

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 JIM PRIKRYL

Device No: 1440

Manufacturer: METTLER

Model: PM4600

Nomenclature: ELECTRONIC BALANCE

Serial Number: 120461

SwRI No: NONE

Remarks

Accuracy: MFGR SPECS

Procedure: MFGR

ENVIRONMENT

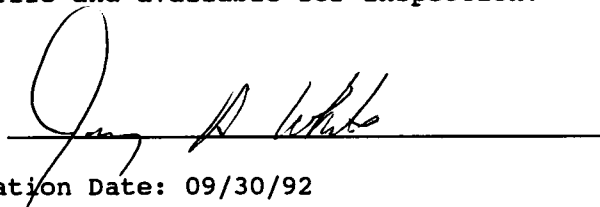
Temperature: 0 Humidity: 0 Location: BLD57

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: 09/30/92

Record Number: 00009910

Next Calibration Due: 03/30/93

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: 120461

Calibration Date: 09/30/92

STANDARDS

Standard No: 1706	Manufacturer: RICE LAKE	Model: 2 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C861	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1712	Manufacturer: RICE LAKE	Model: 100 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C867	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1716	Manufacturer: RICE LAKE	Model: 1 KG
Nomenclature: WEIGHT STANDARD		
Serial No: C871	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1717	Manufacturer: RICE LAKE	Model: 2 KG
Nomenclature: WEIGHT STANDARD		
Serial No: C872	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1718	Manufacturer: RICE LAKE	Model: 2 KG
Nomenclature: WEIGHT STANDARD		
Serial No: C873	Cal.Due: 07/08/93	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 JIM PRIKRYL

Device No: 1440

Manufacturer: METTLER

Model: PM4600

Nomenclature: ELECTRONIC BALANCE

Serial Number: 120461

SwRI No: NONE

Remarks

Accuracy: MFGR SPECS

Procedure: MFGR

ENVIRONMENT

Temperature: 0 Humidity: 0 Location: ROOM A11 B68 SWRI

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: 03/29/93

Record Number: 00010973

Next Calibration Due: 09/29/93

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: 120461

Calibration Date: 03/29/93

STANDARDS

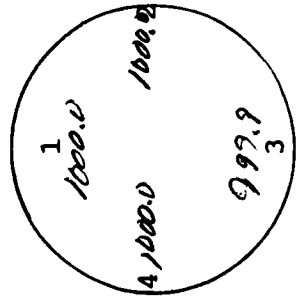
Standard No: 1704	Manufacturer: RICE LAKE	Model: 1 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C859	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1712	Manufacturer: RICE LAKE	Model: 100 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C867	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1715	Manufacturer: RICE LAKE	Model: 500 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C870	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1716	Manufacturer: RICE LAKE	Model: 1 KG
Nomenclature: WEIGHT STANDARD		
Serial No: C871	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1717	Manufacturer: RICE LAKE	Model: 2 KG
Nomenclature: WEIGHT STANDARD		
Serial No: C872	Cal.Due: 07/08/93	Cal.Rec.No: 00000000

BALANCE CALIBRATION VERIFICATION FORM

DATE: 29 MAR 93 MFGR.: METTLER MODEL: PM4600
 SER. NO. 120461 RANGE: 4600 CALIBRATION DATES
 TEMPERATURE: HUMIDITY: LAST: 30 Sep 92 NEXT: 29 Sep 93
 CALIBRATED BY: Jerry A. White BALANCE TOLERANCES
 PRINT NAME
 BALANCE CAL #: 10973 LIN. TOL.: .005 REP. TOL.: .01 / .03

RANGE VERIFICATION

	RANGE #1			RANGE #2			RANGE #3			POSITION GUIDE
	CALIBRATION POINTS			CALIBRATION POINTS			CALIBRATION POINTS			
DATA PTS.	1	2	3	1	2	3	1	2	3	
RUN #1	100.00	100.00	100.00	1000.0	2000.0	3000.0	1000.0	2000.0	3000.0	1000.0
RUN #2	1.00	100.00	100.00	1000.0	2000.0	3000.0	1000.0	2000.0	3000.0	1000.0
RUN #3	1.00	100.00	100.00	1000.0	2000.0	3000.0	1000.0	2000.0	3000.0	1000.0
MEAN	1.00	100.00	100.00	1000.0	2000.0	3000.0	1000.0	2000.0	3000.0	1000.0
STD. DEV.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



1	2
3	4

SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: EXTERNAL: COMMENTS:

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
1000.0	1000.0	999.9	1000.0	1000.0

SIGNATURE: Jerry A. White

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 JIM PRIKRYL

Device No: 1440

Manufacturer: METTLER

Model: PM4600

Nomenclature: ELECTRONIC BALANCE

Serial Number: 120461

SwRI No: NONE

Cal interval 6 Mo.

Remarks

Accuracy: MFGR SPECS

Procedure: MFGR

ENVIRONMENT

Temperature: 69 Humidity: 63 Location: SWRI DIV20 BLDG. 57

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: 09/10/93

Cal interval: 6 Months

Record Number: 00012189

Next Calibration Due: 03/10/94

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: 120461

Calibration Date: 09/10/93

STANDARDS

Standard No: 1704	Manufacturer: RICE LAKE	Model: 1 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C859	Cal.Due: 06/30/94	Cal.Rec.No: 00011756
Standard No: 1712	Manufacturer: RICE LAKE	Model: 100 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C867	Cal.Due: 06/30/94	Cal.Rec.No: 00011764
Standard No: 1715	Manufacturer: RICE LAKE	Model: 500 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C870	Cal.Due: 06/30/94	Cal.Rec.No: 00011767
Standard No: 1716	Manufacturer: RICE LAKE	Model: 1 KG
Nomenclature: WEIGHT STANDARD		
Serial No: C871	Cal.Due: 06/30/94	Cal.Rec.No: 00011768
Standard No: 1717	Manufacturer: RICE LAKE	Model: 2 KG
Nomenclature: WEIGHT STANDARD		
Serial No: C872	Cal.Due: 06/30/94	Cal.Rec.No: 00011769
Standard No: 1718	Manufacturer: RICE LAKE	Model: 2 KG
Nomenclature: WEIGHT STANDARD		
Serial No: C873	Cal.Due: 06/30/94	Cal.Rec.No: 00011770

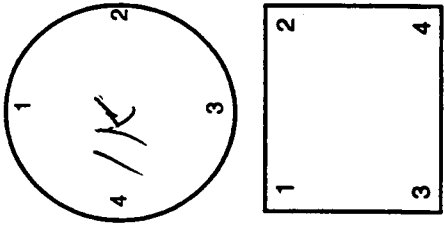
BALANCE CALIBRATION VERIFICATION FORM

DATE: 10 Sept 93 MFGR: METTLER MODEL: PM4600
 SER. NO. 120461 RANGE: 4K CALIBRATION DATES
 TEMPERATURE: 69° HUMIDITY: 63% LAST: 29 MAR 93 NEXT: 10 MAR 94
 CALIBRATED BY: Jerry D. White BALANCE TOLERANCES
 BALANCE CAL #: 12189 LINE. TOL.: .005/02 REP. TOL.: .01/02

RANGE VERIFICATION

	RANGE #1			RANGE #2			RANGE #3		
	CALIBRATION POINTS			CALIBRATION POINTS			CALIBRATION POINTS		
	1	2	3	1	2	3	1	2	3
DATA PTS.	19	100	500	1K	2K	4K			
RUN #1	1.00	100.00	499.99	1.000.0	2000.0	4000.0			
RUN #2	1.00	100.00	499.99	1000.0	2000.0	4000.0			
RUN #3	1.00	100.00	499.99	1000.0	2000.0	4000.0			
MEAN	1.00	100.10	499.99	1000.0	2000.0	4000.0			
STD. DEV.	—	—	—	—	—	—			

POSITION GUIDE



SHIFT VERIFICATION

COMMENTS: _____

SELF CALIBRATION Y/N INTERNAL: _____ EXTERNAL: 1K

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
1000.0	1000.0	999.7	1000.0	1000.0

SIGNATURE: Jerry D. White

TO: DIV20 B57 JIM PRIKRYL

FROM: Calibration Laboratory, Jim Patterson

DATE: 08/31/93

The following item(s) are due for calibration on date indicated, please make arrangements for calibration before the current calibration expires.

Manufacturer/Item	Model	Serial Number	Date	Int
METTLER ELECTRONIC BALANCE	PM4600	120461	09/29/93	6

TO: DIV20 B57 JIM PRIKRYL

FROM: Calibration Laboratory, Jim Patterson

DATE: 07/30/93

The following item(s) are due for calibration on date indicated, please make arrangements for calibration before the current calibration expires.

Manufacturer/Item	Model	Serial Number	Date	Int
METTLER ELECTRONIC BALANCE	PM4600	120461	09/29/93	6

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 JIM PRIKRYL

Device No: 1440

Manufacturer: METTLER

Model: PM4600

Nomenclature: ELECTRONIC BALANCE

Serial Number: 120461

SwRI No: NONE

Cal interval 6 Mo.

Remarks

Accuracy: MFGR SPECS

Procedure: MFGR

ENVIRONMENT

Temperature:

Humidity:

Location: SWRI DIV20 BLDG. 57

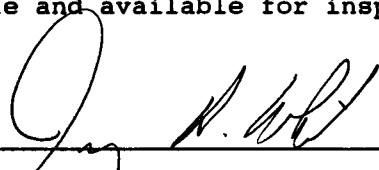
CONCLUSION

Tolerance/Remarks: Received in tolerance, no adjustments made

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: 03/04/94

Cal interval: 6 Months

Record Number: 00013580

Next Calibration Due: 09/04/94

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: 120461

Calibration Date: 03/04/94

STANDARDS

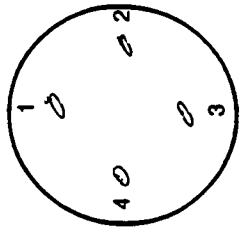
Standard No: 1704	Manufacturer: RICE LAKE	Model: 1 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C859	Cal.Due: 06/30/94	Cal.Rec.No: 00011756
Standard No: 1712	Manufacturer: RICE LAKE	Model: 100 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C867	Cal.Due: 06/30/94	Cal.Rec.No: 00011764
Standard No: 1713	Manufacturer: RICE LAKE	Model: 200 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C868	Cal.Due: 06/30/94	Cal.Rec.No: 00011765
Standard No: 1714	Manufacturer: RICE LAKE	Model: 200 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C869	Cal.Due: 06/30/94	Cal.Rec.No: 00011766
Standard No: 1715	Manufacturer: RICE LAKE	Model: 500 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C870	Cal.Due: 06/30/94	Cal.Rec.No: 00011767
Standard No: 1716	Manufacturer: RICE LAKE	Model: 1 KG
Nomenclature: WEIGHT STANDARD		
Serial No: C871	Cal.Due: 06/30/94	Cal.Rec.No: 00011768
Standard No: 1717	Manufacturer: RICE LAKE	Model: 2 KG
Nomenclature: WEIGHT STANDARD		
Serial No: C872	Cal.Due: 06/30/94	Cal.Rec.No: 00011769

BALANCE CALIBRATION VERIFICATION FORM

DATE: 4/10/94 MFGR: METTER MODEL: PH4600
 SER. NO. 120461 RANGE: 4000 CALIBRATION DATES
 TEMPERATURE: RM HUMIDITY: RM LAST: 12 SEP 93 NEXT: 4 SEP 94
 CALIBRATED BY: J. WHITE
 BALANCE CAL #: 13580 LINE. TOL.: 0.1/0.7 REP. TOL.: .005/.02
BALANCE TOLERANCES

RANGE VERIFICATION

DATA PTS.	RANGE #1			RANGE #2			RANGE #3		
	1	2	3	1	2	3	1	2	3
RUN #1	3000	2000	1000	5000	200.00	100.00	100.00		
RUN #2	3000.0	2000.0	1000.0	500.00	200.00	100.00			
RUN #3	3000.0	2000.0	1000.0	500.00	200.00	100.00			
MEAN									
STD. DEV.									



SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: Y EXTERNAL Y

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
1000g	1000.0	1000.0	1000.0	1000.0

COMMENTS: check at 3900 ml 3500 - 4000
at over load.

SIGNATURE: J. White

TO: DIV20 B57 JIM PRIKRYL

FROM: Calibration Laboratory, Jim Patterson

DATE: 02/25/94

The following item(s) are due for calibration on date indicated, please make arrangements for calibration before the current calibration expires.

Manufacturer/Item	Model	Serial Number	Date	Int
METTLER ELECTRONIC BALANCE	PM4600	120461	03/10/94	6

TO: DIV20 B57 JIM PRIKRYL

FROM: Calibration Laboratory, Jim Patterson

DATE: 02/02/94

The following item(s) are due for calibration on date indicated, please make arrangements for calibration before the current calibration expires.

Manufacturer/Item	Model	Serial Number	Date	Int
METTLER ELECTRONIC BALANCE	PM4600	120461	03/10/94	6

SOUTHWEST RESEARCH INSTITUTE

**Department of Quality Assurance
Calibration Laboratory**

**CERTIFICATE OF CALIBRATION
09/08/94**

Issued to: JIM PRIKRYL DIV20,B57
Manufacturer: METTL
Nomenclature: ELECTRONIC BALANCE
Serial Number: 120461

Asset Number: 001440
Model Number: PM4600
SwRI Capital Number: NONE

ENVIRONMENTAL CONDITIONS

Temperature: 0.0 F

Relative Humidity: 0 %

CALIBRATION INFORMATION

Location: B57
Procedure Number: SWRI
Remarks: LIMITED TO +/- .5GRAMS ABOVE 1K.

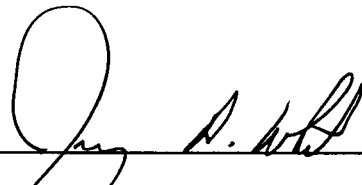
Technician: 7213
Accuracy: MFGR SPECS
Received OUT Tolerance

**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
001704	C859	RICE	1 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001712	C867	RICE	100 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001713	C868	RICE	200 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001714	C869	RICE	200 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001715	C870	RICE	500 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001716	C871	RICE	1 KG	WEIGHT STANDARD	07/20/94	12	07/20/95
001717	C872	RICE	2 KG	WEIGHT STANDARD	07/20/94	12	07/20/95

Certified by :



Calibration Date: 09/07/94
Interval: 6 months
Next Calibration Due: 09/07/94

Order: 15055

TO: DIV20 B57 JIM PRIKRYL

FROM: Calibration Laboratory, Jim Patterson

DATE: 07/29/94

The following item(s) are due for calibration on date indicated, please make arrangements for calibration before the current calibration expires.

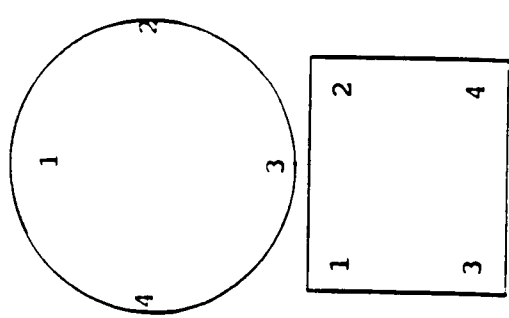
Manufacturer/Item	Model	Serial Number	Date	Int
METTLER ELECTRONIC BALANCE	PM4600	120461	09/04/94	6

BALANCE CALIBRATION VERIFICATION FORM

DATE: 7 Sept MFGR.: NETTELA MODEL: PA 4600
 SER. NO. 120461 RANGE: 4K CALIBRATION DATES
 TEMPERATURE: Room HUMIDITY: Room LAST: 4MAR94 NEXT: 7MAR98
 CALIBRATED BY: Jerry A. White PRINT NAME
 BALANCE CAL #: 15055 LIN. TOL.: .01 REP. TOL.: .02
 BALANCE TOLERANCES

RANGE VERIFICATION

	RANGE #1			RANGE #2			RANGE #3		
	1	2	3	1	2	3	1	2	3
DATA PTS.	<u>3K</u>	<u>2K</u>	<u>1K</u>	<u>400</u>	<u>200</u>	<u>100</u>			
RUN #1	<u>3000.5</u>	<u>2000.2</u>	<u>1000.0</u>	<u>379.98</u>	<u>199.98</u>	<u>1.00</u>			
RUN #2	<u>3000.6</u>	<u>2000.2</u>	<u>1000.0</u>	<u>377.98</u>	<u>177.98</u>	<u>1.00</u>			
RUN #3	<u>2000.5</u>	<u>2000.2</u>	<u>1000.0</u>	<u>377.98</u>	<u>177.98</u>	<u>1.00</u>			
MEAN	<u>SEE COMMENTS</u>								
STD. DEV.									



SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: OK EXTERNAL: OK

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
<u>1K</u>	<u>1000.0</u>	<u>1000.0</u>	<u>1000.0</u>	<u>1.000</u>

COMMENTS: Lim. Tol to ± .05grams above
OK

SIGNATURE: Jerry A. White

Q. Kibbey

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

NONCONFORMANCE REPORT

Project No. 20-5704-070

NCR No. 94-11

PART 1: DESCRIPTION OF NONCONFORMANCE

Mettler Balance Model PM4600, s/n 120461 was found out of tolerance when calibrated 9/4/94. Balance must be tagged out of service until adjusted and successfully recalibrated. Disposition must evaluate the impact of the out of tolerance condition on measurements made since the last valid calibration: 3/94.

Initiated by: R. D. Brient

Date: 9/15/94

PART 2: PROPOSED DISPOSITION AND CORRECTIVE ACTION Responsible EM: L. McKague

Disposition: *All measurements made since last calibration are acceptable.*

Basis of Disposition: *The PM4600 was used in preparation of stock solutions and constant ionic strength solutions only. Dilute solutions were always sampled for analysis. Error in constant ionic strength solutions*

Action to correct nonconformance: *equal 0.05% which is insignificant. Service person from Servotronics Corp. was been notified and replacement balances will be placed*

Proposed by: *R. D. Brient*

Target date for completion: *11/1/94* on *6 month* *service* *contract*

PART 3: APPROVAL

Element Manager: *H. Lawrence McKague* Date: *9/16/94*

Director of QA: *Sum Thabato* Date: *9/16/94*

Comments/Instructions: *After servicing, balance shall be recalibrated by SURE Calibration Lab or qualified vendor. LSW*

PART 4: CLOSE OUT

Comments:

Verified by: _____ Date: _____

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

NONCONFORMANCE REPORT

Project No. 20-5704-070

NCR No. 94-11

PART 1: DESCRIPTION OF NONCONFORMANCE

Mettler Balance Model PM4600, s/n 120461 was found out of tolerance when calibrated 9/4/94. Balance must be tagged out of service until adjusted and successfully recalibrated. Disposition must evaluate the impact of the out of tolerance condition on measurements made since the last valid calibration: 3/94.

Initiated by: R. D. Brient

Date: 9/15/94

PART 2: PROPOSED DISPOSITION AND CORRECTIVE ACTION Responsible EM: L. McKague
Disposition: All measurements made since the last calibration are acceptable.

Basis of Disposition: The PM4600 was used in preparation of stock solutions and constant ionic strength solutions only. Dilute solutions were always sampled for analysis. Error in constant ionic strength solutions equal 0.05%, which is insignificant.

Action to correct nonconformance: Service person from Satorious Corp. has been notified and Geochem balances will be placed on 6 month service schedule.

Proposed by: _____ Target date for completion: _____
Date: _____

PART 3: APPROVAL

Element Manager: _____ Date: _____

Director of QA: _____ Date: _____

Comments/Instructions:

PART 4: CLOSE OUT

Comments:

Verified by: _____ Date: _____

*Classification 27 handwritten
response 9/16/94*

SOUTHWEST RESEARCH INSTITUTE

Department of Quality Assurance
Calibration Laboratory

CERTIFICATE OF CALIBRATION
10/06/94

Issued to: JIM PRIKRYL DIV20 ,B57
Manufacturer: METTL
Nomenclature: ELECTRONIC BALANCE
Serial Number: 120461

Asset Number: 001440
Model Number: PM4600

SwRI Capital Number: NONE

ENVIRONMENTAL CONDITIONS

Temperature: 70.0F

Relative Humidity: 65 %

CALIBRATION INFORMATION

Location: CAL1
Procedure Number: METTLER
Remarks: SCALE HAD BEEN LIMITED TO +/-0.5GRAMS ABOVE
1K. SCALE WAS REPAIRED BY METTLER TO SPECS.

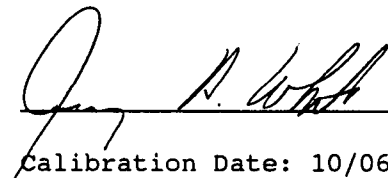
Technician: 7213
Accuracy: MFGR SPECS
Received IN Tolerance

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
001718	C873	RICE	2 KG	WEIGHT STANDARD	07/20/94	12	07/20/95
001717	C872	RICE	2 KG	WEIGHT STANDARD	07/20/94	12	07/20/95
001716	C871	RICE	1 KG	WEIGHT STANDARD	07/20/94	12	07/20/95
001714	C869	RICE	200 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001713	C868	RICE	200 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001704	C859	RICE	1 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95

Certified by :



Calibration Date: 10/06/94

Interval: 6 months

Next Calibration Due: 04/06/95

Work Order: 15337

BALANCE CALIBRATION VERIFICATION FORM

DATE: 6 Oct 94 MFGR: METTLER MODEL: PM4600

SER. NO. 120461 RANGE: 4K CALIBRATION DATES: 25 Sept 94

TEMPERATURE: 70° HUMIDITY: 65 LAST: 6 Oct 94 NEXT: 6 APR 95

CALIBRATED BY: Teroy A. White

BALANCE CAL #: 15337 LINE. TOL.: 0.1/0.03 REP. TOL.: 0.2/0.05

BALANCE TOLERANCES

RANGE VERIFICATION

	RANGE #1			RANGE #2			RANGE #3		
	1	2	3	1	2	3	1	2	3
DATA PTS.	4K	2K	1K	400g	200g	1g			
RUN #1	4000.0	2000.0	1000.0	400.01	200.01	1.00			
RUN #2	4000.0	2000.0	1000.0	400.01	200.01	1.00			
RUN #3	4000.0	2000.0	1000.0	400.01	200.01	1.00			
MEAN									
STD. DEV.									

