

WEIGHT TRACEABILITY CERTIFICATE

TO: Southwest Research
6220 Culebra CNWRALab Bldg 57

The Sartorius balances listed below have been calibrated by our
representative on 5-16-91

This is to certify that the test weights used are traceable to the
National Institute of Standards & Technology

Sartorius identification number of test weights used:	<u>S 30348</u>	<u>S 30208</u>
Calibrated to class:	<u>S</u>	<u>P</u>
Sartorius calibration date of test weights used:	<u>4-2-91</u>	<u>7-9-90</u>
N.I.S.T. Test Number:	<u>731/24366A</u>	<u>731/24366A</u>

Type and serial number of balances serviced:

PE 240 # 101237

PM 4600 # 20467

3808 # 3903006

Donald V. Joy
Sartorius Service Representative

5-16-91
Date of Issue

sartorius
BALANCES AND SCALES

SARTORIUS CORPORATION
140 Wilbur Place
Bohemia, Long Island
New York, 11716

Sartorius Corporation
 140 Wilbur Place
 Bohemia, N.Y. 11716
 800 - 645-3108

TECHNICAL SERVICES
Balances and Scales
SERVICE REPORT

Customer # _____ PO # _____

Customer: _____

Bldg/Dept.: _____

Street _____

City, State, Zip _____

Contact _____

Phone # _____ Date: _____

Spec. Instr. _____

Work Order # _____

Service Program		Travel Zone	
ROUTINE MAINTENANCE			A
HOURLY			B
EMERGENCY			C
WARRANTY			D
SHOP SERVICE			

ROUTINE MAINTENANCE

Line #	Model/Serial #	Make	Explanation
1			
2			
3			
ADDITIONAL UNITS LISTED ON ACCOMPANYING SHEETS			
Total units serviced =		Total labor hours =	

ITEM(S) FOR REPAIR

Line #	Model/Serial #	Make	Explanation	(in ¼ hours) Labor hours
1				.
2				.
3				.
Total hours =				.

SPARE PARTS USED FOR REPAIR

Spare Part Number	Description	Qty. Used	Qty. to Bill	Used for Line #	Cost
					\$.
					\$.
					\$.
					\$.
					\$.
					\$.
					\$.
					\$.

SERVICES PERFORMED

Service Date: / /	Tech #	Tech Name:
Travel Time = .	Comments:	
Return Time = .		
Mileage =		
Next Service Due: Mo / Yr		

Customer Signature: _____ Date: / /

FILE

=====

REPORT NAME: DIV 20 N SRIDHAR

DATE: 28-Dec-90

TIME: 09:36

=====

Manufacturer/Model METTLER AE 240 ELECTRONIC BALANCE
Serial Number 101237
Date Next Calibration 5 Jan 1991
Remark

Manufacturer/Model SARTORIUS 3808 ELECTRONIC BALANCE
Serial Number 39030006
Date Next Calibration 5 Jan 1991
Remark

Manufacturer/Model METTLER PM 4600 ELECTRONIC BALANCE
Serial Number 12046
Date Next Calibration 5 Jan 1991
Remark
END

WEIGHT TRACEABILITY CERTIFICATE

TO: Southwest Research Inst
Bldg 57 263 ave D
6220 Culebra Rd
San Antonio, Tx

The Sartorius balances listed below have been calibrated by our
representative on 11-25-91

This is to certify that the test weights used are traceable to the
National Institute of Standards & Technology

Sartorius identification number of test weights used:	<u>S30408</u>	<u>S30442</u>
Calibrated to class:	<u>P</u>	<u>S</u>
Sartorius calibration date of test weights used:	<u>8-7-91</u>	<u>10-25-91</u>
N.I.S.T. Test Number:	<u>732/246368</u>	<u>731/243669</u>

Type and serial number of balances serviced:

<u>Pm 4600 # 20467-</u>	<u>AE 240# 101237</u>
_____	_____
_____	_____
_____	_____
_____	_____

Donald V. Jones

Sartorius Service Representative

11-25-91

Date of Issue

sartorius
BALANCES AND SCALES

SARTORIUS CORPORATION
140 Wilbur Place
Bohemia, Long Island
New York, 11716

WEIGHT TRACEABILITY CERTIFICATE

TO: Southwest Research Institute
Bldg. 57 263 AVE. D
6220 Culebra Rd. SAN ANTONIO, TX.

The Sartorius balances listed below have been calibrated by our
representative on November 25, 1991

This is to certify that the test weights used are traceable to the
National Institute of Standards & Technology

Sartorius identification number of test weights used: 770-T2

Calibrated to class: CLASS "4"

Sartorius calibration date of test weights used: 8/5/91

N.I.S.T. Test Number: 732/246308

Type and serial number of balances serviced:

3808

3903006

Zane Lynch
Sartorius Service Representative

11/25/91
Date of Issue

sartorius
BALANCES AND SCALES

SARTORIUS CORPORATION
140 Wilbur Place
Bohemia, Long Island
New York, 11716

Garrett Corporation
 40 Wilbur Place
 Bohemia, N.Y. 11716
 100 - 645-3108

TECHNICAL SERVICES
Balances and Scales
SERVICE REPORT

Customer # _____ PO # _____
 Customer: _____
 Bldg/Dept.: _____
 Street: _____
 City, State, Zip: _____
 Contact: _____
 Phone # _____ Date: _____
 Spec. Instr.: _____

Work Order #

Service Program		Travel Zone	
<input checked="" type="checkbox"/>	ROUTINE MAINTENANCE	<input checked="" type="checkbox"/>	A
<input type="checkbox"/>	HOURLY	<input type="checkbox"/>	B
<input type="checkbox"/>	EMERGENCY	<input type="checkbox"/>	C
<input type="checkbox"/>	WARRANTY	<input type="checkbox"/>	D
<input type="checkbox"/>	SHOP SERVICE	<input type="checkbox"/>	

ROUTINE MAINTENANCE

Line #	Model/Serial #	Make	Explanation
1			
2			
3			

ADDITIONAL UNITS LISTED ON ACCOMPANYING SHEETS

Total units serviced =	Total labor hours =
------------------------	---------------------

ITEM(S) FOR REPAIR

Line #	Model/Serial #	Make	Explanation	(in ¼ hours) Labor hours
1				.
2				.
3				.
Total hours =				.

SPARE PARTS USED FOR REPAIR

Spare Part Number	Description	Qty. Used	Qty. to Bill	Used for Line #	Cost
					\$.
					\$.
					\$.
					\$.
					\$.
					\$.
					\$.
					\$.

SERVICES PERFORMED

Service Date: / /	Tech #	Tech Name:
Travel Time = .	Comments:	
Return Time = .		
Mileage =		
Next Service Due: Mo / Yr		

Customer Signature: _____ Date: / /

TECHNICIAN

Sartorius Corporation
 140 Wilbur Place
 Bohemia, N.Y. 11716
 300 - 645-3108

TECHNICAL SERVICES
Balances and Scales
SERVICE REPORT

Customer # _____ PO # _____

Customer: _____

Bldg/Dept.: _____

Street _____

City, State, Zip _____

Contact _____

Phone # _____ Date: _____

Spec. Instr. _____

Work Order #

Service Program		Travel Zone	
ROUTINE MAINTENANCE			A
HOURLY			B
EMERGENCY			C
WARRANTY			D
SHOP SERVICE			

ROUTINE MAINTENANCE

Line #	Model/Serial #	Make	Explanation
1			
2			
3			

ADDITIONAL UNITS LISTED ON ACCOMPANYING SHEETS

Total units serviced =	Total labor hours =
------------------------	---------------------

ITEM(S) FOR REPAIR

Line #	Model/Serial #	Make	Explanation	(in ¼ hours) Labor hours
1				.
2				.
3				.

Total hours = .

SPARE PARTS USED FOR REPAIR

Spare Part Number	Description	Qty. Used	Qty. to Bill	Used for Line #	Cost
					\$.
					\$.
					\$.
					\$.
					\$.
					\$.
					\$.
					\$.
					\$.

SERVICES PERFORMED

Service Date: 5/1/11	Tech # _____	Tech Name: _____
Travel Time = .	Comments: _____	
Return Time = .		
Mileage = _____		
Next Service Due: Mo / Yr		

Customer Signature: _____ Date: _____

TECHNICIAN

WEIGHT TRACEABILITY CERTIFICATE

TO: Southwest Research Inst.
6220 Culebra Rd Bldg 57 (NWRA Lab)
San Antonio, Tx

The Sartorius balances listed below have been calibrated by our
representative on 4-30-92

This is to certify that the test weights used are traceable to the
National Institute of Standards & Technology

Sartorius identification number of test weights used:	<u>530442</u>	<u>530408</u>
Calibrated to class:	<u>S</u>	<u>P</u>
Sartorius calibration date of test weights used:	<u>10-25-91</u>	<u>8-7-91</u>
N.I.S.T. Test Number:	<u>731/243669</u>	<u>732/246308</u>

Type and serial number of balances serviced:

<u>RC 210P# 10704379</u>	<u>3808 # 3903006</u>
<u>PE 240# 101237</u>	<u>PM 240# 101237</u>
_____	_____
_____	_____
_____	_____

Donald J. Jorg
Sartorius Service Representative

4-30-92

Date of Issue

sartorius
BALANCES AND SCALES

SARTORIUS CORPORATION
140 Wilbur Place
Bohemia, Long Island
New York, 11716

140 Wilbur Place
 Bohemia, N.Y. 11716
 516-628-3108

**Balances and Scales
 SERVICE REPORT**

Customer # _____ PO # M 3151
 Customer Southwest Research Inst
 Bldg/Dept Bldg 57 CNWRA Lab.
 Street 6220 Cullera Rd
 City, State, Zip San Antonio Tx
 Contact J. Prikey
 Phone # _____ Date: _____
 Spec. Instr _____

Work Order # _____

Service Program	Travel Zone
<input checked="" type="checkbox"/> ROUTINE MAINTENANCE	<input checked="" type="checkbox"/> A
<input type="checkbox"/> HOURLY	<input type="checkbox"/> B
<input type="checkbox"/> EMERGENCY	<input type="checkbox"/> C
<input type="checkbox"/> WARRANTY	<input type="checkbox"/> D
<input type="checkbox"/> SHOP SERVICE	

ROUTINE MAINTENANCE

Line #	Model/Serial #	Make	Explanation
1	3808 # 3903006	Sartorius	Cal (2000.2)
2	RC210P # 10704375	Sartorius	Cal (99.99968)
3	AE240A # 101237	Mettler	Cal (100.0032)

ADDITIONAL UNITS LISTED ON ACCOMPANYING SHEETS

Total units serviced = _____ Total labor hours = 2.5

TECHNICAL REPAIR

Line #	Model/Serial #	Make	Explanation	(in 1/4 hours) Labor hours
1	PM4600 # 20467	Mettler	Cal (1999.9)	.
2				.
3				.

