Designer and Manufacturer of Scientific and Industrial Instruments

CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC.
501 Oak Street
325-235-5494
Sweetwater, TX 79556, U.S.A.
☐ 10744 Dutchtown Road
865-392-4601
Knoxville, TN 37932, U.S.A.

CUSTOMER ERG ORDER NO. 20301042/443117

Mfg. Thermo Model MICRO REM Serial No. 2079

Mfg. Model Serial No.

Cal. Date 29-Nov-16 Cal Due Date 29-Nov-17 Cal. Interval 1 Year Meterface N/A

Check mark ☑ applies to applicable instr. and/or detector IAW mfg. spec. T. 73 °F RH 29 % Alt 698.0 mm Hg

☐ New Instrument Instrument Received ☐ Within Toler. +-10% ☐ 10-20% ☑ Out of Tol. ☐ Requiring Repair ☐ Other-See comments

☑ Mechanical ck. ☑ Meter Zeroed ☐ Background Subtract ☐ Input Sens. Linearity
☑ F/S Resp. ck ☑ Reset ck. ☐ Window Operation ☑ Geotropism
☐ Audio ck. ☐ Alarm Setting ck. ☐ Batt. ck. (Min. Volt) _____ VDC
☐ Calibrated in accordance with LMI SOP 14.8 ☑ Calibrated in accordance with LMI SOP 14.9

Instrument Volt Set _____ V Input Sens. _____ mV Det. Oper. _____ V at _____ mV Threshold Dial Ratio _____ = _____ mV

☐ HV Readout (2 points) Ref./Inst. _____ / _____ V Ref./Inst. _____ / _____ V

COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING*
X 1000	150 mR/hr	150	150
X 1000	50 mR/hr	45	45
X 100	15 mR/hr	150	150
X 100	5 mR/hr	45	45
X 10	1500 µR/hr	150	150
X 10	500 µR/hr	50	50
X 1	150 µR/hr	190	150
X 1	100 µR/hr	125	100
X 0.1	15 µR/hr	150	150
X 0.1			

*Uncertainty within ± 10% C.F. within ± 20%

Range(s) Calibrated Electronically

	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*		REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*
Digital Readout				Log Scale			

Ludlum Measurements, Inc certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques.
The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323-1978
State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources: Cs-137 S/N. ☐ 059 ☐ 2171CP ☐ 2261CP ☐ 720 ☐ 734 ☐ 781 ☐ 1131 ☐ 1616 ☐ 1696 ☐ 1909 ☐ 1916CP ☐ 2324/2521
☐ 5717CO ☐ 5719CO ☐ 60646 ☐ 70897 ☐ 73410 ☐ E552 ☑ G112 ☑ 2168CP ☐ S-394 ☐ S-1054 ☐ T10081 ☐ T10082 Neutron Am-241 Be ☐ T-304 Ra-226 ☐ Y982

☐ Alpha S/N _____ ☐ Beta S/N _____ ☑ Other Cs137#NES-356 GRN

☐ m 500 S/N _____ ☐ Oscilloscope S/N _____ ☐ Multimeter S/N _____

Calibrator James McBeth Title Calibrator Date 29NOV16

QC'd By _____ Title Service Dept. QC Date 29Nov16

This certificate shall not be reproduced except in full, without the written approval of Ludlum Measurements, Inc.

AC Inst. Only ☐ Passed Dielectric (Hi-Pot) and Continuity Test ☐ Failed: _____

Certificate of Calibration

Air Sampler Calibration Form

Environmental Restoration Group, Inc.
8809 Washington St NE. Suite 150
Albuquerque, NM 87113
(505) 298-4224
www.ERGoffice.com

