONMENTAL CONDITIONS

Temperature: 70.0F

Relative Humidity: 60 %

CALIBRATION INFORMATION

Location: CAL2
Procedure Number: WI-9-30-MS07
Remarks:

Technician: 8114
Accuracy: .001
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
002171	88-R-4482	DOALL	UNKWN	GAGE BLOCK SET	02/11/94	36 02/11/97

Certified by :



Certificate#: 15984

Calibration Date: 12/14/94
Interval: 6 months
Next Calibration Due: 06/14/95

SOUTHWEST RESEARCH INSTITUTE
Department of Quality Assurance
Calibration Laboratory

CERTIFICATE OF CALIBRATION
06/23/95

Issued to: DARRELL DUNN DIV20 ,B57
Manufacturer: FOWLE
Nomenclature: FOWLER DIAL CALIPERS
Serial Number: 20-8C-1
Notes:

Asset Number: 002185
Model Number: 8"

SwRI/Div. I.D. #: NONE

ENVIRONMENTAL CONDITIONS

Temperature: 70.0F

Relative Humidity: 60%

CALIBRATION INFORMATION

Procedure Number: WI-9-30-MS07
Remarks:

Accuracy: .001
Received IN Tolerance

Calibration was in accordance 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.

STANDARDS USED FOR CERTIFICATION

Asset #	Serial #	Mfg	Model #	Nomenclature	Cal Date	Int.	Cal Due
002171	88-R-4482	DOALL	UNKWN	GAGE BLOCK SET	02/11/94	36	02/11/97

Certified by : 

Calibration Date: 06/23/95
Interval: 6 months
Next Calibration Due: 12/22/95

Certificate#: 17834

SOUTHWEST RESEARCH INSTITUTE

Department of Quality Assurance
Calibration Laboratory

CERTIFICATE OF CALIBRATION
01/23/96

Issued to: DARRELL DUNN DIV20 ,B57
Manufacturer/Model: FOWLE/8"
Nomenclature: FOWLER DIAL CALIPERS
Serial Number: 20-8C-1
Asset Number: 002185
Notes:

ENVIRONMENTAL CONDITIONS

Temperature: 70.0F

Relative Humidity: 60%

CALIBRATION INFORMATION

Procedure Number: WI-9-30-MS07

Accuracy: .001

Remarks:

Received IN Tolerance

Calibration was in accordance 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.

STANDARDS USED FOR CERTIFICATION

Asset #	Serial #	Mfg	Model #	Nomenclature	Cal Date	Int. Cal Due
002171	88-R-4482	DOALL	UNKWN	GAGE BLOCK SET	02/11/94	36 02/11/97

Certified by :



Certificate#: 19891

Calibration Date: 01/23/96

Interval: 6 months

Next Calibration Due: 07/23/96



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

Certificate of Calibration

31 July 1996

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FOWLER 8"
Description: FOWLER DIAL CALIPERS
Serial Number: 20-8C-1
Asset Number: 002185

Environmental Conditions

Temperature: 70.0 Humidity: 60%

Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NC SL 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.

Calibration Date: 30 Jul 96 Calibration Procedure: WI930MS07
Interval: 6 months Accuracy: .001
Next Calibration Due: 30 Jan 97 Received: In Tolerance

Remarks:

Certificate # 22087

Signed: _____

LAST PAGE OF REPORT
Total Pages Printed: 1



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

Certificate of Calibration

11 February 1997

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FOWLER 52-008-008
Description: 8" DIAL CALIPER
Serial Number: 20-8C-1
Asset Number: 002185

Environmental Conditions

Temperature: 70.0 Deg. F Humidity: 30%

Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NC SL 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.

Calibration Date: 11 Feb 97 Calibration Procedure: WI-9-30-MS07
Interval: 6 months Accuracy: .001
Next Calibration Due: 11 Aug 97 Received: In Tolerance

Remarks:

Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
002171	DOALL	88	GAGE BLOCK SET	4482	11 Feb 97

Certificate # 24193

Signed: 



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

Certificate of Calibration

11 September 1997

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: WEST-GERMANY 25 X 0.01MM
Description: MICROMETER
Serial Number: 20-M-1
Asset Number: 002186

Environmental Conditions

Temperature: 70.0 Deg. F Humidity: 66%

Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NC SL 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.

Calibration Date: 9 Sep 97 Calibration Procedure: WI-9-30-MS03
Interval: 6 months Accuracy: .01MM
Next Calibration Due: 9 Mar 98 Received: In Tolerance

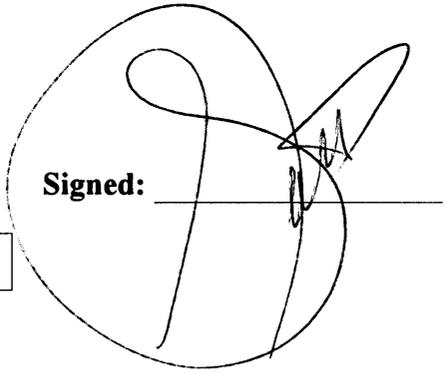
Remarks:

Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
002171	DOALL	88	GAGE BLOCK SET	4482	11 Feb 00