SHIFT VERIFICATION

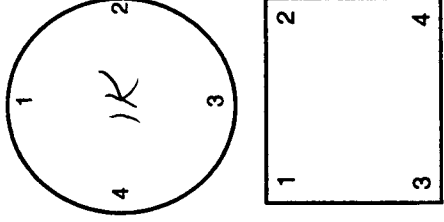
SELF CALIBRATION Y/N INTERNAL: _____ EXTERNAL 1K

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
1K	1000.0	1000.0	1000.0	1000.0

COMMENTS: _____

SIGNATURE: _____

POSITION GUIDE





Mettler Instrument Corporation • Box 71 • Hightstown, NJ 08520-0071 • 1-800-METTLER • In NJ: 1-609-448-3000

SERVICE REPORT.

BILLING # 0038475 000

Southwest Research Inst.
220 Cullebra Rd.
P.O. Drawer 28510
San Antonio, Tx. 78284

BILLING # 0038475 000

Southwest Research Inst.
220 Cullebra Rd.
P.O. Drawer 28510
San Antonio, Tx. 78284

TAX CODE: _____ UNITS SCHEDULED FOR SERVICE: 3 NO FILE UPDATE:

MONTH: 09 AREA: 67 ZONE: 2 RATE: 1 CLASS: 14

TITLE: MR Ferr, white

DEPARTMENT: Calibration BUILDING: 64

DATE: 10-4-54 TECHNICIAN: CAUSEY SERIAL NUMBER: 120461

MODEL: PM 4600 SVC'D TYPE: YES

TECH. I.D. #: 60391

UNITS @ \$: 130 MECHANICAL: _____ ELECTRONIC: _____

UNITS @ \$: _____ MECHANICAL: _____ ELECTRONIC: _____

HRS. @ \$: _____ MECHANICAL: _____ ELECTRONIC: _____

HRS. @ \$: _____ MECHANICAL: _____ ELECTRONIC: _____

TRANSPORTATION \$: _____ SHIPPING \$: _____

WORK ORDER: _____ TYPE: ES PAGE: _____

PART NUMBER	DESCRIPTION	QTY.	PRICE EA.	ITEM	PART NUMBER	DESCRIPTION	QTY.	PRICE EA.	PROBLEM	SOLUTION	CAUSE (IF KNOWN)	CUSTOMER SIGNATURE
600264	Master Pk	1	257									X

FORWARD TO PAYING DEPT.
ACKNOWLEDGEMENT OF WORK
DONE - NOT AN INVOICE

THE INSTRUMENTS SERVICED HAVE BEEN CLEANED, LUBRICATED, ADJUSTED, TESTED AND CALIBRATED TO FACTORY SPECIFICATIONS.

ALL PRICES SUBJECT TO FINAL AUDIT.

SOUTHWEST RESEARCH INSTITUTE
Department of Quality Assurance
Calibration Laboratory

OUT OF TOLERANCE NOTICE

09/08/94

The following asset was found to be out of tolerance when submitted for calibration. Please be aware measurements made with this may be inaccurate.

INSTRUMENT INFORMATION

Issued to: JIM PRIKRYL DIV20 B57 Asset Number: 001440
Manufacturer: METTL Model Number: PM4600
Nomenclature: ELECTRONIC BALANCE
Serial Number: 120461 SwRI Capital Number: NONE
Accuracy: MFGR SPECS Calibration Interval: 6 months

DEVIATION

Out of Tolerance Date: 09/07/94 Last Valid Calibration Date: 09/04/94

REMARKS

BALANCE DID NOT MEET THE REQUIRED SPECIFICATIONS. ABOVE 1K HAS A ERROR OF OVER 0.5GRAMS. BALANCE WILL HAVE TO BE RECALIBRATED BY METTLER TO BRING THE BALANCE WITHIN ITS SPECIFICATIONS.

Signed



SOUTHWEST RESEARCH INSTITUTE

Department of Quality Assurance
Calibration Laboratory

CERTIFICATE OF CALIBRATION
04/07/95

Issued to: JIM PRIKRYL DIV20 ,B57
Manufacturer: METTLER
Nomenclature: ELECTRONIC BALANCE
Serial Number: 120461

Asset Number: 001440
Model Number: PM4600
SwRI/Div. I.D. #: NONE

ENVIRONMENTAL CONDITIONS

Temperature: 74.0F

Relative Humidity: 60%

CALIBRATION INFORMATION

Procedure Number: METTLER
Remarks:


Accuracy: MFRG SPECS
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
001718	C873	RICE	2 KG	WEIGHT STANDARD	07/20/94	12	07/20/95
001717	C872	RICE	2 KG	WEIGHT STANDARD	07/20/94	12	07/20/95
001716	C871	RICE	1 KG	WEIGHT STANDARD	07/20/94	12	07/20/95
001714	C869	RICE	200 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001713	C868	RICE	200 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001704	C859	RICE	1 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95

Certified by :



Certificate#: 16988

Calibration Date: 04/07/95
Interval: 6 months
Next Calibration Due: 10/07/95

BALANCE CALIBRATION VERIFICATION FORM

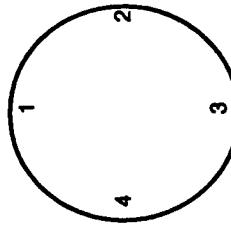
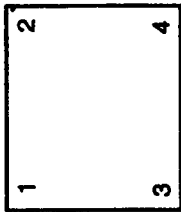
DATE: 7 APR 95 MFGR: METTLER MODEL: PM4600

SER. NO. 120461 RANGE: 4K CALIBRATION DATES

TEMPERATURE: 74 HUMIDITY: 60% LAST: 6 Oct 94 NEXT: 20 Oct 95

CALIBRATED BY: TERRY M. WHITES BALANCE TOLERANCES

BALANCE CAL #: 16988 LINE. TOL.: .1/.0 REP. TOL.: .02/.015

	RANGE VERIFICATION									POSITION GUIDE
	RANGE #1			RANGE #2			RANGE #3			
	CALIBRATION POINTS			CALIBRATION POINTS			CALIBRATION POINTS			
DATA PTS.	1	2	3	1	2	3	1	2	3	
RUN #1	4K	2K	1K	40g	200g	1g				
RUN #2	8889.9	2000.0	1000.0	400.00	200.00	.95				
RUN #3	3999.9	2000.0	1000.0	400.00	200.00	.99				
MEAN	2889.9	2000.0	1000.0	400.00	200.00	.99				
STD. DEV.										

SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: _____ EXTERNAL: _____

COMMENTS: _____

WEIGHT VALUE

PAN POSITION	PAN POSITION			
	1	2	3	4
1K	1000.0	1000.0	1000.0	1000.0

SIGNATURE: [Signature]

Southwest Research Institute
Quality Assurance Department

Date: 03/31/95
JIM PRIKRYL DIV20 B57
From: Calibration Laboratory
Subj: Items due for Calibration

The following item(s) are due for calibration on date indicated.
Please make arrangements for calibration before the current calibration
expires. This report is valid for all of your assets due between
03/31/95 and 04/30/95.

Asset Number	Mfg	Model	Nomenclature	Serial Number	Due-Date	Cal Cycle (Months)
001440	METTL	PM4600	ELECTRONIC BALANCE	120461	04/06/95	6

SOUTHWEST RESEARCH INSTITUTE

Department of Quality Assurance
Calibration Laboratory

CERTIFICATE OF CALIBRATION
10/06/95

Issued to: JIM PRIKRYL DIV20 ,B57
Manufacturer: METTLER
Nomenclature: ELECTRONIC BALANCE
Serial Number: 120461
Notes:

Asset Number: 001440
Model Number: PM4600
SwRI/Div. I.D. #: NONE

ENVIRONMENTAL CONDITIONS

Temperature: 73.0F

Relative Humidity: 38%

CALIBRATION INFORMATION

Procedure Number: METTLER
Remarks:

Accuracy: MFRG SPECS
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
001718	C873	RICE	2 KG	WEIGHT STANDARD	06/23/95	12	06/23/96
001717	C872	RICE	2 KG	WEIGHT STANDARD	06/23/95	12	06/23/96
001716	C871	RICE	1 KG	WEIGHT STANDARD	06/23/95	12	06/23/96
001714	C869	RICE	200 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96
001713	C868	RICE	200 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96
001704	C859	RICE	1 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96

Certified by :

Certificate#: 18854

Calibration Date: 10/06/95
Interval: 6 months
Next Calibration Due: 04/06/96

BALANCE CALIBRATION VERIFICATION FORM

DATE: 6 OCT 95 MFR: METTLER MODEL: PM4600

SER. NO. 120461 RANGE: 4K CALIBRATION DATES

TEMPERATURE: 73 HUMIDITY: 38 LAST: 7 APR 95 NEXT: 6 APR 91

CALIBRATED BY: Jerry A. White

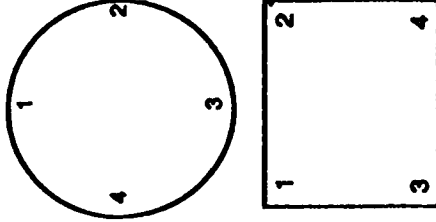
BALANCE CAL #: 18854 LINE. TOL.: 1/01 REP. TOL.: 02/005

BALANCE TOLERANCES

RANGE VERIFICATION

	RANGE #1			RANGE #2			RANGE #3		
	CALIBRATION POINTS			CALIBRATION POINTS			CALIBRATION POINTS		
DATA PTS.	1	2	3	1	2	3	1	2	3
RUN #1	4K	ZK	1K	400g	200g	9			
RUN #2	1000.0	2000.0	1000.0	400.0	200.0	.99			
RUN #3	1000.0	2000.0	1000.0	400.0	200.0	.99			
MEAN	400.0	2000.0	1000.0	400.0	200.0	.95			
STD. DEV.			0K						

POSITION GUIDE



SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: _____ EXTERNAL: _____

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
1K	1000.0	1000.0	1000.0	1000.0

COMMENTS: _____

SIGNATURE: Jerry A. White

Southwest Research Institute
Quality Assurance Department

Date: 09/26/95
JIM PRIKRYL DIV20 B57
From: Calibration Laboratory
Subj: Items due for Calibration

The following item(s) are due for calibration on date indicated.
Please make arrangements for calibration before the current calibration
expires. This report is valid for all of your assets due between
10/01/95 and 10/31/95.