Total hours = _____

SPARE PARTS USED FOR REPAIR

Spare Part Number	Description	Qty. Used	Qty. to Bill	Used for Line #	Cost
					\$.
					\$.
					\$.
					\$.
					\$.
					\$.
					\$.
					\$.
					\$.
					\$.

SERVICES PERFORMED

Service Date: 1/20/06 Tech # 15 Tech Name: Jim Long
 Travel Time = _____ Comments: _____
 Return Time = _____
 Mileage = _____
 Next Service Due: 1/20/06
Balance Cleaned + Calib to Manu. Specs.

Customer Signature: _____ Date: _____
TECHNICIAN

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: 1439

Manufacturer: METTLER

Model: AE 240

Nomenclature: ELECTRIC BALANCE

Serial Number: 101237

SwRI No:

Remarks

Accuracy: MFGR SPECS

Procedure: MFGR

ENVIRONMENT

Temperature: 68 Humidity: 28 Location:

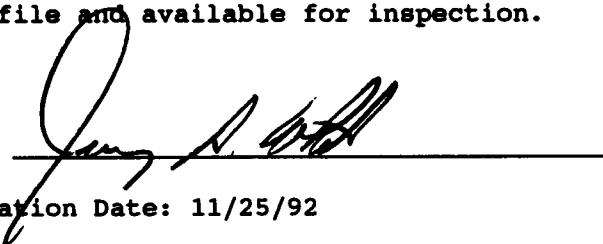
CONCLUSION

Tolerance/Remarks: Received in tolerance, no adjustments made

Calibrated within Tolerance.

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: 11/25/92

Record Number: 00010260

Next Calibration Due: 05/25/93

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: 101237

Calibration Date: 11/25/92

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: 1708 Manufacturer: RICE LAKE Model: 10 GRAM
Nomenclature: WEIGHT STANDARD
Serial No: C863 Cal.Due: 07/08/93 Cal.Rec.No: 00000000

Standard No: 1709 Manufacturer: RICE LAKE Model: 20 GRAM
Nomenclature: WEIGHT STANDARD
Serial No: C864 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: 1713 Manufacturer: RICE LAKE Model: 200 GRAM
Nomenclature: WEIGHT STANDARD
Serial No: C868 Cal.Due: 07/08/93 Cal.Rec.No: 00000000

Standard No: 1720 Manufacturer: RICE LAKE Model: 1 - 500 MG
Nomenclature: WEIGHT STANDARDS
Serial No: C858 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: 1439

Manufacturer: METTLER

Model: AE 240

Nomenclature: ELECTRIC BALANCE

Serial Number: 101237

SwRI No:

Cal interval 6 Mo.

Remarks

Accuracy: MFGR SPECS

Procedure: MFGR

ENVIRONMENT

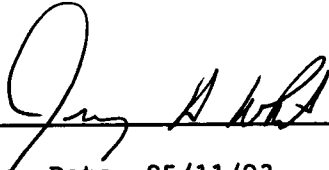
Temperature: 68 Humidity: 48 Location: SWRI B57

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: 05/11/93

Cal interval: 6 Months

Record Number: 00011250

Next Calibration Due: 11/11/93

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: 101237

Calibration Date: 05/11/93

STANDARDS

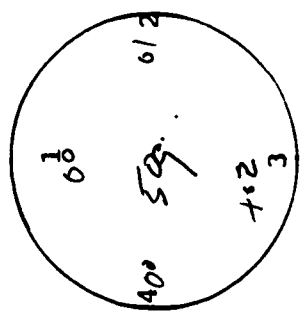
Standard No: 1704	Manufacturer: RICE LAKE	Model: 1 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C859	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1708	Manufacturer: RICE LAKE	Model: 10 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C863	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1709	Manufacturer: RICE LAKE	Model: 20 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C864	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1710	Manufacturer: RICE LAKE	Model: 20 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C865	Cal.Due: 07/08/93	Cal.Rec.No: 00000000
Standard No: 1711	Manufacturer: RICE LAKE	Model: 50 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C866	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: 1714	Manufacturer: RICE LAKE	Model: 200 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C869	Cal.Due: 07/08/93	Cal.Rec.No: 00000000

BALANCE CALIBRATION VERIFICATION FORM

DATE: 10 MAY 93 MFR.: METTLER MODEL: AE240
 SER. NO. 101237 RANGE: 240g CALIBRATION DATES
 TEMPERATURE: 68.2 HUMIDITY: 48% LAST: 25 Nov 92 NEXT: NOV 93
 CALIBRATED BY: Jerry A. White PRINT NAME
 BALANCE CAL #: 11250 LIN. TOL.: 2/03 REP. TOL.: 1/02
 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.	1	2	3	1	2	3	1	2	3
RUN #1	200	100	50	40	10	/			
RUN #2	200.0001	100.0000	50.0000	35.99999	2.99992	.79999			
RUN #3	200.0001	100.0000	50.0000	35.55999	2.55999	.95999			
MEAN	200.0001	100.0000	50.0000	35.99979	2.59997	.95999			
STD. DEV.				32.59979	9.79997	9.9999			



1	2
3	4

POSITION GUIDE

SHIFT VERIFICATION

SELF CALIBRATION Y/N	INTERNAL:	EXTERNAL:		
		<u>20g</u>		
WEIGHT VALUE	PAN POSITION			
	1	2	3	4
59	50.0000	50.0001	50.0002	50.0000

COMMENTS: The .01 gram pan is affected by the
slight in the 1000-amp is within 10 ± .02 grams.
 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: 1439

Manufacturer: METTLER

Model: AE 240

Nomenclature: ELECTRIC BALANCE

Serial Number: 101237

SwRI No:

Cal interval 6 Mo.

Remarks

Accuracy: MFGR SPECS

Procedure: MFGR

ENVIRONMENT

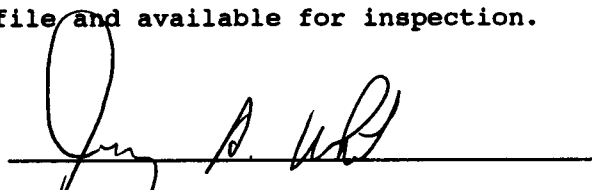
Temperature: 72 Humidity: 35 Location: SWRI DIV20 B75

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: 11/05/93

Cal interval: 6 Months

Record Number: 00012699

Next Calibration Due: 05/05/94

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: 101237

Calibration Date: 11/05/93

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: 1709	Manufacturer: RICE LAKE	Model: 20 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C864	Cal.Due: 06/30/94	Cal.Rec.No: 00011761
Standard No: 1710	Manufacturer: RICE LAKE	Model: 20 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C865	Cal.Due: 06/30/94	Cal.Rec.No: 00011762
Standard No: 1711	Manufacturer: RICE LAKE	Model: 50 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C866	Cal.Due: 06/30/94	Cal.Rec.No: 00011763
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

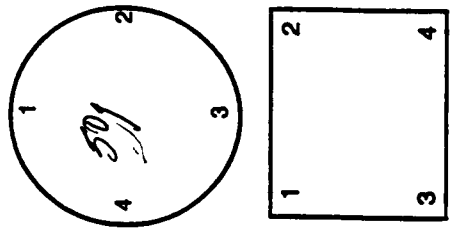
BALANCE CALIBRATION VERIFICATION FORM

DATE: 5 NOV 93 MFGR: METTLER MODEL: A2246
 SER. NO. 101237 RANGE: 205g CALIBRATION DATES
 TEMPERATURE: 72° HUMIDITY: 35% LAST: 15 MAY 93 NEXT: 5 MAY 94
 CALIBRATED BY: Jeremy R. White
 BALANCE CAL #: 12699 LINE. TOL.: 2/.03 REP. TOL.: 1/.02
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.	1	2	3	1	2	3	1	2	3
RUN #1	9.9999	20.0000	39.9999	49.9999	100.0000	199.9999			
RUN #2	9.9999	20.0000	39.9999	49.9999	100.0000	199.9999			
RUN #3	9.9999	20.0000	39.9999	49.9999	100.0000	199.9999			
MEAN	9.9999	20.0000	39.9999	49.9999	100.0000	199.9999			
STD. DEV.									

POSITION GUIDE



SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: INTERNAL _____ EXTERNAL _____

COMMENTS: _____

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
50g	49.9999	49.9999	49.9999	49.9999

SIGNATURE: Jeremy R. 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: 1439

Manufacturer: METTLER

Model: AE 240

Nomenclature: ELECTRIC BALANCE

Serial Number: 101237

SwRI No:

Cal interval 6 Mo.