Certificate # 26578

LAST PAGE OF REPORT
Total Pages Printed: 1

Signed: 



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

Certificate of Calibration

23 February 1998

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FOWLER 52-008-008
Description: 8" DIAL CALIPER
Serial Number: 20-8C-1
Asset Number: 002185

Environmental Conditions

Temperature: 69.00 Deg. F

Humidity: 45 % RH

Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NC SL 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: 23 Feb 98

Calibration Procedure: CLCP-MS-007

Interval: 6 months

Next Calibration Due: 23 Aug 98

Received: In Tolerance

Remarks:

Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
001741	DOALL	88-R-8842	GAGE BLOCK SET	11161	11 Aug 98
002171	DOALL	88	GAGE BLOCK SET	4482	11 Feb 00

Signed:

Title:

LAST PAGE OF REPORT
Total Pages Printed: 1

Certificate # 28699



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 March 1999

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FOWLER & NSK 52-008-008
Description: DIAL CALIPER
Serial Number: 20-8C-1
Asset Number: 002185

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NC SL 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: 69.0 Degrees Fahrenheit Humidity: 42 % RH

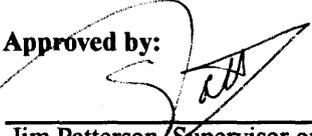
Calibration Date: 16 Mar 99 **Calibration Procedure:** CLCP-MS-007, DEC97

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

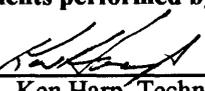


Jim Patterson, Supervisor or Walt Hill, Metrologist

Certificate # 33570

m:\a2la.rpt Rev date 10 Mar 99

Measurements performed by:



Ken Harp, Technician

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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

14 September 1999

Issued to: DARRELL DUNN DIV20 B57
Manufacturer/Model: FOWLER & NSK 52-008-008
Description: DIAL CALIPER
Serial Number: 20-8C-1
Asset Number: 002185

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: 68.0 Degrees Fahrenheit Humidity: 42 % RH

Calibration Date: 14 Sep 99 **Calibration Procedure** CL-11, MAY99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

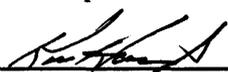
Approved by:


Jim Patterson, Supervisor or Walt Hill, Metrologist

Certificate # 35948

m:\a2la.rpt Rev date 10 Mar 99

Measurements performed by:


Ken Harp, Technician

Page 1 of 1

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

NONCONFORMANCE REPORT

Project No. 20-01402-571

NCR No. 2002-07

PART 1: DESCRIPTION OF NONCONFORMANCE:

Fowler 8" caliper (serial Number 20-8C-1 Asset Number 002185) was found to be out of tolerance during a normally scheduled calibration.

Initiated by: Darrell S. Dunn



Date: 7/15/2002

PART 2: PROPOSED DISPOSITION AND CORRECTIVE ACTION

Disposition:

Accept data obtained in tests using this instrument as is. Replace Caliper.

Basis of Disposition:

Out of tolerance condition is limited to inside dimension measurement jaws. Error ^{6 mm}/_{in} measurements are less than 0.005", which is one of the tightest dimensional tolerances for test specimens and other components with critical dimensions.

7/16/02

Action to Correct Nonconformance:

Replace Calipers. Damage to jaws is not repairable.

Target date for completion: 7/31/2002

Proposed by: Darrell S. Dunn



Date: 7/15/2002

PART 3: APPROVAL

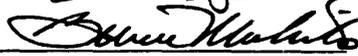
Element Manager:



Date:

7/16/02

Director of QA:



Date:

7/16/02

Comments/Instructions:

PART 4: CLOSE OUT

Comments:

No further action required.

Distribution:

all EMs
Technical Director
D. Dunn

Verified by:



Date:

7/16/02

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA ROAD • POST OFFICE DRAWER 28510 • SAN ANTONIO, TEXAS, 78228-0510 • TEL (210) 522-5215 • FAX (210) 522-3692

To: Darrell Dunn, Div 20, And Bldg 57.

From: Walt Hill, Metrology Group Leader
Institute Calibration Laboratory 

Date: Jun. 17, 2002

Subject: Out-of-tolerance Notice

The purpose of this notice is to alert you of a condition, which may have caused erroneous measurements affecting safety or the quality of products or services your organization provides. The attached as-found readings are provided for your evaluation to determine if the instrument listed below had an impact and if further action is required.

When the as-found results are near the specification limit, +/- a margin less than the measurement uncertainty, it is not possible to state in-tolerance or out-of-tolerance with a 95% level of confidence. It is the Institute Calibration Laboratory policy that the client is made aware of this situation because the end-user is taking some of the risk that the instrument listed below may not meet the end-user measurement requirements.

Your review/evaluation should be conducted in accordance with your organizational quality policy and procedural requirements. If we can be of further assistance, please contact the Calibration Laboratory at 522-5215.