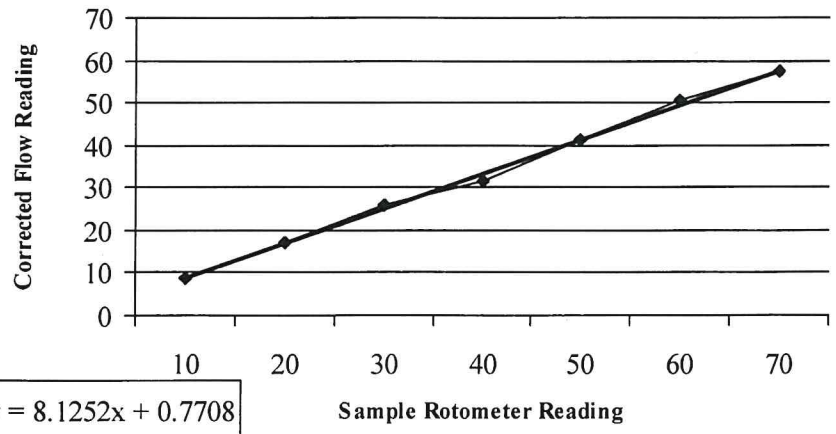
Sampler: Manufacturer: Eberline Model Number: RAS-1 Serial Number: 408667-8

Warm up Time 30 min Temperature: 75 °F Relative Humidity 20 % Barometric Pressure: 24.6 in. Hg

Correction Factor: 0.899227

Sampler Rotometer	Calibrator Flow Meter	Corrected Flow
10	10	8.992275
20	19	17.08532
30	29	26.0776
40	35	31.47296
50	46	41.36446
60	56	50.35674
70	64	57.55056

Calibration Chart



$y = 8.1252x + 0.7708$

$R^2 = 0.9974$

$$Correction\ Factor = (A * B)^{0.5} \qquad Corrected\ Flow = Calibrated\ Flow\ Meter * Correction\ Factor$$

$$A = \frac{Barometric\ Pressure\ in\ inches\ of\ Hg.}{29.92} \qquad B = \frac{529.67}{459.67 + °F} * \frac{181.87}{\mu_{air}}$$

$$\mu_{air} = \frac{14.58\left(\frac{459.67 + °F}{1.8}\right)^{3/2}}{110.4 + \left(\frac{459.67 + °F}{1.8}\right)}$$

Comments:

Reference Instrument:

Air Flow Calibrator: ☐ AFC-85L sn: 6042 ☐ HFC-SIDE-60C sn: 12723

Calibrated By: Calibration Date: 2/14/17 Calibration Due: 2/14/18

Reviewed By: Review Date: 14 Feb 2017

Certificate of Calibration

Air Sampler Calibration Form

Environmental Restoration Group, Inc.
8809 Washington St NE. Suite 150
Albuquerque, NM 87113
(505) 298-4224
www.ERGoffice.com

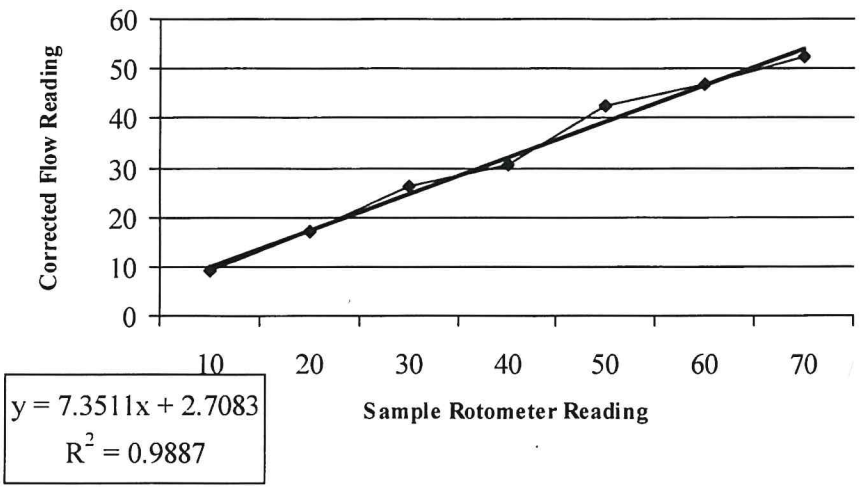
Sampler: Manufacturer: Eberline Model Number: RAS-1 Serial Number: 405685-3