Remarks

Accuracy: MFGR SPECS

Procedure: MFGR

ENVIRONMENT

Temperature:

Humidity:

Location: SWRI DIV20 BLDG. 57

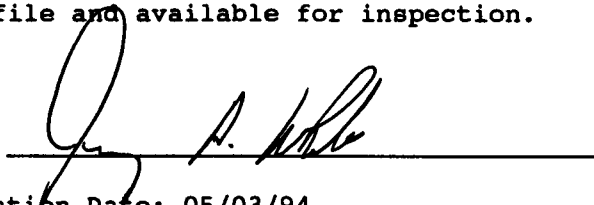
CONCLUSION

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: 05/03/94

Cal interval: 6 Months

Record Number: 00014021

Next Calibration Due: 11/03/94

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: 101237

Calibration Date: 05/03/94

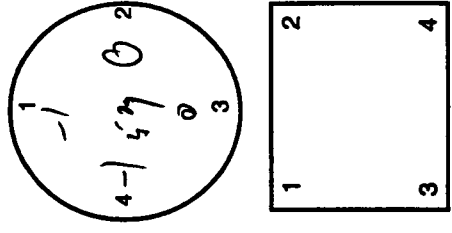
STANDARDS

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: 1708	Manufacturer: RICE LAKE	Model: 10 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C863	Cal.Due: 06/30/94	Cal.Rec.No: 00011760
Standard No: 1709	Manufacturer: RICE LAKE	Model: 20 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C864	Cal.Due: 06/30/94	Cal.Rec.No: 00011761
Standard No: 1710	Manufacturer: RICE LAKE	Model: 20 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C865	Cal.Due: 06/30/94	Cal.Rec.No: 00011762
Standard No: 1711	Manufacturer: RICE LAKE	Model: 50 GRAM
Nomenclature: WEIGHT STANDARD		
Serial No: C866	Cal.Due: 06/30/94	Cal.Rec.No: 00011763
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

BALANCE CALIBRATION VERIFICATION FORM

DATE: 3/24/94 MFGR: METTLER MODEL: AE 240
 SER. NO. 101237 RANGE: 20g CALIBRATION DATES
 TEMPERATURE: 21.0 HUMIDITY: 55% LAST: 5/20/93 NEXT: 3/20/94
 CALIBRATED BY: Tracy A. White
14021 LINE. TOL.: .2/.03 REP. TOL.: .1/.02
BALANCE TOLERANCES

	RANGE #1			RANGE #2			RANGE #3		
	1	2	3	1	2	3	1	2	3
DATA PTS.	200	100	50	40	20	10	1	2	3
RUN #1	199.9999	100.0000	50.0000	35.9999	19.9997	10.0003			
RUN #2	199.9999	100.0000	50.0000	35.9997	19.9997	10.0003			
RUN #3	199.9999	100.0000	50.0000	35.9997	19.9997	10.0003			
MEAN									
STD. DEV.									



SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: INTERNAL EXTERNAL

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
50g	49.9997	50.0000	50.0000	49.9997

COMMENTS: _____
 SIGNATURE: [Signature]

SOUTHWEST RESEARCH INSTITUTE

**Department of Quality Assurance
Calibration Laboratory**

**CERTIFICATE OF CALIBRATION
11/04/94**

Issued to: JIM PRIKRYL DIV20 ,B57
Manufacturer: METTL
Nomenclature: ELECTRIC BALANCE
Serial Number: 101237

Asset Number: 001439
Model Number: AE 240
SwRI Capital Number: UNKWN

ENVIRONMENTAL CONDITIONS

Temperature: 73.0F

Relative Humidity: 74 %

CALIBRATION INFORMATION

Location: B57
Procedure Number: SWRI
Remarks:

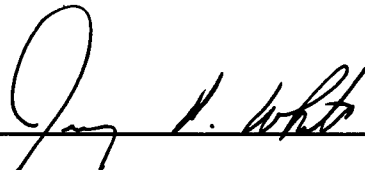
Technician: 7213
Accuracy: MFRG SPECS
Received IN Tolerance

**Calibration was in accordance with requirements of MIL-STD-45662A.
Measurements are traceable to the National Institute of Standards and 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
001713	C868	RICE	200 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001712	C867	RICE	100 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001711	C866	RICE	50 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001710	C865	RICE	20 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001709	C864	RICE	20 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001708	C863	RICE	10 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 :



Work Order: 15643

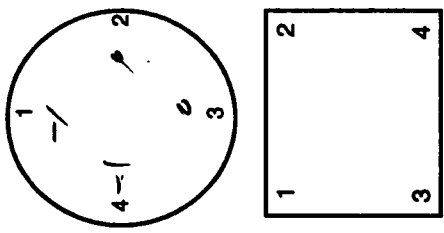
Calibration Date: 11/04/94
Interval: 6 months
Next Calibration Due: 05/04/95

BALANCE CALIBRATION VERIFICATION FORM

DATE: 4 NOV 95 MFGR: METTLER MODEL: AE240
 SER. NO. 101237 RANGE: 20g CALIBRATION DATES
 TEMPERATURE: 23° HUMIDITY: 74% LAST: 3 MAY 94 NEXT: 4 MAY 95
 CALIBRATED BY: Jeany A. White
 BALANCE CAL #: 15643 LINE. TOL.: .2/.03 REP. TOL.: 1/.2
BALANCE TOLERANCES

RANGE VERIFICATION

DATA PTS.	RANGE #1			RANGE #2			RANGE #3		
	1	2	3	1	2	3	1	2	3
200g	100g	50g	50g	40g	20g	1g			
RUN #1	200.0001	100.0000	50.0000	40.0000	20.0000	10.0000	9.9999		
RUN #2	200.0001	100.0000	50.0000	40.0000	20.0000	10.0000	9.9998		
RUN #3	200.0001	100.0000	50.0000	40.0000	20.0000	10.0000	9.9998		
MEAN									
STD. DEV.									



COMMENTS:

SHIFT VERIFICATION
 SELF CALIBRATION Y/N INTERNAL: INTERNAL EXTERNAL
 WEIGHT VALUE

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
50g	49.9999	50.0000	50.0000	49.9998

 SIGNATURE: [Signature]

SOUTHWEST RESEARCH INSTITUTE
Department of Quality Assurance
Calibration Laboratory

CERTIFICATE OF CALIBRATION
05/15/95

Issued to: JIM PRIKRYL DIV20 ,B57
Manufacturer: METTL
Nomenclature: ELECTRIC BALANCE
Serial Number: 101237

Asset Number: 001439
Model Number: AE 240

SwRI/Div. I.D. #: UNKWN

ENVIRONMENTAL CONDITIONS

Temperature: 67.0F

Relative Humidity: 68%

CALIBRATION INFORMATION

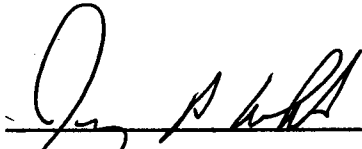
Procedure Number: SWRI
Remarks:

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
001713	C868	RICE	200 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001712	C867	RICE	100 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001711	C866	RICE	50 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001710	C865	RICE	20 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001709	C864	RICE	20 GRAM	WEIGHT STANDARD	07/20/94	12	07/20/95
001708	C863	RICE	10 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#: 17326

Calibration Date: 05/08/95
Interval: 6 months
Next Calibration Due: 11/08/95

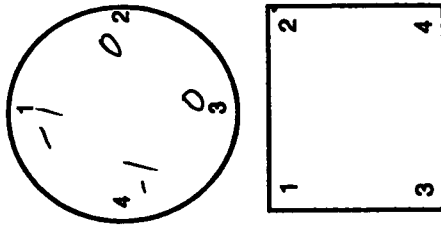
BALANCE CALIBRATION VERIFICATION FORM

DATE: 8 MAY 95 MFGR: METTLER MODEL: AE240
 SER. NO. 101237 RANGE: 20g CALIBRATION DATES
 TEMPERATURE: 67 HUMIDITY: 68 LAST: 4 NOV 94 NEXT: 8 NOV 95
 CALIBRATED BY: Ferry N. White BALANCE TOLERANCES
 BALANCE CAL #: 17326 LINE. TOL.: 2/02 REP. TOL.: 1/2

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.	100	50	20	40	20	15	1	2	3
RUN #1	197.9999	100.0000	50.0000	72.9999	42.9999	99997			
RUN #2	199.9999	100.0000	50.0000	39.9999	19.9999	99997			
RUN #3	199.9999	100.0000	50.0000	59.9999	29.9999	99997			
MEAN									
STD. DEV.									