Asset Number	Mfg	Model	Nomenclature	Serial Number	Due-Date	Cal Cycle (Months)
001440	METTL	PM4600	ELECTRONIC BALANCE	120461	10/07/95	6

SOUTHWEST RESEARCH INSTITUTE

Department of Quality Assurance
Calibration Laboratory

CERTIFICATE OF CALIBRATION
04/09/96

Issued to: JIM PRIKRYL DIV20 ,B57
Manufacturer/Model: METTL/PM4600
Nomenclature: ELECTRONIC BALANCE
Serial Number: 120461
Asset Number: 001440
Notes:

ENVIRONMENTAL CONDITIONS

Temperature: 68.0F

Relative Humidity: 34%

CALIBRATION INFORMATION

Procedure Number: WI-9-30-WT01
Remarks:

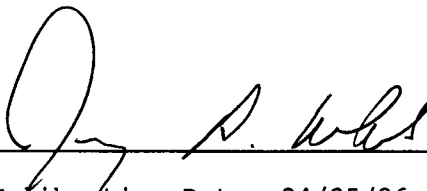
Accuracy: MFGR SPECS
Received IN Tolerance

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
001718	C873	RICE	2 KG	WEIGHT STANDARD	06/23/95	12	06/23/96
001717	C872	RICE	2 KG	WEIGHT STANDARD	06/23/95	12	06/23/96
001716	C871	RICE	1 KG	WEIGHT STANDARD	06/23/95	12	06/23/96
001714	C869	RICE	200 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96
001713	C868	RICE	200 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96
001704	C859	RICE	1 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96

Certified by :



Calibration Date: 04/05/96
Interval: 6 months
Next Calibration Due: 10/05/96

Certificate#: 20710

BALANCE CALIBRATION VERIFICATION FORM

DATE: 5 APR 96 MODEL: METTLER MODEL: PM4600

SER. NO. 22 120461 RANGE: 5K CALIBRATION DATES

TEMPERATURE: 68 HUMIDITY: 34 LAST: 6 Oct 95 NEXT: 5 Oct 96

CALIBRATED BY: Terry P White

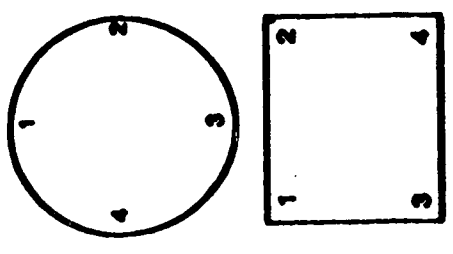
BALANCE TOLERANCES

BALANCE CAL #: 20710 LINE TOL: 0.02 REP. TOL: 0.2 / .005

RANGE VERIFICATION

	RANGE #1			RANGE #2			RANGE #3			
	CALIBRATION POINTS	1	2	3	1	2	3	1	2	3
DATA PTS.	4K	ZK	1K	400g	200g	1g				
RUN #1	4000.0	2000.0	1000.0	400.00	200.00	1.00				
RUN #2	4000.0	2000.0	1000.0	400.00	200.00	1.00				
RUN #3	4000.0	2000.0	1000.0	400.00	200.00	1.00				
MEAN										
STD. DEV.										

POSITION GUIDE



SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: _____ EXTERNAL: _____

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
1K	1000.0	1000.0	1000.0	1000.0

COMMENTS: _____

SIGNATURE: [Signature]

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

WORK ORDER

CERTIFICATE # 22907 ASSET # 12140 DATE 3/06/97

ITEM DATA:

Manufacturer METTLER Model PL 4600

Description Balance Serial # _____

Accessories _____

ACTION REQUESTED on

CUSTODIAN DIV 20 B57 TIM MATHIAS

Turned in by: _____ Phone _____

CHARGE # _____ 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) ent

CAL ENVIRONMENT:
Temperature 74 °F Humidity 67 %RH

CALIBRATED/REPAIRED:
By [Signature]
Date 3/06/97
Cal Interval 1
Next Cal due 3/06/97
Standards used (Asset#) _____
Cal Procedure WTS-S-30-10 T12
Accuracy mg
Time to complete: _____
Cal 1.5 Repair _____

DATE COMPLETED _____
DATE PICKED UP ent PICKED UP BY S. H

22907

TD1440

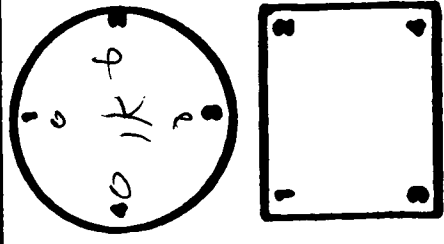
BALANCE CALIBRATION VERIFICATION FORM

DATE: 3 Oct 96 OPER: METTLER MODEL: PM4600
 SER. NO.: 120461 RANGE: 4K CALIBRATION DATES: _____
 TEMPERATURE: 74 HUMIDITY: 44 LAST: 5 APR 96 NEXT: 3 APR 97
 CALIBRATED BY: Jeany A. White BALANCE TOLERANCE: _____
 BALANCE CAL. #: 22507 USE. TOL.: _____ REP. TOL.: _____

RAISE VERIFICATION

	PANNE 01		PANNE 02		PANNE 03	
	1	2	1	2	1	2
DATA Pts.	4		400g	200	1g	
RUN 01	3999.9	2000.0	1000.0	400.01	200.00	1.00
RUN 02	3999.9	2000.0	1000.0	400.01	200.00	1.00
RUN 03	3999.9	2000.0	1000.0	400.01	200.00	1.00
MEAN						
STD. DEV.						

POSITION GUIDE



SHIFT VERIFICATION

SELF CALIBRATION VIM INTERVAL: _____ INTERNAL _____ COMMENTS: _____

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
1K	1000.0	1000.0	1000.0	1000.0

SIGNATURE: Jeany A. White



**Southwest Research Institute
Calibration Laboratory**

Date: 26 Sep 96

To: JIM PRIKRYL

DIV20

Subject: Items Due for Calibration

Attached is listing of items due for calibration on dates indicated. Please make arrangements for calibration before the current calibration expires. This report is valid for all of your assets scheduled to come due between 1 Oct 96 and 31 Oct 96 .

Due Date	Mfg.	Model	Description	Serial No.	Asset No.
5 Oct 96	METTL	PM4600	ELECTRONIC BALANCE	120461	001440

SOUTHWEST RESEARCH INSTITUTE

Department of Quality Assurance

Calibration Laboratory • 522-5215

WORK ORDER

CERTIFICATE # 24945 ASSET # 1440 DATE 2/1/97

ITEM DATA:

Manufacturer METTLER Model TM 4600

Description Balance Serial # 120461

Accessories _____

ACTION REQUESTED Cal

CUSTODIAN DWZ B57 TIM PRIORITY

Turned in by: _____ Phone _____

CHARGE # _____ 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) Cal

CAL ENVIRONMENT:
Temperature 72 °F Humidity 81 %RH

CALIBRATED/REPAIRED:

By [Signature]
 Date 2/1/97
 Cal Interval 6
 Next Cal due 2 Oct 97
 Standards used (Asset#) _____

Cal Procedure QIP-WB-007
 Accuracy M
 Time to complete: 1/2
 Cal 1/2 Repair _____

DATE COMPLETED _____
DATE PICKED UP Cal PICKED UP BY [Signature]

24945

ED 1440

BALANCE CALIBRATION VERIFICATION FORM

DATE: 2 APR 97 MFGR: METTLER MODEL: PM 4600

SER. NO. 120461 RANGE: 50/50 CALIBRATION DATES

TEMPERATURE: 72 HUMIDITY: 81 LAST: 30.191 NEXT: 2 Oct 97

CALIBRATED BY: Tracy A. White

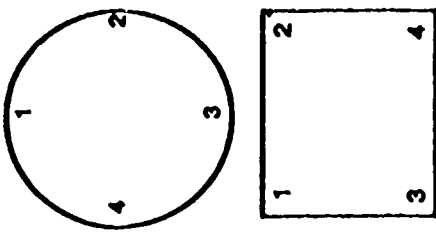
BALANCE CAL #: 24945 LINE. TOL.: _____ REP. TOL.: _____

BALANCE TOLERANCES

RANGE VERIFICATION

	RANGE #1			RANGE #2			RANGE #3		
	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS	
DATA PTS.	5K	2K	1K	500	200	1	1	2	3
RUN #1	1999.8	1999.9	1000.0	500.00	200.01	1.00			
RUN #2	1999.8	1999.9	1000.0	500.00	200.01	1.00			
RUN #3	1999.8	1999.9	1000.0	500.00	200.01	1.00			
MEAN									
STD. DEV.									

POSITION GUIDE



SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: EXTERNAL: _____

COMMENTS: _____

WEIGHT VALUE

PAN POSITION	
1	2

SIGNATURE: [Signature]

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

WORK ORDER

CERTIFICATE # 27013 ASSET # 1440 DATE 25 Sept 97

ITEM DATA:

Manufacturer Mettler Model PA14600
Description Balance Serial # 120461
Accessories _____

ACTION REQUESTED cal

CUSTODIAN DN 20 Jim P. K. H. yz

Turned in by: _____ Phone _____

CHARGE # _____ 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

27013

CAL ENVIRONMENT:
Temperature 74 °F Humidity 51 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure SWRI-65-001
Date 25 Sept 97 Accuracy mg
Cal Interval 6 Reliability Code: _____
Next Cal due 29 MAR 98 Cal Time 1.8 Repair Time _____
Standards used (Asset#) _____

DATE COMPLETED _____
DATE PICKED UP [Signature] PICKED UP BY [Signature]
SwRI Form QA-174-0

BALANCE CALIBRATION VERIFICATION FORM

DATE: 29 Sep 97
 BALANCE CAL NO.: 27073
 TEMPERATURE: 24
 HUMIDITY: 51
 BARO. PRESSURE: 14.23

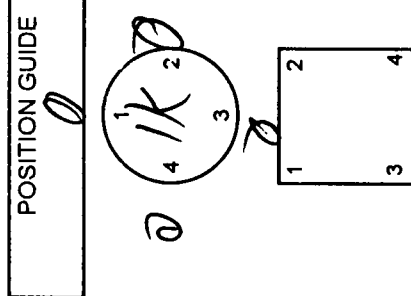
MFGR: Mettler
 MODEL: PM460
 SERIAL NO.: 120411
 ASSET NO.: 1448
 RANGE: PK
 MASS UNCERTAINTY (U_m): _____

MFGR BALANCE TOLERANCES
 LINEARITY: _____
 ECCENTRICITY: _____
 REPRODUCIBILITY: _____
 TEMP. DRIFT/°C: _____
 COMBINED MFR SPECS (U_{mfr}): _____

LAST CAL: 2 APR 97
 NEXT CAL: 29 APR 98
 TUR = Comb. MFR Specs (U_{mfr}) = 1
 U_{m-std}

If TUR < 4:1, U_b = _____

	RANGE VERIFICATION				POSITION GUIDE	
	RANGE 1		RANGE 2			RANGE 3
	CALIBRATION POINTS		CALIBRATION POINTS			
DATA POINTS	<u>PK</u>	<u>2K</u>	<u>1K</u>	<u>500</u>	<u>200</u>	<u>10</u>
RUN #1	<u>3599.8</u>	<u>1000.0</u>	<u>500.00</u>	<u>200.00</u>	<u>200.00</u>	<u>10.00</u>
RUN #2	<u>/</u>	<u>/</u>	<u>/</u>	<u>/</u>	<u>/</u>	<u>/</u>
RUN #3	<u>/</u>	<u>/</u>	<u>/</u>	<u>/</u>	<u>/</u>	<u>/</u>
MEAN						
STD. DEV.						



SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: _____ EXTERNAL: _____

	PAN POSITION			
	1	2	3	4
ACTUAL WEIGHT IN CENTER				
DIFF.				

COMMENTS: _____

 SIGNATURE: [Signature]

MEASURED UNCERTAINTY:

Linearity ± _____ g Std. Uncertainty ± _____ g
 Eccentricity ± _____ g Std. Uncertainty ± _____ g
 Comb. Uncertainty ± _____ g
 Rep. (σ) ± _____ g
 Mass tol. (2σ) ± _____ g
 Comb. Uncertainty ± _____ g
 (σ) ± _____ g
 (linearity, eccentricity, reproducibility, mass)
 Expanded Unc. (k = 2) ± _____ g

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

WORK ORDER

CERTIFICATE # 27110 ASSET # 440 DATE 27 MARCH

ITEM DATA:

Manufacturer METTLER Model PM4600
Description BALANCE Serial # 120461
Accessories _____

ACTION REQUESTED CAL

CUSTODIAN DIVRU J. DRISKY

Turned in by: _____ Phone _____

CHARGE # _____ 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

CAL ENVIRONMENT: Temperature 72 °F Humidity 67 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure QACP-WT-001
Date 27 MARCH Accuracy m
Cal Interval L Reliability Code: _____
Next Cal due 27 APR 50 Cal Time 1.5 Repair Time _____
Standards used (Asset#) 1717 17 1615 14 06

DATE COMPLETED _____
DATE PICKED UP [Signature] PICKED UP BY [Signature]

29180

BALANCE CALIBRATION VERIFICATION FORM

DATE: 27 Mar 98
 BALANCE CAL NO.: _____
 TEMPERATURE: 72
 HUMIDITY: 67
 BARO. PRESSURE: 74.24

MFGR: Mettler
 MODEL: PM 4600
 SERIAL NO.: 120461
 ASSET NO.: 1448
 RANGE: _____
 MASS UNCERTAINTY (U_m): _____

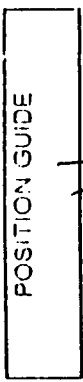
MFGR BALANCE TOLERANCES
 LINEARITY: _____
 ECCENTRICITY: _____
 REPRODUCIBILITY: _____
 TEMP. DRIFT/°C: _____
 COMBINED MFR SPECS (U_{mfr}): _____

CALIBRATION DATES
 LAST CAL: 27 Sept 97
 NEXT CAL: 25 Sept 98
 TUR = Comb. MFR Specs (U_{mfr}) = 1 : 1
 U_{m-std}

If TUR < 4:1, U₉ = _____

1714

DATA POINTS	RANGE VERIFICATION		
	RANGE 1	RANGE 2	RANGE 3
	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS
1718	4K	500	200
1217	2K	2000.0	200.01
1216	1K	1000.0	200.01
1715	2K	1000.0	200.02
RUN #1	2000.0	500.02	200.01
RUN #2	1000.0	500.02	200.01
RUN #2	1000.0	500.02	200.01
MEAN			
STD. DEV.			



SHIFT VERIFICATION		PAN POSITION			
ACTUAL WEIGHT IN CENTER		1	2	3	4
DIFF.					

SELF CALIBRATION Y/N INTERNAL: _____ EXTERNAL: _____

COMMENTS: _____

 SIGNATURE: [Signature]

MEASURED UNCERTAINTY:

Linearity = _____ g
 Eccentricity = _____ g
 Comb Uncertainty = _____ g
 Rep (σ) = _____ g
 Mass tol. (2σ) = _____ g
 Comb. Uncertainty = _____ g

Std Uncertainty = _____ g
 Std Uncertainty = _____ g
 (σ) = _____ g
 (linearity, eccentricity, reproducibility, mass)
 Expanded Unc. (k = 2) = _____ g



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

Certificate of Calibration

27 March 1998

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTLER PM4600
Description: ELECTRONIC BALANCE
Serial Number: 120461
Asset Number: 001440

Environmental Conditions

Temperature: 72.00 Deg. F Humidity: 67 % RH

Calibration Information

Calibration was in accordance with requirements of MIL-STD-45662A and ANSI/NCSL 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: 27 Mar 98 Calibration Procedure: CLCP-WT-001

Interval: 6 months

Next Calibration Due: 27 Sep 98 Received: In Tolerance

Remarks:

Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
001706	RICE LAKE	2G	WEIGHT STANDARD	C861	21 Jul 98
001714	RICE LAKE	200G	WEIGHT STANDARD	C869	21 Jul 98
001715	RICE LAKE	500G	WEIGHT STANDARD	C870	21 Jul 98
001716	RICE LAKE	1KG	WEIGHT STANDARD	C871	21 Jul 98
001717	RICE LAKE	2KG	WEIGHT STANDARD	C872	21 Jul 98
001718	RICE LAKE	2KG	WEIGHT STANDARD	C873	21 Jul 98

Signed:

Title:

LAST PAGE OF REPORT
Total Pages Printed: 1

Certificate # 29180

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

WORK ORDER

CERTIFICATE # 31405 ASSET # 1440 DATE 21 Sep 98

ITEM DATA:

Manufacturer METTLER Model PM4600
Description BALANCE Serial # 120461
Accessories _____

ACTION REQUESTED CAL

CUSTODIAN DIV 20 1357 JIM PRIKRYL

Turned in by: _____ Phone _____

CHARGE # _____ 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) CAL

CAL ENVIRONMENT:

Temperature 72°F Humidity 71 %RH

CALIBRATED/REPAIRED:

By [Signature] Cal Procedure CECP, WT-001

Date 28 Sep 98 Accuracy 10h

Cal Interval 6 Reliability Code: _____

Next Cal due 28 Mar 99 Cal Time 1.5 Repair Time _____

Standards used (Asset#) 1718 1717 1715 1714 1708

DATE COMPLETED _____

DATE PICKED UP _____ PICKED UP BY [Signature]

31405

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

WORK ORDER

CERTIFICATE # 31405 ASSET # 1440 DATE 21 Sep 98

ITEM DATA:

Manufacturer METTLER Model PM4600
Description BALANCE Serial # 120461
Accessories _____

ACTION REQUESTED CVL

CUSTODIAN DIV 20 1357 JIM PRUKRYL

Turned in by: _____ Phone _____

CHARGE # _____ 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)

CUSTOMER SURVEY

The following information is requested to provide feedback for improvement of the process for service provided. Please complete and return the form to the Supervisor, Quality Assurance, CAL LAB.

1. Quality of service being performed _____
2. Turn-around time _____
3. Ease of doing business with the CAL LAB _____
4. Overall service _____

LEGEND
5 = Excellent
4 = Good
3 = Acceptable
2 = Poor
1 = Unacceptable

COMMENTS: _____

Name _____ Phone # _____

TO: Supervisor
QA, CAL, LAB
Southwest Research Institute
P.O. Drawer 28510
San Antonio, TX 78228

BALANCE CALIBRATION VERIFICATION FORM

DATE: 21 Jan 51
 BALANCE CAL NO.: 31405
 TEMPERATURE: 20
 HUMIDITY: 21
 BARO. PRESSURE: 14.25

MFGR: METTLER
 MODEL: 7M4600
 SERIAL NO: 120461
 ASSET NO: 1440
 RANGE: 4K
 MASS UNCERTAINTY (U_m): _____

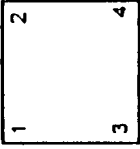
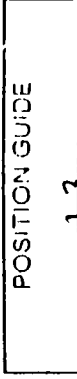
MFGR BALANCE TOLERANCES
 LINEARITY: _____
 ECCENTRICITY: _____
 REPRODUCIBILITY: _____
 TEMP. DRIFT/°C: _____
 COMBINED MFR SPECS (U_{mfr}): _____

CALIBRATION DATES
 LAST CAL: _____
 NEXT CAL: _____
 TUR = Comb. MFR Soecs (U_{mfr}) = 1
 U_{m-stc}

If TUR < 4:1, U_g = _____

1718

	RANGE VERIFICATION		
	RANGE 1	RANGE 2	RANGE 3
DATA POINTS	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS
RUN #1	4K 2K 1K	500 200 100	10
RUN #2	1000.0 2000.0 4000.0	500.0 1000.0 2000.0	10.00
RUN #3	f f f	f f f	f
MEAN			
STD. DEV.			



SHIFT VERIFICATION
 SELF CALIBRATION Y/N INTERNAL: _____ EXTERNAL: IX

ACTUAL WEIGHT IN CENTER	PAN POSITION			
	1	2	3	4
DIFF.				

COMMENTS: _____
 SIGNATURE: [Signature]

MEASURED UNCERTAINTY:
 Linearity = _____ g
 Eccentricity = _____ g
 Comb. Uncertainty = _____ g

Std Uncertainty = _____ g
 Std Uncertainty = _____ g

Rep (σ) = _____ g
 Mass tol. (2σ) = _____ g
 Comb Uncertainty = _____ g

Expanded Unc (k = 2) = _____ g

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

WORK ORDER

CERTIFICATE # 33820 ASSET # 1440 DATE 26 MAR

ITEM DATA:

Manufacturer METTLER Model PM4606

Description _____ Serial # 120461

Accessories _____

ACTION REQUESTED o/c

CUSTODIAN 2126 TIM PRINGLE

Turned in by: _____ Phone _____

CHARGE # _____ 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) _____

MEASURING UNCERTAINTY IS +/- 0.06 (0 to 600g) +/- 0.1 (600g to 1kg)

CAL ENVIRONMENT:

Temperature 67 °F Humidity 47 %RH

CALIBRATED/REPAIRED:

By [Signature] Cal Procedure CEP-WT-001

Date 26 MAR 99 Accuracy 1

Cal Interval 6 Reliability Code: _____

Next Cal due 22 Sept 99 Cal Time 1.5 Repair Time _____

Standards used (Asset#) 1718 1717 1716 115 1714 1708

DATE COMPLETED o/c 20 [Signature]

DATE PICKED UP _____ PICKED UP BY _____

33820

BALANCE CALIBRATION VERIFICATION FORM

DATE: 26 MAR 99
 BALANCE CAL NO: _____
 TEMPERATURE: 68
 HUMIDITY: 47
 BARO. PRESSURE: 14.40

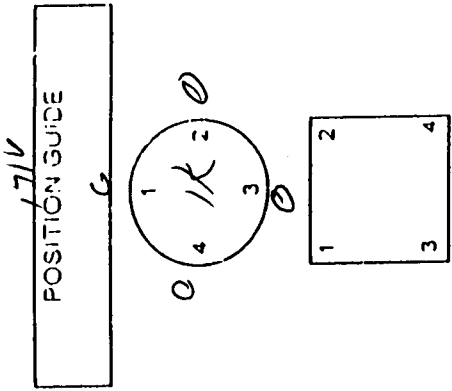
MFGR: METTLER
 MODEL: PM4600
 SERIAL NO: 120461
 ASSET NO: 1440
 RANGE: 1K
 MASS UNCERTAINTY (U_m): _____

MFGR BALANCE TOLERANCES
 LINEARITY: _____
 ECCENTRICITY: _____
 REPRODUCIBILITY: _____
 TEMP. DRIFT/°C: _____
 COMBINED MFR SPECS (U_{mfr}): _____

CALIBRATION DATES
 LAST CAL: 28 Sep 98
 NEXT CAL: 26 Sep 99
 TUR = Comb. MFR Specs (U_{mfr}) = _____ : 1
 U_{m, std}

If TUR < 4:1, U_o = _____

DATA POINTS	RANGE VERIFICATION			CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS
	RANGE 1	RANGE 2	RANGE 3			
4K	2K	1K	500	200	10	
3999.9	2000.0	1000.0	200.01	200.01	10.00	
RUN #2	f	f	f	f	f	
RUN #2	f	f	f	f	f	
MEAN						
STD DEV.						