Warm up Time 20 min Temperature: 73 °F Relative Humidity 20 % Barometric Pressure: 24.63 in. Hg

Correction Factor: 0.902767

Sampler Rotometer	Calibrator Flow Meter	Corrected Flow
10	10	9.027671
20	19	17.15257
30	29	26.18024
40	34	30.69408
50	47	42.43005
60	52	46.94389
70	58	52.36049

Calibration Chart



$$Correction\ Factor = (A * B)^{0.5} \qquad Corrected\ Flow = Calibrated\ Flow\ Meter * Correction\ Factor$$

$$A = \frac{Barometric\ Pressure\ in\ inches\ of\ Hg.}{29.92} \qquad B = \frac{529.67}{459.67 + °F} * \frac{181.87}{\mu_{air}}$$

$$\mu_{air} = \frac{14.58\left(\frac{459.67 + °F}{1.8}\right)^{3/2}}{110.4 + \left(\frac{459.67 + °F}{1.8}\right)}$$

Comments:

Reference Instrument:

Air Flow Calibrator: ☐ AFC-85L sn: 6042 ☐ HFC-SIDE-60C sn: 12723

Calibrated By: Calibration Date: 14 Feb 2017 Calibration Due: 14 Feb 2017

Reviewed By: Review Date: 2/14/17

Certificate of Calibration

Calibration and Efficiency Determination

Environmental Restoration Group, Inc.
8809 Washington St NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224
www.ERGoffice.com

Meter:	Manufacturer:	Ludlum	Model Number:	12	Serial Number:	276863	
Detector:	Manufacturer:	Ludlum	Model Number:	44-9	Serial Number:	PR147787	

- [x] Mechanical Check
- [x] F/S Response Check
- [x] Geotropism
- [x] Meter Zeroed
- [x] THR/WIN Operation
- [x] Reset Check
- [x] Audio Check
- [x] Battery Check (Min 4.4 VDC)

HV Check (+/- 2.5%): [x] 500 V [x] 1000 V [x] 1500 V

Cable Length: [x] 39-inch [ ] 72-inch [ ] Other:

Source Distance: [x] Contact [ ] 6 inches [ ] Other:

Source Geometry: [ ] Side [x] Below [ ] Other:

Threshold: 40 mV

Window:

Barometric Pressure: 24.42 inches Hg

Temperature: 75 °F

Relative Humidity: 20 %

Instrument found within tolerance: [x] Yes [ ] No

Range/Multiplier	Reference Setting	"As Found Reading"		Meter Reading		Integrated 1-Min. Count	Log Scale Count	
x 1000	400	400	kcpm	400	kcpm		400	kcpm
x 1000	100	100	kcpm	100	kcpm		100	kcpm
x 100	400	400	kcpm	400	kcpm		400	kcpm
x 100	100	100	kcpm	100	kcpm		100	kcpm
x 10	400	400	kcpm	400	kcpm		400	kcpm
x 10	100	100	kcpm	100	kcpm		100	kcpm
x 1	400	400	cpm	400	cpm		400	cpm
x 1	100	100	cpm	100	cpm		100	cpm

Gross Tc-99 counts (cpm):	2500	Gross Sr/Y-90 counts (cpm):	
Background counts (cpm):	70	Background counts (cpm):	
Net Tc-99 Counts (cpm):	2430	Net Sr/Y-90 counts (cpm):	

Comments:

Reference Instruments and/or Sources:

Ludlum pulser serial number: [ ] 97743 [x] 201932

Fluke multimeter serial number: [ ] 87490128

[ ] Alpha Source: Th-230 @ 12,800 dpm (1/4/12) sn: 4098-03

[x] Beta Source: Tc-99 @ 17,700 dpm (1/4/12) sn: 4099-03

[ ] Gamma Source Cs-137 @ 5.2 uCi (1/4/12) sn: 4097-03

[ ] Other Source:

Calibrated By: 