POSITION GUIDE



SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: INTERNAL EXTERNAL

COMMENTS:

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
49.9920	50.0000	50.0000	47.9999	

SIGNATURE:

SOUTHWEST RESEARCH INSTITUTE

**Department of Quality Assurance
Calibration Laboratory**

**CERTIFICATE OF CALIBRATION
11/03/95**

Issued to: JIM PRIKRYL DIV20 ,B57
Manufacturer/Model: METTL/AE 240
Nomenclature: ELECTRIC BALANCE
Serial Number: 101237
Asset Number: 001439
Notes:

ENVIRONMENTAL CONDITIONS

Temperature: 74.0F

Relative Humidity: 50%

CALIBRATION INFORMATION

Procedure Number: -30-WT01
Remarks:

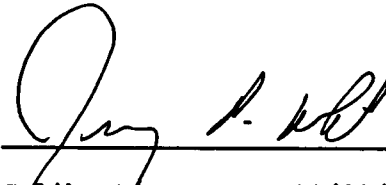
Accuracy: MFGR SPECS
Received IN Tolerance

**Calibration was in accordance with requirements of MIL-STD-45662A.
Measurements are traceable to the National Institute of Standards and 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
001713	C868	RICE	200 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96
001712	C867	RICE	100 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96
001711	C866	RICE	50 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96
001710	C865	RICE	20 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96
001709	C864	RICE	20 GRAM	WEIGHT STANDARD	06/23/95	12	06/23/96
001708	C863	RICE	10 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: 11/02/95
Interval: 6 months
Next Calibration Due: 05/02/96

Certificate#: 19169

BALANCE CALIBRATION VERIFICATION FORM

DATE: 2 NOV 95 MFR: MATTLEN MODEL: AE240

SER. NO. 101237 RANGE: 200 CALIBRATION DATES

TEMPERATURE: 74 HUMIDITY: 50 LAST: 9 MAY 95 NEXT: 2 MAY 96

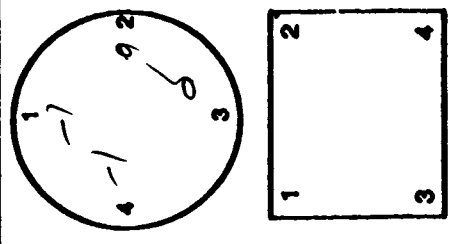
CALIBRATED BY: Jeremy A. White BALANCE TOLERANCES

BALANCE CAL #: 19169 LINE TOL: .2/.03 REP. TOL: 1/1.2

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.	200	100	50	40	20	1	2	3	
RUN #1	200.000 / 100.000	50.000	50.000	39.9998	19.9998	.9997			
RUN #2	200.000 / 100.000	50.000	50.000	39.9997	19.9997	.9997			
RUN #3	200.000 / 100.000	50.000	50.000	39.9998	19.9998	.9997			
MEAN									
STD. DEV.									

POSITION GUIDE



SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: _____ EXTERNAL: _____

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
50	49.9997	50.0000	50.0000	49.9998

COMMENTS: _____

SIGNATURE: [Signature]



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

Certificate of Calibration

3 May 1996

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTL AE 240
Description: ELECTRIC BALANCE
Serial Number: 101237
Asset Number: 001439

Environmental Conditions

Temperature: 72.0 Humidity: 64%

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: 2 May 96 Calibration Procedure: WI-9-30-WT01
Interval: 6 months Accuracy: MFGR SPECS
Next Calibration Due: 2 Nov 96 Received: In Tolerance

Remarks:

Certificate # 21116

Signed: 

LAST PAGE OF REPORT
Total Pages Printed: 1

BALANCE CALIBRATION VERIFICATION FORM

DATE: 2 May 96 MFG: METTLER MODE: AE240

SER. NO. 101237 RANGE: 200 CALIBRATION DATES

TEMPERATURE: 73 HUMIDITY: 64 LAST: 2 Nov 95 NEXT: 2 Nov 95

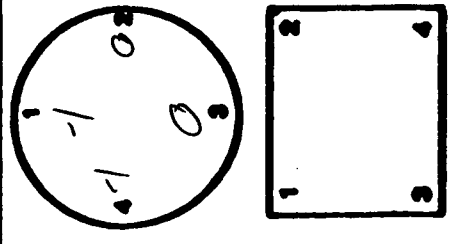
CALIBRATED BY: Jerry A. White **BALANCE TOLERANCES**

BALANCE CAL. #: 21114 LINE. TOL.: .2/.07 REP. TOL.: .1/.2

RANGE VERIFICATION

	RANGE 01			RANGE 02			RANGE 03		
	1	2	3	1	2	3	1	2	3
DATA PTR.	2005	100	501	403	203	15			
PLN 01	199.9999	99.9999	50.0000	40.0000	20.0000	1.0000			
PLN 02	199.9999	99.9999	50.0000	40.0000	20.0000	1.0000			
PLN 03	199.9999	99.9999	50.0000	40.0000	20.0000	1.0000			
MEAN									
STD. DEV.									

POSITION GUIDE



SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: EXTERNAL:

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
50g	49.9999	50.0000	50.0000	49.9999

COMMENTS

 SIGNATURE

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

WORK ORDER

CERTIFICATE # 22308 ASSET # 14131 DATE 3 Oct 96

ITEM DATA:

Manufacturer METTLER Model ME240
Description Balance Serial # 101337
Accessories _____

ACTION REQUESTED CAL

CUSTODIAN DINEO B57 JIM PARKER

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 74 °F Humidity 64 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure ASTM E-30-6101
Date 3 Oct 96 Accuracy Mg
Cal Interval 2 Time to complete: _____
Next Cal due? APR 97 Cal 1.5 Repair _____
Standards used (Asset#) _____

DATE COMPLETED _____
DATE PICKED UP CAL PICKED UP BY S. R.

22908

D1439

BALANCE CALIBRATION VERIFICATION FORM

DATE: 30 Oct 96 INSTR: METTEL MODEL: AZ240

SER. NO. 101237 RANGE: 200/40 CALIBRATION DATES

TEMPERATURE: 24 HUMIDITY: 64 LAST: 2 MAY 97 NEXT: 3 APR 97

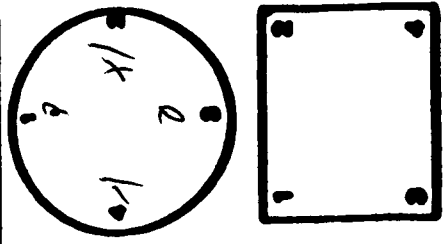
CALIBRATED BY: Jerry P. White BALANCE TOLERANCE

BALANCE CAL. #: 22908 LINE TOL: _____ REP. TOL: _____

BALANCE VERIFICATION

	PAN		POCKET		POCKET	
	1	2	1	2	1	2
DATA Pts.	200	100	50	40	20	1
RUN #1	97.9999	90.0000	50.0001	47.9998	19.99979	9.99979
RUN #2	97.9999	100.0000	50.0001	39.9999	19.99999	9.99999
RUN #3	95.9999	100.0000	50.0000	39.9997	19.99979	9.99979
MEAN						
STD. DEV.						

POSITION GUIDE



SHIFT VERIFICATION

SELF CALIBRATION MIN INTERVAL: _____ EXTREMAL _____

WEIGHT VALUE	PAN POSITION			
	1	2	3	4
50	50.0000	50.0001	50.0000	50.0000

COMMENTS: _____

SIGNATURE: [Signature]



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

Certificate of Calibration

8 October 1996

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTL AE 240
Description: ELECTRIC BALANCE
Serial Number: 101237
Asset Number: 001439

Environmental Conditions

Temperature: 74.0 Deg. F Humidity: 64%

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: 3 Oct 96

Calibration Procedure: WI-9-30-WT01

Interval: 6 months

Accuracy: MFGR SPECS

Next Calibration Due: 3 Apr 97

Received: In Tolerance

Remarks:

Certificate # 22908

Signed: 

LAST PAGE OF REPORT
Total Pages Printed: 1

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

WORK ORDER

CERTIFICATE # 241946 ASSET # 1439 DATE 2 APR 97

ITEM DATA:

Manufacturer METTLER Model AE 240
Description BALANCE Serial # 101237
Accessories _____

ACTION REQUESTED CAL

CUSTODIAN DW 20 B57 JIM PRITBYL

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

241946

CAL ENVIRONMENT:
Temperature 72 °F Humidity 76 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure OLC D, WR-001
Date 2 APR 97 Accuracy M
Cal Interval 6 Time to complete: _____
Next Cal due 2 OCT 97 Cal 1.5 Repair _____
Standards used (Asset#) _____

DATE COMPLETED _____
DATE PICKED UP CAL PICKED UP BY DW S, H

351 1439

BALANCE CALIBRATION VERIFICATION FORM

DATE: 2 APR 97 MFGR: METTLER MODEL: A2240

SER. NO. 101237 RANGE: 200 CALIBRATION DATES

TEMPERATURE: 72 HUMIDITY: 76 LAST: 30 Oct 96 NEXT: 20 Oct 97

CALIBRATED BY: Jerry A. White

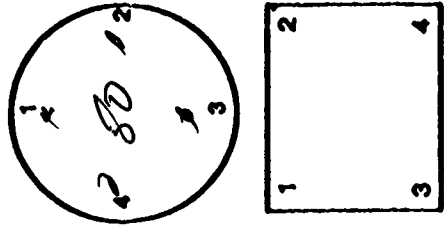
BALANCE TOLERANCES

BALANCE CAL #: 24946 LINE. TOL.: _____ REP. TOL.: _____

RANGE VERIFICATION

	RANGE #1			RANGE #2			RANGE #3		
	1	2	3	1	2	3	1	2	3
DATA PTS.	200	100	50	40	20	1	1	2	3
RUN #1	199.9999	99.9999	50.0000	40.0000	20.0000	1.0000			
RUN #2	199.9999	99.9999	50.0000	40.0000	20.0000	1.0000			
RUN #3	199.9997	99.9999	50.0000	40.0000	20.0000	1.0000			
MEAN									
STD. DEV.									

POSITION GUIDE



SHIFT VERIFICATION

SELF CALIBRATION Y/N INTERNAL: EXTERNAL: _____

COMMENTS: _____

PAN POSITION

WEIGHT VALUE	1	2	3	4

SIGNATURE: _____



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

Certificate of Calibration

2 April 1997

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTLER AE 240
Description: ELECTRIC BALANCE
Serial Number: 101237
Asset Number: 001439

Environmental Conditions

Temperature: 72.0 Deg. F Humidity: 76%

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.