SHIFT VERIFICATION				
SELF CALIBRATION Y/N	INTERNAL:	EXTERNAL:	PAN POSITION	
		<u>10/11</u>	1	2
			3	4
ACTUAL WEIGHT IN CENTER				
DIFF.				

COMMENTS: _____

 SIGNATURE: [Signature]

SWRI CALIBRATION LAB
 (210) 522-5210
 CAL: 28 Sep 98 BY: [Signature]
 DUE: 26 Sep 99
 SN: 120461 ID: 1440

MEASURED UNCERTAINTY:
 Linearity = _____ g
 Eccentricity = _____ g
 Comb Uncertainty = _____ g
 Std Uncertainty = _____ g
 Std Uncertainty = _____ g
 Rep (σ) = _____ g
 Mass tol. (2σ) = _____ g
 Comb Uncertainty = _____ g
 (σ) = _____ g
 (linearity, eccentricity, reproducibility mass)
 Expanded Unc (k=2) = _____ g



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

29 March 1999

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTLER PM4600
Description: ELECTRONIC BALANCE
Serial Number: 120461
Asset Number: 001440

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: 47 % RH

Calibration Date: 26 Mar 99

Calibration Procedure: CLCP-WT-001 AUG 97

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks: MEASURING UNCERTAINTY IS +/-0.05G(0 TO 600G) AND +/-0.1G(600G TO 4KG)

Approved by:

Jim Patterson, Supervisor or Walt Hill, Metrologist

Measurements performed by:

Jerry White, Technician

Certificate # 33820

Page 1 of 1

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

B57
26 Sept 99

WORK ORDER

WORK ORDER # 36120 ASSET # 1440 DATE 23 Sept 99

ITEM DATA:

Manufacturer Mettler Model Pm4600
Description Balance Serial # 120461
Accessories _____

ACTION REQUESTED _____

CUSTODIAN Jim Paikryk

Turned in by: _____ Phone _____

CHARGE # 20-0751-006 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: _____ Out of tolerance
 In tolerance
_____ Damaged (Contact customer)
_____ Contact _____ Date _____
_____ Received into system, introduced or reactivated

ACTION TAKEN: (Calibration/Repair/Parts) cal

SWRI CALIBRATION LAB
(210) 522-5215
CAL 26 Sept 99 BY mm
DUE 26 Sept 99 ID 1440
SN 120461

CAL ENVIRONMENT:
Temperature 71 °F Humidity 34 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure ELCP-WT-001 PUB 98
Date 23 Sept 99 Accuracy _____
Cal Interval 6 Reliability Code _____
Next Cal Due 23 Nov 00 Cal Time 1.5 Repair Time _____
Standards used (Asset #) _____

DATE COMPLETED 23 Sept 99 ed on site
DATE PICKED UP _____ PICKED UP BY _____

36120

BALANCE CALIBRATION VERIFICATION FORM

DATE: 23 Sep 99
 BALANCE CAL NO.: 36120
 TEMPERATURE: 71
 HUMIDITY: 34
 BARO. PRESSURE: 14.32

MFGR: METTLER
 MODEL: PM4600
 SERIAL NO.: 120761
 ASSET NO.: 1440
 RANGE: PP
 MASS UNCERTAINTY (U_m): _____

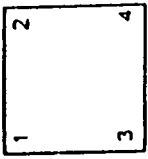
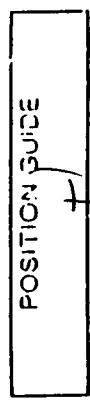
MFGR BALANCE TOLERANCES
 LINEARITY: _____
 ECCENTRICITY: _____
 REPRODUCIBILITY: _____
 TEMP. DRIFT/°C: _____
 COMBINED MFR SPECS (U_{mf}): _____

CALIBRATION DATES
 LAST CAL: 26 MAR 99
 NEXT CAL: 3 APR 00
 TUR = Comb MFR Specs (U_{mf}) = 0.1
 U_{m-std}

If TUR < 4:1, U₀ = _____

1718 17 16 15 14 11

	RANGE VERIFICATION			
	RANGE 1	RANGE 2	RANGE 3	
DATA POINTS	CALIBRATION POINTS			CALIBRATION POINTS
RUN #1	4K	2K	1K	500 200 10
RUN #2	4000.1	2000.0	1000.0	500.00 200.00 10.00
RUN #3	/	/	/	/
MEAN	/	/	/	/
STD DEV	/	/	/	/



SHIFT VERIFICATION				
SELF CALIBRATION Y/N		PAN POSITION		
INTERNAL	EXTERNAL	1	2	3
ACTUAL WEIGHT IN CENTER				
DIFF				

COMMENTS: _____
 SIGNATURE: [Signature]

MEASURED UNCERTAINTY:

Linearity = _____ g
 Eccentricity = _____ g
 Comb Uncertainty = _____ g
 Rep (σ) = _____ g
 Mass tol. (2σ) = _____ g
 Comb Uncertainty = _____ g

Std Uncertainty = _____ g
 Std Uncertainty = _____ g
 (σ) = _____ g
 (linearity, eccentricity, reproducibility, mass)

Exceeded Line (σ = 2) = _____ g



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

Certificate of Calibration

23 September 1999

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTLER PM4600
Description: ELECTRONIC BALANCE
Serial Number: 120461
Asset Number: 001440

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: 71.0 Degrees Fahrenheit Humidity: 34 % RH


Calibration Date: 23 Sep 99 **Calibration Procedure:** CLCP-WT-001 AUG 97

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:




Jim Patterson, Supervisor or Walt Hill, Metrologist

Certificate # 36120

m:\nona2la.rpt Rev date 13 Apr 99

Measurements performed by:



Jerry White, Technician

Page 1 of 1

WORK ORDER 38374

Date Received 3/23/00

Asset No. 001440 Manufacturer METTLER Model PM4600
 Description ELECTRONIC BALANCE Serial Number 120461
 Accessory Received/Required NONE
 Div/CC ID NONE Accessory to Asset No. N/A Accuracy MFG SPECS
 Div/CC DIV20 Location B57 Custodian JIM PRIKRYL Tel. 5667
 Charge/Project No. 20.00751.006 Proprietary/Confidential N Date Required ROUTINE
 Work Requested CALIBRATION ONSITE

Receiving Inspection _____
 Delivered By N/A Tel. 5667

WORK HISTORY

Date	Start Time	Stop Time	Notes

PARTS

Part Name	Part Number	Cost	Failure Description

38374

WORK SUMMARY

Failure Description _____

Repair Action _____

Cal Procedure CLCP-WT-001, 12/99 Temp 73 F Hum 51 %

Tech gn Cal Hrs. 1.5 Repair Hrs. _____ Part Cost _____

Action Taken cal

Standards Used 1714 1317 1718 1712

Date Cal 23 Mar 2000 Int. 6 Mo. Date Due 23 Apr 2000 Reliability Code 1

Date Picked Up _____ Picked Up By cal on site

ELECTRONIC BALANCE CALIBRATION DATA SHEET

WORK ORDER _____ DATE 23 MAR 2000 TECHNICIAN JMW

MODEL PM4600 SERIAL NO. 120461 ASSET NO. 1440

LOCATION 857

AMBIENT: TEMP 73 HUMIDITY 51 BARO PRESS 14.26

1) CALIBRATION CHECK

AS FOUND FULL-CAPACITY INDICATION 2999.9 (CHL 1000)

POST-CALIBRATION INDICATION 4000.0 TOLERANCE _____ P/F _____

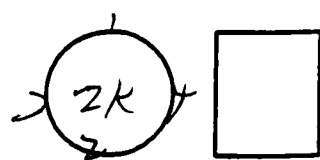
2) REPEATABILITY

1	2000.0	6	2000.0
2	2000.0	7	2000.0
3	2000.0	8	2000.0
4	2000.0	9	2000.0
5	2000.0	10	2000.0

SWRI CALIBRATION LAB
(210) 522-5245
CAL 23 MAR 00 BY JMW
DUE 23 MAR 00 ID 1440
S/N 120461

1716
1717
1718

S.D. _____ TOLERANCE _____ P/F _____



3) OFF-CENTER ERROR

1	1999.9	3	1999.9
2	2000.0	4	2000.0

TOLERANCE _____ P/F _____

4) NON-LINEARITY

TEST POINT	INDICATION	NON-LIN ERROR	TEST WEIGHT S/N
0	0.0	—	—
25%	1000.0		
50%	1000.0		
75%	1000.0		
100%	1000.0		

TOLERANCE _____ P/F _____

0.0
100.0 - 100.00

5) COMMENTS:

100
300 100.00
400 100.00
500 100.00



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

Certificate of Calibration

24 March 2000

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTLER PM4600
Description: ELECTRONIC BALANCE
Serial Number: 120461
Asset Number: 001440

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: 73.0 Degrees Fahrenheit Humidity: 51 % RH

Calibration Date: 23 Mar 00 **Calibration Procedure:** CLCP-WT-001, 12/99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

Jim Patterson, Supervisor or Walt Hill, Metrologist

Certificate # 38374

m:\nona21a.rpt Rev date 13 Apr 99

Measurements performed by:

Jerry White, Technician

Page 1 of 1

WORK ORDER 40564

Date Received 9/14/00

Asset No. 001440 Manufacturer METTLER Model PM4600
 Description ELECTRONIC BALANCE Serial Number 120461
 Accessory Received/Required NONE
 Div/CC ID NONE Accessory to Asset No. N/A
 Div/CC DIV20 Location B57 Custodian JIM PRIKRYL Tel. 5667
 Charge/Project No. 20.00751.006 Proprietary/Confidential N Date Required ROUTINE
 Work Requested CALIBRATION ONSITE
 Receiving Inspection
 Delivered By N/A Tel. 5667