Manufacturer: Fowler & NSK **Model:** 52-008-008

Description: 8" Dial Caliper **Serial Number:** 20-8C-1

Asset Number: 002185 **User ID Number:**

Last Calibration: Dec. 31, 2001

Date Received for Service: Jun. 14, 2002 **Work Order Number:** 444049039

Service Requested: Scheduled calibration

Remarks: As found inside data point was out of tolerance. Inside jaws appear to have been bent, cannot fix problem. Limited calibration to not use inside function of caliper per phone conversation with Darrell Dunn.

OUT OF TOLERANCE



SOUTHWEST RESEARCH INSTITUTE™

6220 Culebra Road, P.O. Drawer 28510
Institute Quality Systems
Institute Calibration Laboratory
Phone: 210-522-5215 Fax 210-522-3692

Certificate of Calibration

Submitted By: DIV20

Address: B57

Contact: DARRELL DUNN

Manufacturer Model: FOWLER 52-008-008

Description: CALIPER

Serial No: 20-8C-1

Asset No: 002185

Procedure: CALIPERS, JUN/02

Work Order: 444051771

Date Issued: Jan 7, 2003

Calibration Date: Jan 7, 2003

****Calibration Due:** Jul 7, 2003

Calibration Location: N/A

Environment: Temp. 68.0°F Hum. 40 %RH

***As Found:** LIMITED CALIBRATION

***As Left:** LIMITED CALIBRATION

This certificate documents traceability to the National Institute of Standards and Technology (NIST) and the International System of Units (SI). The Laboratory quality system conforms to ISO/IEC 17025, 1999 and ANSI/NC SL Z540-1-1994 which are equivalent to relevant requirements of the ISO 9000-1994 series of standards. This certificate may not be reproduced, except in full, without the written approval of the Southwest Research Institute Calibration Laboratory. The results of this calibration relate only to the individual instrument described above. This certificate shall not be used to claim product endorsement by the American Association for Laboratory Accreditation (A2LA) or any agency of the U. S. Government.

Uncertainty evaluation includes the item under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM). The uncertainty represents an expanded uncertainty using a coverage factor of $k=2$ to approximate a 95% confidence level. The calibration process provides a Test Uncertainty Ratio (TUR) of less than or equal to 25% (4:1) of the test limit unless otherwise stated in remarks or an attachment.

*The client has sole responsibility for determination of in/out of tolerance or compliance/noncompliance. An in/out of tolerance opinion is provided for your convenience based only on the Test Instrument (TI) reading(s) and limits as reported. The reported uncertainty relates only to the results at the time of calibration and does not imply any short or long term stability of the TI.

**Calibration interval is determined by the client and does not assure the instrument will remain within tolerance until this date. Any number of factors may cause the instrument to be out of tolerance before the next calibration date.

Remarks: LIMITED CALIBRATION, THE INSIDE FUNCTION OF CALIPER DOES NOT MEET TOLERANCE AND SHOULD NOT BE USED.

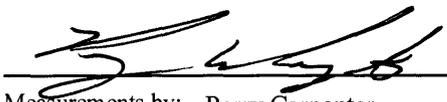
Standards Used

Asset	Manufacturer	Model	Description	Cal Due
006465	STARRETT	SS81A1	GAGE BLOCK SET	Jun 29, 04

Approved by: 
Walt Hill

Metrology Group Leader

m:\Nona21a1.rpt Rev date: 15, August 02

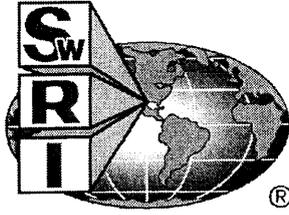

Measurements by: Perry Carpenter

Metrology Technician

Southwest Research Institute
 Calibration Laboratory
 Calibration Data sheet.

Work Order	444051771	Mfr	FOWLER	Tech:	Perry Carpenter
Asset No.	002185	Model	52-008-008	Procedure:	<u>CALIPERS, JUN/02</u>
Serial No.	20-8C-1	Type	Caliper	Cal Date:	7-Jan-03
Remarks:					

RANGE	Test Point	Indicated Difference		+/- Limits	Uncertainty	Found/Left
8.000	Inch	Inch	Inch	Inch	Inch	Results
OUTSIDE SCALE	2.0000	2.0000	0.0000	0.0010	0.0012	Pass
	4.0000	4.0000	0.0000	0.0010	0.0012	Pass
	6.0000	6.0000	0.0000	0.0010	0.0012	Pass
	8.0000	8.0000	0.0000	0.0010	0.0012	Pass
INSIDE SCALE	0.5000	0.4985	-0.0015	0.0010	0.0012	Fail
DEPTH SCALE	1.0000	1.0000	0.0000	0.0010	0.0012	Pass



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sciences and engineering*

6220 Culebra Road · San Antonio · Texas, U.S.A. 78228-5166

MEMORANDUM

To: SwRI Calibration Lab
From: Darrell S. Dunn *D.S.D.*
Date: July 10, 2003
Subject: Removal of Equipment from the Calibration Recall List

The following equipment are no longer within tolerance and need to be removed from the calibration recall list. A copy of this memorandum will be placed in the Division 20 calibration records.

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Asset Number</u>
Fowler	52-008-008	20-8C-1	002185

Please contact me at extension 6090 if you have any questions.