Calibration Date: 2 Apr 97 Calibration Procedure: CLCP-WB-001
Interval: 6 months Accuracy: MFGR SPECS
Next Calibration Due: 2 Oct 97 Received: In Tolerance

Remarks:

Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
001704	RICE	1 GRAM	WEIGHT STANDARD	C859	19 Jul 97
001710	RICE	20 GRAM	WEIGHT STANDARD	C865	19 Jul 97
001711	RICE	50 GRAM	WEIGHT STANDARD	C866	19 Jul 97
001712	RICE	100 GRAM	WEIGHT STANDARD	C867	19 Jul 97
001713	RICE	200 GRAM	WEIGHT STANDARD	C868	19 Jul 97

Certificate # 24946

Signed: 

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

WORK ORDER

CERTIFICATE # 27012 ASSET # 1439 DATE 25 Sept 97

ITEM DATA:

Manufacturer North Model PE 210
Description Balance Serial # 101237
Accessories _____

ACTION REQUESTED Cal

CUSTODIAN D. V. 20 JIM PRATT

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

357
27012

ACTION TAKEN: (Calibration/Repair/Parts) Cal

CAL ENVIRONMENT:
Temperature 74 °F Humidity 51 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure QMS-001
Date 29 Sept 97 Accuracy mg
Cal Interval 1 Reliability Code: _____
Next Cal due 25 MAR 98 Cal Time 1.5 Repair Time _____
Standards used (Asset#) _____

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

BALANCE CALIBRATION VERIFICATION FORM

DATE: 28 Sep 1997
 BALANCE CAL NO.: _____
 TEMPERATURE: 74
 HUMIDITY: 51
 BARO. PRESSURE: 14.22

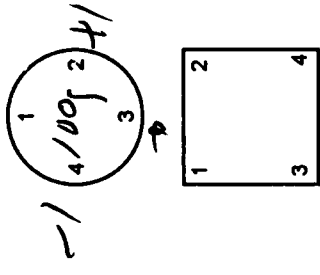
MFGR: Nette
 MODEL: NE240
 SERIAL NO: 101237
 ASSET NO: 1435
 RANGE: 200
 MASS UNCERTAINTY (U_m): _____

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

LAST CAL: 20 Feb 97
 NEXT CAL: 23 Mar 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		CALIBRATION POINTS					
DATA POINTS	200	100	50	40	20	1			
RUN #1	200.0000	99.9999	50.0001	59.9999	20.0003	1.0002			
RUN #2	1	1	1	1	20.0002	1.0003			
RUN #2	1	1	1	1	20.0002	1.0003			
MEAN									
STD. DEV.									



SHIFT VERIFICATION

	SELF CALIBRATION Y/N INTERNAL: _____ EXTERNAL: _____			
	PAN POSITION			
ACTUAL WEIGHT IN CENTER	1	2	3	4
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)

Expanded Unc. (k = 2) ± _____ g



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

Certificate of Calibration

29 September 1997

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTLER AE 240
Description: ELECTRONIC BALANCE
Serial Number: 101237
Asset Number: 001439

Environmental Conditions

Temperature: 74.0 Deg. F Humidity: 51%

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: 29 Sep 97 Calibration Procedure: CLCP-WT-001
Interval: 6 months Uncertainty: MFGR SPECS
Next Calibration Due: 29 Mar 98 Received: In Tolerance

Remarks:

Standards Used

Asset	MFR	Model	Description	Serial No.	Due Cal
001704	RICE LAKE	1G	WEIGHT STANDARD	C859	21 Jul 98
001709	RICE LAKE	20G	WEIGHT STANDARD	C864	21 Jul 98
001710	RICE LAKE	20G	WEIGHT STANDARD	C865	21 Jul 98
001711	RICE LAKE	50G	WEIGHT STANDARD	C866	21 Jul 98
005116	RICE LAKE	100G	WEIGHT STANDARD	T097	21 Jul 98
005117	RICE LAKE	200G	WEIGHT STANDARD	T098	21 Jul 98

Signed: 

Title: 

LAST PAGE OF REPORT
Total Pages Printed: 1

Certificate # 27012

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

WORK ORDER

CERTIFICATE # 29179 ASSET # 1433 DATE 2/11/98

ITEM DATA:

Manufacturer METTLER Model AK 270
Description BALANCE Serial # 101237
Accessories _____

ACTION REQUESTED OK

CUSTODIAN DIK 20 J. PR. KRYL

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) OK

CAL ENVIRONMENT:
Temperature 73 °F Humidity 72 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure ELCP WT-001
Date 12/7/97 Accuracy MJ
Cal Interval L Reliability Code: _____
Next Cal due 2/2/98 Cal Time 1.5 Repair Time _____
Standards used (Asset#) 1714 1211 10 05 01

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

29179

BALANCE CALIBRATION VERIFICATION FORM

DATE: 27 MAR 98
 BALANCE CAL NO.: 29779
 TEMPERATURE: 7.3
 HUMIDITY: 72
 BARO. PRESSURE: 14.21

MFGR: METTLER
 MODEL: AE 290
 SERIAL NO.: 107237
 ASSET NO.: 1429
 RANGE:
 MASS UNCERTAINTY (U_m):

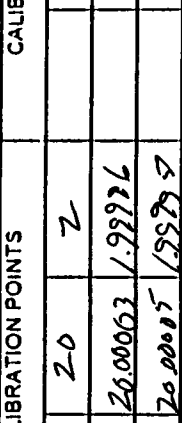
MFGR BALANCE TOLERANCES
 LINEARITY:
 ECCENTRICITY:
 REPRODUCIBILITY:
 TEMP. DRIFT/°C:
 COMBINED MFR SPECS (U_{mfr}):

TUR = Comb. MFR Specs (U_{mfr}) = : 1
 U_{m-scd}

CALIBRATION DATES
 LAST CAL: 27 FEB 97
 NEXT CAL: 25 APR 98

If TUR < 4:1, U_o =

		RANGE VERIFICATION				POSITION GUIDE
		RANGE 1	RANGE 2	RANGE 3		
		CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS		
DATA POINTS	200	100	50	20	2	
RUN # 1	199.9997	100.0002	49.9999	37.9995	20.00063	1.99926
RUN # 2	199.9998	100.0000	49.9997	37.9997	20.00005	1.99927
RUN # 3	199.9998	100.0003	50.0000	38.99994	20.00000	1.99991
MEAN						
STD. DEV.						



SHIFT VERIFICATION		PAN POSITION			
SELF CALIBRATION Y/N		INTERNAL	EXTERNAL		
ACTUAL WEIGHT IN CENTER	1	2	3	4	
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)

Expanded U_{rc} (k = 2) = _____ g

Certificate of Calibration

27 March 1998

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTLER AE 240
Description: ELECTRONIC BALANCE
Serial Number: 101237
Asset Number: 001439

Environmental Conditions

Temperature: 73.00 Deg. F Humidity: 72 % 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
001709	RICE LAKE	20G	WEIGHT STANDARD	C864	21 Jul 98
001710	RICE LAKE	20G	WEIGHT STANDARD	C865	21 Jul 98
001711	RICE LAKE	50G	WEIGHT STANDARD	C866	21 Jul 98
001712	RICE LAKE	100G	WEIGHT STANDARD	C867	21 Jul 98
001714	RICE LAKE	200G	WEIGHT STANDARD	C869	21 Jul 98

Signed: 

Title: 

LAST PAGE OF REPORT
Total Pages Printed: 1

Certificate # 29179

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

WORK ORDER

CERTIFICATE # 31404 ASSET # 1439 DATE 28 Sep/98

ITEM DATA:

Manufacturer METTLER Model NE240
Description BALANCE Serial # 101237
Accessories OFFSETS

ACTION REQUESTED: CAL

CUSTODIAN DKZB B57 JIM TRIKPYL

Turned in by: DKZB 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 SEE CERT 31563

FAIL - CAL METTLER -
METTLER Replace display & set calibration

CAL ENVIRONMENT:

Temperature _____ °F Humidity _____ %RH

CALIBRATED/REPAIRED:

By [Signature] Cal Procedure _____

Date _____ Accuracy _____

Cal Interval _____ Reliability Code: _____

Next Cal due _____ Cal Time _____ Repair Time _____

Standards used (Asset#) _____

DATE COMPLETED 9 Oct 98

DATE PICKED UP _____ PICKED UP BY _____

31404

BALANCE CALIBRATION VERIFICATION FORM

DATE: 28 Jan 97
 BALANCE CAL NO.: 31404
 TEMPERATURE: 70
 HUMIDITY: 71
 BARO. PRESSURE: 14.28

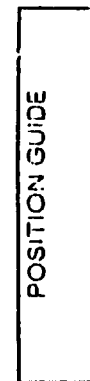
MFGR: Mettler
 MODEL: PE240
 SERIAL NO.: 101237
 ASSET NO.: 1439
 RANGE: 200
 MASS UNCERTAINTY (U_m): _____
 TUR = Comb. MFR Specs (U_{mfr}) = 1 : 1
 U_{m-sic}

MFGR BALANCE TOLERANCES
 LINEARITY: _____
 ECCENTRICITY: _____
 REPRODUCIBILITY: _____
 TEMP. DRIFT/°C: _____
 COMBINED MFR SPECS (U_{mfr}): _____
 If TUR < 4:1, U_b = _____

CALIBRATION DATES
 LAST CAL: 27 MAR 97
 NEXT CAL: 28 MAR 97

1714
1712
1711 1711
1710
1709

	RANGE VERIFICATION					
	RANGE 1	RANGE 2		RANGE 3		
	CALIBRATION POINTS	CALIBRATION POINTS		CALIBRATION POINTS		
DATA POINTS	200	100	50	40	20	2
RUN # 1	199990	99.9995	49.9997	39.99987	19.99974	1.99996
RUN # 2						
RUN # 2						
MEAN						
STD. DEV.						



5228
EMARK

SHIFT VERIFICATION

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

SELF CALIBRATION Y/N INTERNAL: _____ EXTERNAL: _____

COMMENTS: _____

 SIGNATURE: _____

one mfr spec?