WORK HISTORY

Date	Start Time	Stop Time	Notes

PARTS

Part Name	Part Number	Cost	Failure Description

WORK SUMMARY

Failure Description _____

Repair Action _____

Cal Procedure CLCP-WT-001, 12/99 Temp 68 F Hum 40 %

Tech [Signature] Cal Hrs. 1.5 Repair Hrs. _____ Part Cost _____

Action Taken cnl

Standards Used 1718 17 16 14 12

Date Cal 14 Sep 2000 Int. 6 Mo. Date Due 14 Mar 2001 Reliability Code _____

Date Picked Up _____ Picked Up By _____

cnl ou sets

40564

ELECTRONIC BALANCE CALIBRATION DATA SHEET

WORK ORDER 40564 DATE 14 Sept 2000 TECHNICIAN JM

MODEL PM4600 SERIAL NO. 120461 ASSET NO. 1440

LOCATION B5

AMBIENT: TEMP 69 HUMIDITY 60 BARO PRESS 14.26

1) CALIBRATION CHECK

AS FOUND FULL-CAPACITY INDICATION 3999.9

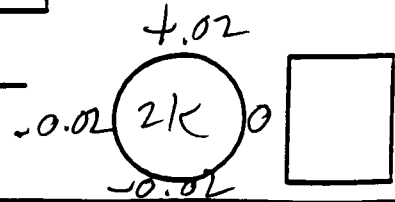
POST-CALIBRATION INDICATION 3999.9 TOLERANCE _____ P/F _____

2) REPEATABILITY

1	1999.9	6	1999.9
2	1999.9	7	1999.9
3	1999.9	8	1999.9
4	1999.9	9	1999.9
5	1999.9	10	1999.9

1718
17
16
14
12

S.D. _____ TOLERANCE _____ P/F _____



3) OFF-CENTER ERROR

1		3	
2		4	

TOLERANCE _____ P/F _____

4) NON-LINEARITY

TEST POINT	INDICATION	NON-LIN ERROR	TEST WEIGHT S/N
0	0.00	—	—
25%	1000.0		
50%	1000.0		
75%	1000.0		
100%	1000.0		

TOLERANCE _____ P/F _____

5) COMMENTS:

100 . 99.99
200 199.99
300 300.00



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

15 September 2000

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTLER PM4600
Description: ELECTRONIC BALANCE
Serial Number: 120461
Asset Number: 001440

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: 60 % RH

Calibration Date: 14 Sep 00 **Calibration Procedure:** CLCP-WT-001, 12/99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

Jim Patterson, Supervisor, or Walt Hill, Metrologist

Certificate # 40564

m:\a2la.rpt Rev date 22 May 00

Measurements performed by:

Jerry White, Technician

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

Processed by WHILL at 11:11:05AM on 3/1/01

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

Work Order 444042615

Arrived 3/1/01

Asset No. 001440 Manufacturer METTLER

Model PM4600

Instrument Type/Class BALANCE

Serial No. 120461

Accessory No. Calibration Procedure CLCP-WT-001, 12/99

Location B57

Div/Client DIV20

Custodian JIM PRIKRYL

Mail Stop B57

Tel. 5667

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 CLCP-WT-001, 12/99 Temp 70 F Hum 51 %

Tech Ullrich Totals Cal Hours 10 Repair Hours _____ Parts Cost _____

Standards Used 1717, 1718, 171c

Date Picked Up _____ Picked Up By _____

42615



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

5 March 2001

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTLER PM4600
Description: BALANCE
Serial Number: 120461
Asset Number: 001440
Work Order Number: 444042615

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: 70.0 Degrees Fahrenheit Humidity: 51 % RH

Calibration Date: 1 Mar 01 **Calibration Procedure:** CLCP-WT-001, 12/99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

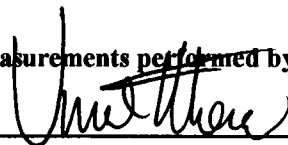
Remarks:

Approved by:



Walt Hill, Supervisor
Institute Calibration Laboratory

Measurements performed by:



Vince Morales, Technician

ELECTRONIC BALANCE CALIBRATION DATA SHEET

WORK ORDER 444042615 DATE 1 MAR 01 TECHNICIAN V. Moral

MODEL PM4600 SERIAL NO. 120461 ASSET NO. 1440

LOCATION Div 20 B57

AMBIENT: TEMP 70 HUMIDITY 51 BARO PRESS 14.17

1) CALIBRATION CHECK

AS FOUND FULL-CAPACITY INDICATION 3999.9g

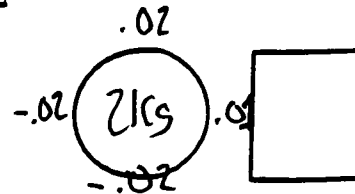
POST-CALIBRATION INDICATION 3999.9g TOLERANCE _____ P/F _____

2) REPEATABILITY

1	1999.9g	6	1999.9g
2	1999.9g	7	1999.9g
3	1999.9g	8	1999.9g
4	1999.9g	9	2000.0g
5	1999.9g	10	2000.0g

1717, 1718, 1715

S.D. _____ TOLERANCE _____ P/F _____



3) OFF-CENTER ERROR

1		3	
2		4	

TOLERANCE _____ P/F _____

4) NON-LINEARITY

TEST POINT	INDICATION	NON-LIN ERROR	TEST WEIGHT S/N
0	0	—	—
25%	1000.0g		
50%	1000.0g		
75%	1000.0g		
100%	1000.0g		

TOLERANCE _____ P/F _____

5) COMMENTS:

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

Received by MROMERO, 8/17/01 8:54:10AM

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

Arrived 8/17/01

Work Order **444044843**

Asset No. 001440 Manufacturer METTLER

Model PM4600

Instrument Type/Class BALANCE

Serial No. 120461

Accessory No. _____

Calibration Procedure CLCP-WT-001, 12/99

Location B57

Div/Client DIV20

Custodian JIM PRIKRYL

Mail Stop B57

Tel. 5667

IN4CAL

Special Instructions _____

Notify before making adjustments or repairs. (Provide measurement readings ()

Charge/Project No. 00751.006 1.20

Requested By / Telephone _____

The above is correct for the work requested.

WORK NOTES

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

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

WORK SUMMARY

Failure Description _____

Repair Action _____

Calibration Procedure _____

Temp 71 F

Hum. 56 %

Tech Walter Anthony Sanchez

Totals

Cal Hours 15

Repair Hours _____

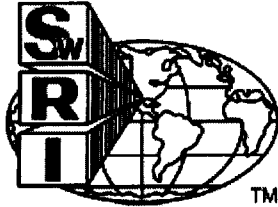
Parts Cost _____

Standards Used 1716, 1711, 1718

Date Picked Up _____

Picked Up By _____

44843



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

17 August 2001

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTLER PM4600
Description: BALANCE
Serial Number: 120461
Asset Number: 001440
Work Order Number: 444044843

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: 71.0 Degrees Fahrenheit Humidity: 56 % RH

Calibration Date: 17 Aug 01 **Calibration Procedure:** CLCP-WT-001, 12/99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

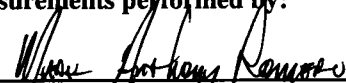
Remarks:

Approved by:



Walt Hill, Supervisor
Institute Calibration Laboratory

Measurements performed by:



Mark Romero, Technician

WORK ORDER 441044843 DATE 17 Aug 2001 TECHNICIAN Mr Anthony Jones

MODEL PM4600 SERIAL NO. 120461 ASSET NO. 001440

LOCATION B57

AMBIENT: TEMP 71 HUMIDITY 56 BARO PRESS 14.31

1) CALIBRATION CHECK

AS FOUND FULL-CAPACITY INDICATION 3999.9 g

POST-CALIBRATION INDICATION _____ TOLERANCE _____ P/F _____

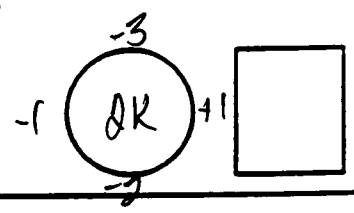
2) REPEATABILITY

1	<u>1999.9 g</u>	6	
2		7	
3		8	
4		9	
5		10	

1716
1717
1718

SWRI CALIBRATION LAB
(210) 522-5215
CAL 2 MAR 01 BY UM
DUE 2 SEP 01 ID 1440
S/N 120461

S.D. _____ TOLERANCE _____ P/F _____



3) OFF-CENTER ERROR

1		3	
2		4	

TOLERANCE _____ P/F _____

4) NON-LINEARITY

TEST POINT %FS or value	INDICATION	NON-LIN ERROR	TEST WEIGHT S/N
	<u>0</u>	<u>-</u>	<u>-</u>
	<u>1000.0 g</u>		
	<u>1000.0 g</u>		
	<u>1000.0 g</u>		
	<u>1000.0 g</u>		

TOLERANCE _____ P/F _____

5) COMMENTS:

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

Received by MROMERO, 2/15/02 11:17:56AM

Arrived 2/15/02

Work Order **444047260**

Asset No. 001440 Manufacturer METTLER

Model PM4600

Equipment Type BALANCE

Serial No. 120461

Accessory No. _____

Interval 6 M

Calibration Procedure CLCP-WT-001, 12/99

Location B57

Div/Client DIV20

Custodian JIM PRIKRYL

Mail Stop B57

Tel 5667

QUEUE

Special Instructions _____

Notify before adjustments or repairs. () Provide data with certificate () Certificate Typ. _____

Charge/Project No. 00751.006 1.20

Requester / Telephone _____

SWR CALIBRATION LAB
(210) 522-5215
CAL 17 Feb 01 BY WAP
DUE 17 Feb 02 ID 001440
S/N 120461

This information is correct for the work requested. _____

WORK NOTES

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

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

WORK SUMMARY

Failure Description _____

Repair Action _____

Tech WAP Cal Hrs. 1.0 Repair Hrs _____ Parts Cost _____ Temp 72 F Hum. 43 %

Standards Used 1716, 1717, 1718

Date Picked Up 15 Feb 2002

Picked Up By WAP ON SITE

444047260

Southwest Research Institute
Calibration Laboratory
Calibration Data Sheet

Work Order 444047260	Mfr. Mettler	Technician Mark A. Romero
Asset No. 1440	Model PM4600DR	Procedure CLCP-WT-001, 12/99
Serial No. 120461	Type Balance	Cal Date 15-Feb-02

Location: Bldg. 57/ Lab L106 Geochemistry Lab

Ambient Conditions: 72 F 43 %RH 14.39 PSIA

Operational Check: Limits +/- : 0.1 g

STD Mass Load	As Found Indication	Instrument Error
4000.0 g	4000.0 g	0.0 g

Post Calibration Check:

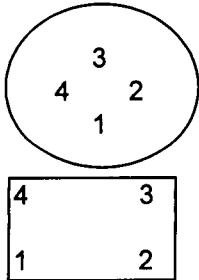
STD Mass Load	Post calibration Indication	Instrument Error	Results
4000.0 g	4000.0 g	0.0 g	Pass

Repeatability Check: Mass Load: 2000.0 g

1	2000.0 g	6	2000.0 g
2	2000.0 g	7	2000.0 g
3	2000.0 g	8	2000.0 g
4	2000.0 g	9	2000.0 g
5	2000.0 g	10	2000.0 g

Std Deviation	Tolerance
0.00	0.01 g

Off-Centerline Check: Mass Load: 2000.0 g



	Indication	Instrument Error	+/- Limits	Results
1	-0.02 g	-0.02 g	0.03	Pass
2	0.00 g	0.00 g	0.03	Pass
3	0.02 g	0.02 g	0.03	Pass
4	-0.02 g	-0.02 g	0.03	Pass

Non-Linearity Check: Range: 4000.0 g

STD Mass Load	Indication	Instrument Error	+/- Limits	Results
0.0 g	0.0 g	0.00 g	0.03	Pass
1000.0 g	1000.0 g	0.00 g	0.03	Pass
2000.0 g	1000.0 g	0.00 g	0.03	Pass
3000.0 g	1000.0 g	0.00 g	0.03	Pass
4000.0 g	1000.0 g	0.00 g	0.03	Pass

Remarks: Readability is 0.01g (600g) and 0.1g (4.1kg). Standards used 1716, 1717, and 1718.

Southwest Research Institute
Calibration Laboratory
Uncertainty Budget

Mettler PM4600DR (TI)	Units	Range	Acc. +/- (1)	Resolution
	g	4 100	0.1	0.1
Source of Uncertainty	Value	Distribution	Divisor	Std. Uncert.
Standard weight (2)	0.0075	Rectangular	Sqrt 3	0.00433
Resolution	0.1	Rectangular	Sqrt 3	0.0577
Air buoyancy (3)	0.0041	Rectangular	Sqrt 3	0.00237
Combined Uncertainty	RSS			0.0579
Expanded Uncertainty	$k=2$			0.12
Test Accuracy Ratio (TAR)	TI Acc./STD Acc.			
	13.3	to 1		
Test Uncertainty Ratio (TUR)	TI Acc./Muk=2			
	0.9	to 1		

(1) Combined Uncertainty (2 sigma) of mfg std dev. (0.03g), linearity (0.05g), corner load (0.03g), & Class S1 1kg internal check weight (2.5mg) tolerances.
(2) RSS of combined tolerances for check weights [Class S1 (2) 2kg (5mg) and 1kg (2.5mg)].
(3) No correction is made for air buoyancy. As the span of the weighing machine was adjusted before calibration, the uncertainty limits were estimated to be 1 ppm of the nominal value ie= 4.1 mg.

Mettler PM4600DR (TI)	Units	Range	Acc. +/- (1)	Resolution
	g	600	0.05	0.01
Source of Uncertainty	Value	Distribution	Divisor	Std. Uncertainty
Standard weight (2)	0.00132	Rectangular	Sqrt 3	0.000764
Resolution	0.01	Rectangular	Sqrt 3	0.00577
Air buoyancy (3)	0.00041	Rectangular	Sqrt 3	0.000237
Combined Uncertainty	RSS			0.00583
Expanded Uncertainty	$k=2$			0.01
Test Accuracy Ratio (TAR)	TI Acc./STD Acc.			
	37.8	to 1		
Test Uncertainty Ratio (TUR)	TI Acc./Muk=2			
	4.3	to 1		

(1) Combined Uncertainty (2 sigma) of mfg std dev. (0.01g), linearity (0.02g), corner load (0.03g), & Class S1 1kg (2.5mg) internal check weight tolerance.
(2) RSS of combined tolerances for check weights [Class S1 500g (1.2mg), 200g (0.5mg), and S1 100g (0.25mg)].
(3) No correction is made for air buoyancy. As the span of the weighing machine was adjusted before calibration, the uncertainty limits were estimated to be 1 ppm of the nominal value ie= 0.4 mg.



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

Certificate of Calibration

18 February 2002

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTLER PM4600DR
Description: BALANCE
Serial Number: 120461
Asset Number: 001440
Work Order Number: 444047260

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: 72.0 Degrees Fahrenheit Humidity: 43 % RH


Calibration Date: 15 Feb 02 **Calibration Procedure:** CLCP-WT-001, 12/99

Condition as Received: IN TOLERANCE

Condition as Returned: IN TOLERANCE

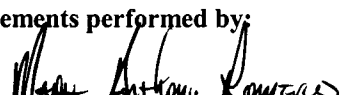
Remarks:

Approved by:

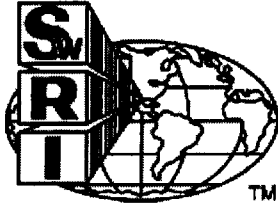


Walt Hill, Supervisor
Institute Calibration Laboratory

Measurements performed by:



Mark Romero, Technician



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

Certificate of Calibration

5 August 2002

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTLER PM4600DR
Description: BALANCE
Serial Number: 120461
Asset Number: 001440
Work Order Number: 444049723

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: 68.0 Degrees Fahrenheit Humidity: 63 % RH

Calibration Date: 5 Aug 02 **Calibration Procedure:** CLCP-WT-001, 12/99

Condition as Received: IN TOLERANCE

Condition as Returned: IN TOLERANCE

Remarks:

Approved by:


Walt Hill, Metrology Group Leader
Institute Calibration Laboratory

Measurements performed by:


Mark Romero, Technician

Southwest Research Institute
 Calibration Laboratory
 Calibration Data Sheet

Work Order 444049723	Mfr. Mettler	Technician Mark A. Romero
Asset No. 001440	Model PM4600DR	Procedure CLCP-WT-001, 12/99
Serial No. 120461	Type Balance	Cal Date 05-Aug-02

Location: Bldg. 57/ Lab 106 Geochemistry Lab

Ambient Conditions: 68 F 63 %RH 14.23 PSIA

Operational Check: Limits +/- : 0.1 g

STD Mass Load	As Found Indication	Instrument Error
1000.0 g	999.9 g	-0.1 g

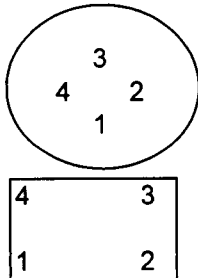
Post Calibration Check:

STD Mass Load	Post calibration Indication	Instrument Error	Results
1000.0 g	999.9 g	-0.1 g	Pass

Repeatability Check: Mass Load: 1000.0 g

1	1000.0 g	6	1000.0 g
2	1000.0 g	7	1000.0 g
3	1000.0 g	8	1000.0 g
4	1000.0 g	9	1000.0 g
5	1000.0 g	10	1000.0 g
Std Deviation		Tolerance	
0.00 g		0.01 g	

Off-Centerline Check: Mass Load: 2000.0 g

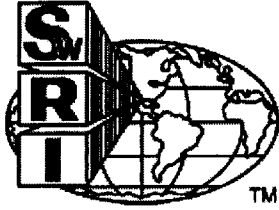


	Indication	Instrument Error	+/- Limits	Results
1	0.03 g	0.03 g	0.03	Pass
2	0.01 g	0.01 g	0.03	Pass
3	-0.01 g	-0.01 g	0.03	Pass
4	-0.01 g	-0.01 g	0.03	Pass

Non-Linearity Check: Range: 4000.0 g

STD Mass Load	Indication	Instrument Error	+/- Limits	Results
0.0 g	0.0 g	0.00 g	0.03	Pass
1000.0 g	1000.0 g	0.00 g	0.03	Pass
2000.0 g	1000.0 g	0.00 g	0.03	Pass
3000.0 g	1000.0 g	0.00 g	0.03	Pass
4000.0 g	1000.0 g	0.00 g	0.03	Pass

Remarks: Readability is 0.01g (600g) and 0.1g (4.1kg). Standards used 1716, 1717, and 1718.



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

Certificate of Calibration

5 August 2002

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTLER AE240
Description: BALANCE
Serial Number: 101237
Asset Number: 001439
Work Order Number: 444049724

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: 68.0 Degrees Fahrenheit Humidity: 63 % RH

Calibration Date: 5 Aug 02 Calibration Procedure: CLCP-WT-001, 12/99

Condition as Received: SEE ATTACHED DATA

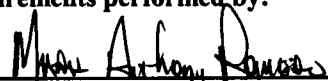
Condition as Returned: SEE ATTACHED DATA

Remarks:

Approved by:


Walt Hill, Metrology Group Leader
Institute Calibration Laboratory

Measurements performed by:


Mark Romero, Technician

Southwest Research Institute
Calibration Laboratory
 Calibration Data Sheet

Work Order 444049724	Mfr. Mettler	Technician Mark A. Romero
Asset No. 001439	Model AE240	Procedure CLCP-WT-001, 12/99
Serial No. 101237	Type Balance	Cal Date 05-Aug-02

Location: Bldg. 57/ Lab 106

Ambient Conditions: 68 F 63 %RH 14.23 PSIA

Operational Check: Limits +/- : 0.0006 g **Uncertainty:** 0.0004 g

STD Mass Load	As Found Indication	Instrument Error
100.0000 g	100.0001 g	0.0001 g

Post Calibration Check:

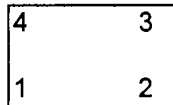
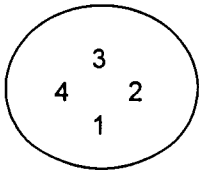
STD Mass Load	Post calibration Indication	Instrument Error	Results *
100.0000 g	100.0001 g	0.0001 g	Pass

Repeatability Check: Mass Load: 80.0000 g

1	80.0001 g	6	80.0000 g
2	80.0000 g	7	80.0000 g
3	80.0000 g	8	80.0000 g
4	80.0000 g	9	80.0000 g
5	80.0001 g	10	79.9999 g

Std Deviation	Tolerance
0.0001 g	0.0001 g

Off-Centerline Check: Mass Load: 80.0000 g **Uncertainty:** 0.0004 g



	Indication	Instrument Error	+/- Limits	Results *
1	0.0000 g	0.0000 g	0.0003	
2	0.0000 g	0.0000 g	0.0003	
3	0.0000 g	0.0000 g	0.0003	
4	0.0000 g	0.0000 g	0.0003	

Non-Linearity Check: Range: 200.0000 g **Uncertainty:** 0.0004 g

STD Mass Load	Indication	Instrument Error	+/- Limits	Results *
0.0000 g	0.0000 g	0.0000 g	0.0003	
50.0000 g	50.0001 g	0.0001 g	0.0003	
100.0000 g	50.0002 g	0.0002 g	0.0003	
150.0000 g	50.0000 g	0.0000 g	0.0003	
200.0000 g	50.0001 g	0.0001 g	0.0003	

Remarks: Readability is 0.01mg (41g) and 0.1mg (205g). Standards used 8160, 8159, 1710, and 1708.

* The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, which provides a level of confidence of approximately 95%. The results can be Pass, Fail, or if blank "not determinable". If "not determinable" the end user is responsible in determining whether the results meet their requirements.