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
Department of Quality Assurance
Calibration Laboratory • 522-5215

WORK ORDER

CERTIFICATE # 31562 ASSET # 1439 DATE 9 Oct 98

ITEM DATA:

Manufacturer METTLER Model AE240
Description BALANCE Serial # 101237
Accessories _____

ACTION REQUESTED CAL

CUSTODIAN DIV 20 B57 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) Repair by Mettler

See cert 31404

CAL ENVIRONMENT:

Temperature 78 °F Humidity 48 %RH

CALIBRATED/REPAIRED:

By [Signature] Cal Procedure CCCP-WT-007

Date 9 Oct 98 Accuracy _____

Cal Interval 6 Reliability Code: _____

Next Cal due 9 APR 99 Cal Time _____ Repair Time _____

Standards used (Asset#) 1710 1711 1712 1714 1706

DATE COMPLETED 9 Oct 98

DATE PICKED UP BY [Signature]

31563

DIV 20 252 TIM PRIKRYL

BALANCE CALIBRATION VERIFICATION FORM

DATE: 9 Oct 58
BALANCE CAL NO.: 21563
TEMPERATURE: 78
HUMIDITY: 47
BARO. PRESSURE: 14.27

MFGR: METTLER
MODEL: AE 240
SERIAL NO.: 101237
ASSET NO.: 439
RANGE:
MASS UNCERTAINTY (U_m):

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

TUR = Comb. MFR Specs (U_{mfr}) = : 1
U_{m-stc}

If TUR < 4:1, U_o =

1714 1706 AFTER

DATA POINTS	RANGE VERIFICATION		
	RANGE 1	RANGE 2	RANGE 3
	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS
RUN # 1	200 100 50	40 20	2
RUN # 2	200,000 99,999 50,000	40,000 20,000 10,000	2,000 1
RUN # 2	1 1	40,000 20,000 10,000	2,000 2
MEAN		41,000 20,000 10,000	2,000 2
STD. DEV.			



SHIFT VERIFICATION		PAN POSITION			
SELF CALIBRATION Y/N		INTERNAL	EXTERNAL		
ACTUAL WEIGHT IN CENTER		1	2	3	4
DIFF.					

COMMENTS:

SIGNATURE:

[Handwritten 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
Department of Quality Assurance
Calibration Laboratory • 522-5215

WORK ORDER

CERTIFICATE # 33021 ASSET # 1439 DATE 26 MAR 99

ITEM DATA:

Manufacturer METTLER Model AE-40
Description BALANCE Serial # 101237
Accessories _____

ACTION REQUESTED o/l

CUSTODIAN DIV 20 JIM PATRYL

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) o/l

CAL ENVIRONMENT:

Temperature 68 °F Humidity 47 %RH

CALIBRATED/REPAIRED:

By [Signature] Cal Procedure o/l - WT-001

Date 26 MAR 99 Accuracy ± 0.5 or 1/0.08

Cal Interval 6 Reliability Code: _____

Next Cal due 22 Sep 99 Cal Time 2 Repair Time _____

Standards used (Asset#) 5117 5116 1711 1710 1709 1706

DATE COMPLETED 22 MAR 99 cal on zero [Signature]

DATE PICKED UP _____ PICKED UP BY _____

33821

BALANCE CALIBRATION VERIFICATION FORM

DATE: 26 MAR 99
 BALANCE CAL NO.: 33P21
 TEMPERATURE: 68
 HUMIDITY: 47
 BARO. PRESSURE: 14.40

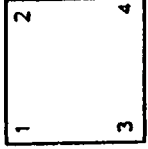
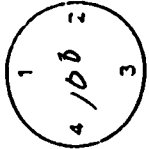
MFGR: Mettler
 MODEL: AE240
 SERIAL NO.: 101297
 ASSET NO.: 137
 RANGE: 200g
 MASS UNCERTAINTY (U_m): _____
 TUR = Comb. MFR Specs (U_{mfr}) = 1 : 1
 U_{mfr}-std

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

CALIBRATION DATES
 LAST CAL: 9 Oct 98
 NEXT CAL: 26 Sep 99

517 5116 11/1 1710 Before 1705
1701 RANGE VERIFICATION

POSITION GUIDE



DATA POINTS	RANGE 1			RANGE 2			RANGE 3		
	CALIBRATION POINTS			CALIBRATION POINTS			CALIBRATION POINTS		
200	100	50	40	20	2				
199.9995	99.9996	49.9998	99.9994	9.9996	1.99991				
/	/	/	/	/	/				
MEAN									
STD. DEV.					120.08				

SELF CALIBRATION Y/N INTERNAL: EXTERNAL: _____

ACTUAL WEIGHT IN CENTER	PAN POSITION			
	1	2	3	4
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)
 Expanded Unc (k = 2) = _____ g

BALANCE CALIBRATION VERIFICATION FORM

DATE: 26 Mar 99
 BALANCE CAL NO.: 33821

TEMPERATURE: 67
 HUMIDITY: 47
 BARO. PRESSURE: 24.10

CALIBRATION DATES
 LAST CAL: _____
 NEXT CAL: _____

MFGR: METTLER
 MODEL: RE240
 SERIAL NO.: 101237
 ASSET NO.: 439
 RANGE: 2005
 MASS UNCERTAINTY (U_m): _____

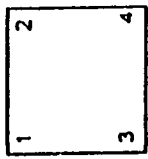
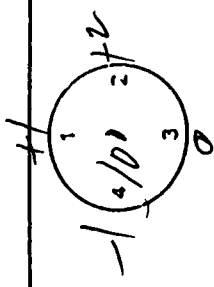
TUR = Comb. MFR Specs (U_{mfr}) = 1
 U_{m-std}

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

TUR < 4:1, U_b = _____

after cleaning weights

	RANGE VERIFICATION			
	RANGE 1	RANGE 2	RANGE 3	POSITION GUIDE
	CALIBRATION POINTS			
DATA POINTS	200	50	40	20
RUN # 1	200.0002	50.0000	40.0005	20.0000g
RUN # 2				2.00001
RUN # 2				
MEAN				
STD. DEV.				



Adjusted & Cal

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

ACTUAL WEIGHT IN CENTER	PAN POSITION			
	1	2	3	4
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)

Expanded Unc (k=2) = _____ g

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

B57
26 Sept 99

WORK ORDER

WORK ORDER # 36121 ASSET # 101237 DATE 26 Sept 99

ITEM DATA:

Manufacturer Mettler Model AE240
Description Balance Serial # 101237
Accessories _____

ACTION REQUESTED _____

CUSTODIAN Jim PRIKRYL

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) entire repair of internal weight

CAL ENVIRONMENT:
Temperature 72 °F Humidity 41 %RH

CALIBRATED/REPAIRED:
By [Signature] Cal Procedure CLCP-NT-011 AUG 97
Date 09/26/99 Accuracy _____
Cal Interval 6 Reliability Code _____
Next Cal Due 1/26/00 Cal Time _____ Repair Time _____
Standards used (Asset #) 5117 5116 1711 1710 1709 1707

DATE COMPLETED entire work

DATE PICKED UP _____ PICKED UP BY _____

36121

BALANCE CALIBRATION VERIFICATION FORM

DATE: 1 Oct 99
 BALANCE CAL NO.: 36121
 TEMPERATURE: 72
 HUMIDITY: 74
 BARO. PRESSURE: 14.34
 CALIBRATION DATES
 LAST CAL: 25 MAR 99
 NEXT CAL: 1 APR 00

MFGR: METTLEN
 MODEL: AE340
 SERIAL NO.: 101217
 ASSET NO.: 2432
 RANGE: 20g
 MASS UNCERTAINTY (U_m): _____
 TUR = Comb. MFR Specs (U_{mfr}) = 1

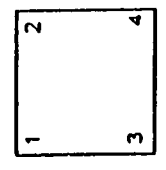
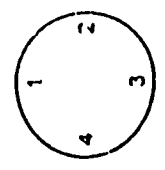
MFGR BALANCE TOLERANCES
 LINEARITY: _____
 ECCENTRICITY: _____
 REPRODUCIBILITY: _____
 TEMP. DRIFT/°C: _____
 COMBINED MFR SPECS (U_{mfr}): _____

If TUR < 4:1, U_g = _____

5114 5116 111 1710 1707 1707

	RANGE VERIFICATION				
	RANGE 1	RANGE 2	RANGE 3	CALIBRATION POINTS	
DATA POINTS	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS	
200	100	50	20	10	5
RUN #1	200.0000	100.0000	50.0001	20.0000	10.0000
RUN #2	/	/	/	/	/
RUN #2	/	/	/	/	/
MEAN					
STD. DEV.					

POSITION GUIDE



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

COMMENTS: _____
 SWRI CALIBRATION LAB
 (210) 522-5949
 CAL BY: MLP
 DUE: 10/23/99 ID: 1739
 SN: 101237
 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

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

Expanded Unc (k = 2) = _____ g

BALANCE CALIBRATION VERIFICATION FORM

DATE: 26 Sep 99
 BALANCE CAL NO: 36121
 TEMPERATURE: 72
 HUMIDITY: 46
 BARO. PRESSURE: 74.0

MFGR: METTLER
 MODEL: AE 240
 SERIAL NO: 101257
 ASSET NO: 4438
 RANGE: _____
 MASS UNCERTAINTY (U_m): _____

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

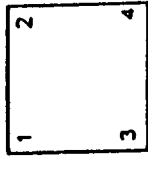
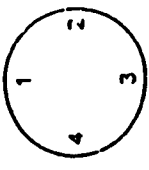
CALIBRATION DATES
 LAST CAL: 26 MAR 97
 NEXT CAL: _____
 TUR = Comb. MFR Specs (U_{mfr}) = 1
 U_{mfr} = _____
 If TUR < 4:1, U_o = _____

Repa
 6117 5114 1701

RANGE VERIFICATION

	RANGE VERIFICATION		
	RANGE 1	RANGE 2	RANGE 3
DATA POINTS	CALIBRATION POINTS	CALIBRATION POINTS	CALIBRATION POINTS
RUN # 1	200	100	10
RUN # 2	100.0018	100.0000	10.0001
RUN # 2	/	/	/
MEAN			
STD. DEV.			

POSITION GUIDE



SHIFT VERIFICATION

SELF CALIBRATION Y/N: INTERNAL: EXTERNAL:

	PAN POSITION			
ACTUAL WEIGHT IN CENTER	1	2	3	4
DIFF				

COMMENTS: Cal point 200, Red 200.0010

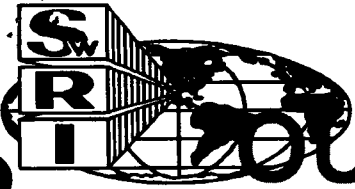
SIGNATURE: _____

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

OUT OF TOLERANCE

Out of Tolerance Notice

OUT OF TOLERANCE

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

Instrument Information

Issued to: J. M. PRINCE, DIV. 0, B57
 Manufacturer/Model: METTLER AE 240
 Description: ELECTRONIC BALANCE
 Serial Number: 101237
 Asset Number: 001439
 SwRI Cap No.: NONE
 Calibration Interval: 6 months
 Accuracy: MFG SPECS
 Calibration Procedure: CLCP-WT-001 AUG 97
 Remarks:

OUT OF TOLERANCE

OUT OF TOLERANCE

Calibration Results

Out of Tolerance Date: 23 Sep 99 Last Valid Calibration Date: 26 Mar 99

STANDARD MASS	UNIT READING	TOLERANCE
200 GRAMS	200.0018 GRAMS	+/-0.0005 GRAMS
100 GRAMS	100.0010	
50 GRAMS	50.0005	

OUT OF TOLERANCE

OUT OF TOLERANCE

OUT OF TOLERANCE

OUT OF TOLERANCE

OUT OF TOLERANCE

Signed: 

Checked by: 



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



Certificate #
0972-01

Certificate of Calibration

4 October 1999

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTLER AE 240
Description: ELECTRONIC BALANCE
Serial Number: 101237
Asset Number: 001439

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: 72.0 Degrees Fahrenheit Humidity: 46 % RH

Calibration Date: 1 Oct 99 **Calibration Procedure** CLCP-WT-001 AUG 97

Condition as Received: OUT OF TOLERANCE

Condition as Released: IN TOLERANCE, ADJUSTED

Remarks:

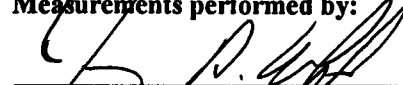
Approved by:


Jim Patterson, Supervisor or Walt Hill, Metrologist

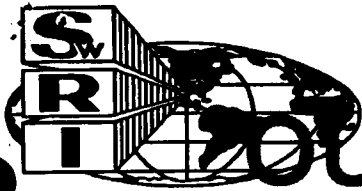
Certificate # 36121

m:\a2la.rpt Rev date 10 Mar 99

Measurements performed by:


Jerry White, Technician

Page 1 of 1



Southwest Research Institute

6220 Culebra Road

San Antonio, TX 78238

Department of Quality Assurance
Calibration Laboratory

OUT OF TOLERANCE

Out of Tolerance Notice

OUT OF TOLERANCE

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

Instrument Information

Issued to: J. M. P. KEYL DIV. 00-857
Manufacturer/Model: MEYLER AE 240
Description: ELECTRONIC BALANCE
Serial Number: 101237
Asset Number: 001439
SwRI Cap No.: NONE
Calibration Interval: 6 months
Remarks:

Accuracy: MFG SPECS
Calibration Procedure: CLCP-WT-001 AUG 97

OUT OF TOLERANCE

OUT OF TOLERANCE

Calibration Results

Out of Tolerance Date: 23 Sep 99

Last Valid Calibration Date: 26 Mar 99

STANDARD MASS	UNIT READING	TOLERANCE
200 GRAMS	200.0018 GRAMS	+/-0.0005 GRAMS
100 GRAMS	100.0010	
50 GRAMS	50.0005	

OUT OF TOLERANCE

OUT OF TOLERANCE

OUT OF TOLERANCE

OUT OF TOLERANCE

OUT OF TOLERANCE

Signed:

Checked by:

WORK ORDER 38373

Date Received 3/23/00

Asset No. 001439 Manufacturer METTLER Model AE 240
Description ELECTRONIC BALANCE Serial Number 101237
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 _____ Tel. 5667
Delivered By N/A

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 73 F Hum 51 %
Tech OKW Cal Hrs. 1.5 Repair Hrs. _____ Part Cost _____
Action Taken OKL
Standards Used 5117 5116 1711
Date Cal 23 Mar 2000 Int. 6 Mo. Date Due 23 Sep 2000 Reliability Code 11
Date Picked Up _____ Picked Up By _____
workreq.rpt Rev 30 Jan 00

38373

ELECTRONIC BALANCE CALIBRATION DATA SHEET

WORK ORDER 38373 DATE 23 Mar 2000 TECHNICIAN JM

MODEL AE240 SERIAL NO. 101237 ASSET NO. 1439

LOCATION B57

AMBIENT: TEMP 73 HUMIDITY 51 BARO PRESS 14.25

1) CALIBRATION CHECK

AS FOUND FULL-CAPACITY INDICATION 200.0002

POST-CALIBRATION INDICATION 200.0002 TOLERANCE _____ P/F _____

2) REPEATABILITY

1	100.0000	6	100.0002
2	100.0000	7	100.0000
3	100.0000	8	100.0000
4	99.9997	9	100.0002
5	100.0000	10	100.0002

5117
5116
1711

SwRI CALIBRATION LAB
(210) 522-5215
CAL 10 Oct 99 BY JM
DUE APR 00 ID 1439
S/N 101237

S.D. _____ TOLERANCE _____ P/F _____

3) OFF-CENTER ERROR

1	100.0000	3	99.9997
2	99.9999	4	100.0002

TOLERANCE _____ P/F _____

4) NON-LINEARITY

TEST POINT	INDICATION	NON-LIN ERROR	TEST WEIGHT S/N
0	0.0	—	—
25%	50.0001		
50%	49.9997		
75%	50.0001		
100%	50.0000		

TOLERANCE _____ P/F _____

5) COMMENTS:



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 AE 240
Description: ELECTRONIC BALANCE
Serial Number: 101237
Asset Number: 001439

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,DEC 99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

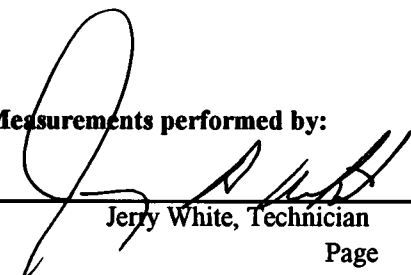


Jim Patterson, Supervisor or Walt Hill, Metrologist

Certificate # 38373

m:\nona2la.rpt Rev date 13 Apr 99

Measurements performed by:



Jerry White, Technician

Page 1 of 1

WORK ORDER 40562

Date Received 9/14/00

Asset No. 001439 Manufacturer METTLER Model AE 240
Description ELECTRONIC BALANCE Serial Number 101237

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,DEC 99 Temp 69 F Hum 60 %

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

Action Taken enl

Standards Used 1714 8160 1708 1709

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

Date Picked Up _____ Picked Up By _____

enl or sub

40562

ELECTRONIC BALANCE CALIBRATION DATA SHEET

WORK ORDER 40562 DATE 14 Sep/2000 TECHNICIAN QW

MODEL AE240 SERIAL NO. 101237 ASSET NO. 1439

LOCATION 057

AMBIENT: TEMP 69 HUMIDITY 60 BARO PRESS 14.26

1) CALIBRATION CHECK

AS FOUND FULL-CAPACITY INDICATION 199.9999

POST-CALIBRATION INDICATION 199.9998 TOLERANCE _____ P/F _____

2) REPEATABILITY

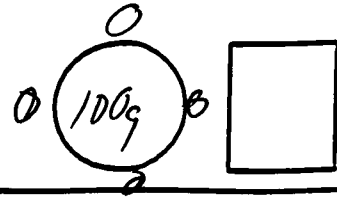
cnl nt 100g Rnd 99.9999

1	99.9999	6	99.9999
2	99.9999	7	99.9999
3	99.9999	8	99.9999
4	99.9999	9	99.9999
5	99.9999	10	99.9999

1714
8160
1708
1709

SWRI CALIBRATION LAB
(210) 522-5216
CAL 23 MAR 2000 BY QW
DUE 23 Sep 2000 ID 1439
SN 101237

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	0.0000	—	—
25%	50.0000		
50%	49.9999		
75%	50.0000		
100%	49.9999		

TOLERANCE _____ P/F _____

10 9.99999
20 19.99999
30 29.99999

5) COMMENTS:



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 AE 240
Description: ELECTRONIC BALANCE
Serial Number: 101237
Asset Number: 001439

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NCISL 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 DEC 99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

Remarks:

Approved by:

Jim Patterson, Supervisor, or Walt Hill, Metrologist

Certificate # 40562

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

1 10000 0000 0000 0000 0000 0000 0000

Work Order **444042614**

Arrived 3/1/01

Asset No. 001439 Manufacturer METTLER

Model AE 240

Instrument Type/Class BALANCE

Serial No. 101237

Accessory No. Calibration Procedure CLCP-WT-001,DEC 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, Dec 99 Temp 70°F Hum. 52 %

Tech U. Monal Totals Cal Hours 10 Repair Hours _____ Parts Cost _____

Standards Used 1712, 1711, 1707, 1709

Date Picked Up _____

Picked Up By _____

42614



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 AE 240
Description: BALANCE
Serial Number: 101237
Asset Number: 001439
Work Order Number: 444042614

This certifies the above item was calibrated in compliance with MIL-STD-45662A and ANSI/NC SL 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: 52 % RH

Calibration Date: 5 Mar 01 **Calibration Procedure:** CLCP-WT-001, DEC 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 44404264 DATE 1 MAR 01 TECHNICIAN V. Morales

MODEL AE 240 SERIAL NO. 101237 ASSET NO. 1439

LOCATION DW 20 BS7

AMBIENT: TEMP 70 HUMIDITY 52 BARO PRESS 14.18

1) CALIBRATION CHECK

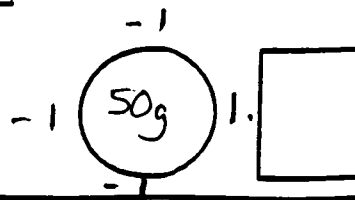
AS FOUND FULL-CAPACITY INDICATION 99.9991g
 POST-CALIBRATION INDICATION 99.9999g TOLERANCE _____ P/F _____

2) REPEATABILITY

1	49.9999g	6	49.9999g
2	49.9999g	7	49.9998g
3	49.9999g	8	49.9998g
4	49.9999g	9	49.9998g
5	49.9998g	10	49.9998g

1712, 1711, 1707
1709

S.D. _____ TOLERANCE _____ P/F _____



3) OFF-CENTER ERROR

1		3	
2		4	

TOLERANCE _____ P/F _____

SWRI CALIBRATION LAB
 (210) 522-5215
 CAL BY MD DATE 1/22/01 ID 1439
 SN 101237

4) NON-LINEARITY

TEST POINT	INDICATION	NON-LIN ERROR	TEST WEIGHT S/N
0	0	—	—
25%	25.0001g		
50%	24.9998g		
75%	25.9999g		
100%	25.0002g		

TOLERANCE _____ P/F _____

5) COMMENTS:

SOUTHWEST RESEARCH INSTITUTE

Calibration Laboratory

WORK ORDER

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

1 0000 0000 0000 0000 0000 0000 0000

Arrived 8/17/01

Work Order **444044841**

Asset No. 001439 Manufacturer METTLER

Model AE 240

Instrument Type/Class BALANCE

Serial No. 101237

Accessory No. _____

Calibration Procedure CLCP-WT-001, DEC 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	Co
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

WORK SUMMARY

Failure Description _____

Repair Action _____

Calibration Procedure _____

Temp 71 F

Hum. 56 %

Tech Jim Prikrayl

Totals Cal Hours 15

Repair Hours _____

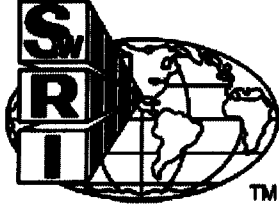
Parts Cost _____

Standards Used 5116, 5117, 1911

Date Picked Up _____

Picked Up By _____

MA ON SITE



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 AE 240
Description: BALANCE
Serial Number: 101237
Asset Number: 001439
Work Order Number: 444044841

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,DEC 99

Condition as Received: IN TOLERANCE

Condition as Released: IN TOLERANCE

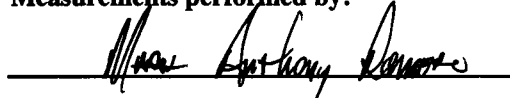
Remarks:

Approved by:



Walt Hill, Supervisor
Institute Calibration Laboratory

Measurements performed by:



Mark Romero, Technician

WORK ORDER 441044B41 DATE 19 Aug. 2001 TECHNICIAN Mr. Anthony Russo

MODEL A640 SERIAL NO. 101237 ASSET NO. 001439

LOCATION B.57

AMBIENT: TEMP 71 HUMIDITY 56 BARO PRESS 14.31

1) CALIBRATION CHECK

AS FOUND FULL-CAPACITY INDICATION 100.0000g

POST-CALIBRATION INDICATION _____ TOLERANCE _____ P/F _____

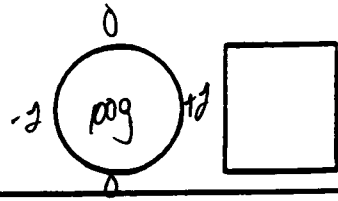
2) REPEATABILITY

5117
5116
111

SWRI CALIBRATION LAB
(210) 522-5215
CAL 2MAR01 BY VMorok
DUE 2Sep01 ID 1439
S/N 101237

1	100.0000g	6	99.9999g
2		7	99.9999g
3		8	100.0000g
4		9	100.0000g
5		10	100.0000g

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
	0	—	—
	50.0001g		
	50.0001g		
	50.0001g		
	50.0001g		

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 **444047261**

Asset No. 001439 Manufacturer METTLER

Model AE 240

Equipment Type BALANCE

Serial No. 101237

Accessory No.

Interval 6 M

Calibration Procedure CLCP-WT-001, DEC 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

SWRI CALIBRATION LAB
(210) 522-5215

CAL 17 Feb 02 BY MAJ
DUE 17 Feb 02 ID 601439
SN 101237

This information 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 _____

Tech MAJ Cal Hrs. 1.0 Repair Hrs _____ Parts Cost _____ Temp 71 F Hum. 48 %

Standards Used 1708, 1709, 1711, 1713

Date Picked Up 15 Feb 2002

Picked Up By PAK ON SITE

444047261



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

Certificate of Calibration

15 February 2002

Issued to: JIM PRIKRYL DIV20 B57
Manufacturer/Model: METTLER AE240
Description: BALANCE
Serial Number: 101237
Asset Number: 001439
Work Order Number: 444047261

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: 48 % RH


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

Condition as Received: SEE ATTACHED DATA

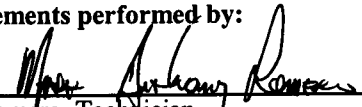
Condition as Returned: SEE REMARKS

Remarks: SEE DATA SHEET FOR UNCERTAINTIES.

Approved by:


Walt Hill, Supervisor
Institute Calibration Laboratory

Measurements performed by:


Mark Romero, Technician

Southwest Research Institute
 Calibration Laboratory
 Calibration Data Sheet

Work Order 444047261	Mfr. Mettler	Technician Mark A. Romero
Asset No. 1439	Model AE240	Procedure CLCP-WT-001, 12/99
Serial No. 101237	Type Balance	Cal Date 15-Feb-02

Location: Bldg. 57/ Lab 106 Geochemistry Lab

Ambient Conditions: 71 F 48 %RH 14.38 PSIA

Operational Check: Limits +/- : 0.0006 g Uncertainty: 0.0007 g

STD Mass Load	As Found Indication	Instrument Error
200.0000 g	200.0017 g	0.0017 g

Post Calibration Check:

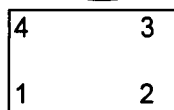
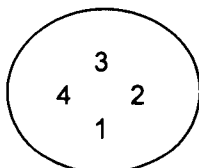
STD Mass Load	Post calibration Indication	Instrument Error	Results *
200.0000 g	200.0006 g	0.0006 g	

Repeatability Check: Mass Load: 80.0000 g

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

Std Deviation	Tolerance
0.0000 g	0.0001 g

Off-Centerline Check: Mass Load: 80.0000 g Uncertainty: 0.0007 g



	Indication	Instrument Error	+/- Limits	Results *
1	0.0000 g	0.0000 g	0.0003	
2	0.0002 g	0.0002 g	0.0003	
3	0.0000 g	0.0000 g	0.0003	
4	-0.0002 g	-0.0002 g	0.0003	

Non-Linearity Check: Range: 200.0000 g Uncertainty: 0.0007 g

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

Remarks: Readability is 0.1 mg. Standards used 1713, 1711, 1709, 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.

Southwest Research Institute
Calibration Laboratory
Uncertainty Budget

Mettler AE240 (TI)	Units	Range	Acc. +/- (1)	Resolution
	mg	205 000	0.6	0.1
Source of Uncertainty	Value	Distribution	Divisor	Std. Uncert. mg
Standard weight (2)	0.522	Rectangular	Sqrt 3	0.301
Resolution	0.1	Rectangular	Sqrt 3	0.0577
Air buoyancy (3)	0.205	Rectangular	Sqrt 3	0.118
Combined Uncertainty	RSS			0.329
Expanded Uncertainty	$k=2$			0.66
Test Accuracy Ratio (TAR)	TI Acc./STD Acc.			
	1.1	to 1		
Test Uncertainty Ratio (TUR)	TI Acc./Muk=2			
	0.9	to 1		
<p>(1) Combined Uncertainty (2 sigma) of mfg std dev. (0.1mg), linearity (0.3mg), corner load (0.3mg), & Class S1 100g (.25mg) internal check weight tolerances.</p> <p>(2) RSS of combined tolerances for standard wghts [Class S1 200g (0.5mg), S1 50g (0.12mg), S1 20g (0.074mg), S1 10g (0.05mg)].</p> <p>(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= 0.205 mg.</p>				

Mettler AE240 (TI)	Units	Range	Acc. +/- (1)	Resolution
	mg	41 000	0.30	0.01
Source of Uncertainty	Value	Distribution	Divisor	Std. Uncert. mg
Standard weight (2)	0.05	Rectangular	Sqrt 3	0.0289
Resolution	0.01	Rectangular	Sqrt 3	0.00577
Air buoyancy (3)	0.041	Rectangular	Sqrt 3	0.0237
Combined Uncertainty	RSS			0.038
Expanded Uncertainty	$k=2$			0.08
Test Accuracy Ratio (TAR)	TI Acc./STD Acc.			
	6	to 1		
Test Uncertainty Ratio (TUR)	TI Acc./Muk=2			
	4	to 1		
<p>(1) Combined Uncertainty (2 sigma) of mfg std dev. (0.02mg), linearity (0.04mg), corner load (0.05mg), & Class S1 100g (.25mg) internal check weight tolerances.</p> <p>(2) Class S1 10g (0.05mg).</p> <p>(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= 0.041 mg.</p>				