Calibration Date: 7 Feb 2017 Calibration Due: 7 Feb 2018

Reviewed By:

Review Date: 2/7/17

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997

Certificate of Calibration

Calibration and Voltage Plateau

Environmental Restoration Group, Inc.
8809 Washington St NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224
www.ERGoffice.com

Meter/Detector: Manufacturer: Ludlum Model Number: 2929 & 43-10-1 Serial Number: 200051 & PR215948

- [x] Mechanical Check
- [ ] F/S Response Check
- [ ] Geotropism
- [ ] Meter Zeroed
- [x] THR/WIN Operation
- [ ] Reset Check
- [x] Audio Check
- [ ] Battery Check (Min 4.4 VDC)

HV Check (+/- 2.5%): [x] 500 V [x] 1000 V [x] 1500 V

Cable Length: [x] 39-inch [ ] 72-inch [ ] Other:

Source Distance: [ ] Contact [ ] 6 inches [x] Other: In planchet

Source Geometry: [ ] Side [ ] Below [x] Other: In planchet

Alpha Threshold:	170 mV	Barometric Pressure:	24.42	inches Hg
Beta Threshold:	4 mV	Temperature:	74	°F
Beta Window:	46 mV	Relative Humidity:	20	%

Instrument found within tolerance: [x] Yes [ ] No

Range/Multiplier	Reference Setting	Integrated 1-Min. Count "As Found" α	Integrated 1-Min. Count "As Found" β	Integrated 1-Min. Count "Reading" α	Integrated 1-Min. Count "Reading" β
x 1000	400 Kcpm	399766	399773	399766	399773
x 100	40 Kcpm	39980	39980	39980	39980
x 10	4 Kcpm	3998	3998	3998	3998
x 1	400 cpm	400	399	400	399

High Voltage	Pot. Setting	Alpha Source α	Alpha Source β	Beta Source α	Beta Source β	Background α	Background β
500	2	3426	306	3	784	0	13
550	2.24	4521	263	6	2322	0	49
600	2.48	4708	436	4	3560	1	53
650	2.68	4650	863	4	4631	1	73

Comments: HV Plateau Scaler Count Time = 1-min. Recommended HV = 600, Pot. setting = 2.48

Reference Instruments and/or Sources:

Ludlum pulser serial number: [ ] 97743 [x] 201932

Fluke multimeter serial number [ ] 87490128

- [x] Alpha Source: Th-230 @ 12,800 dpm (1/4/12) sn: 4098-03
- [x] Beta Source: Tc-99 @ 17,700 dpm (1/4/12) sn: 4099-03
- [ ] Gamma Source Cs-137 @ 5.2 uCi (1/4/12) sn: 4097-03
- [ ] Other Source:

Calibrated By:

Reviewed By:

Calibration Date: 6 Dec 16 Calibration Due: 6 Dec 17

Date: 12/6/16

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997

Certificate of Calibration

Calibration and Voltage Plateau

Environmental Restoration Group, Inc.
8809 Washington St NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224
www.ERGoffice.com

Meter:	Manufacturer:	Ludlum	Model Number:	2360	Serial Number:	184909
Detector:	Manufacturer:	Ludlum	Model Number:	43-93	Serial Number:	PR298426

- [x] Mechanical Check
- [ ] F/S Response Check
- [x] Geotropism
- [x] Meter Zeroed
- [x] THR/WIN Operation
- [x] Reset Check
- [x] Audio Check
- [x] Battery Check (Min 4.4 VDC)

HV Check (+/- 2.5%): [x] 500 V [x] 1000 V [x] 1500 V

Cable Length: [x] 39-inch [ ] 72-inch [ ] Other:

Source Distance: [x] Contact [ ] 6 inches [ ] Other:

Source Geometry: [ ] Side [x] Below [ ] Other:

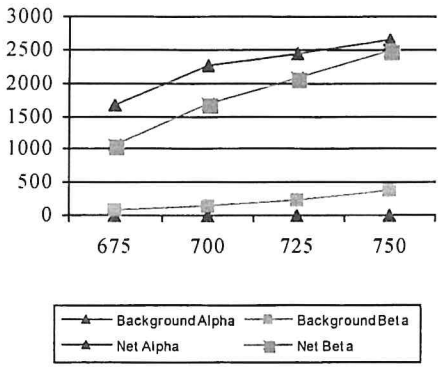
Alpha Threshold:	120 mV	Barometric Pressure:	24.51	inches Hg
Beta Threshold:	4	Temperature:	76	°F
Beta Window:	30 mV	Relative Humidity	20	%

Instrument found within tolerance: [x] Yes [ ] No

Range/Multiplier	Reference Setting	"As Found Reading"	Meter Reading	Integrated 1-Min. Count α	Integrated 1-Min. Count β
x 1000	400 Kcpm	400	400	399826	399835
x 1000	100 Kcpm	100	100		
x 100	40 Kcpm	400	400	39985	39986
x 100	10 Kcpm	100	100		
x 10	4 Kcpm	400	400	3998	3997
x 10	1 Kcpm	100	100		
x 1	400 cpm	400	400	400	399
x 1	100 cpm	100	100		

High Voltage	Alpha Source α	Alpha Source β	Beta Source α	Beta Source β	Background α	Background β
675	1676	352	7	1153	3	82
700	2255	366	8	1843	8	158
725	2437	495	7	2317	1	226
750	2646	579	4	2871	5	378

Voltage Plateau



Comments: HV Plateau Scaler Count Time = 1 min. Recommended HV = 725

Reference Instruments and/or Sources:

Ludlum pulser serial number: [ ] 97743 [x] 201932

Fluke multimeter serial number [x] 87490128

[x] Alpha Source: Th-230 (s/n 4098-03) 12,800 dpm on 1/4/12

[x] Beta Source: Tc-99 (sn: 4099-03) 17,700 dpm on 1/4/12

[ ] Gamma Source Cs-137 @ 5.2 uCi (1/4/12) sn: 4097-03

[ ] Other Source:

Calibrated By:

Calibration Date: 1/16/17 Calibration Due: 1/16/18

Reviewed By:

Date: 1/16/17

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997

Certificate of Calibration

Calibration and Voltage Plateau

Environmental Restoration Group, Inc.
8809 Washington St NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224
www.ERGoffice.com

Meter:	Manufacturer:	Ludlum	Model Number:	2360	Serial Number:	202403
Detector:	Manufacturer:	Ludlum	Model Number:	43-37	Serial Number:	PR178371

☑ Mechanical Check ☑ THR/WIN Operation HV Check (+/- 2.5%): ☑ 500 V ☑ 1000 V ☑ 1500 V
☐ F/S Response Check ☑ Reset Check Cable Length: ☐ 39-inch ☐ 72-inch ☑ Other: 60"
☑ Geotropism ☑ Audio Check
☑ Meter Zeroed ☑ Battery Check (Min 4.4 VDC)

Source Distance: ☑ Contact ☐ 6 inches ☐ Other:
Source Geometry: ☐ Side ☑ Below ☐ Other:

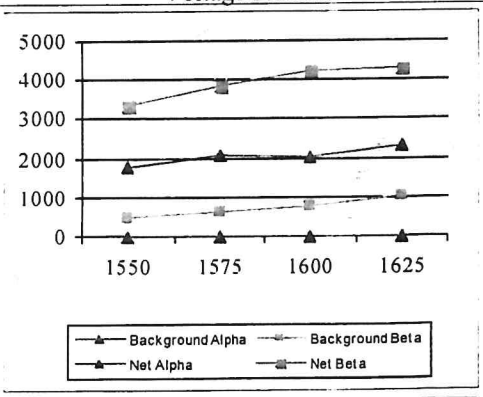
Alpha Threshold: 100 mV Barometric Pressure: 24.86 inches Hg
Beta Threshold: 4 Temperature: 75 °F
Beta Window: 40 mV Relative Humidity 20 %

Instrument found within tolerance: ☑ Yes ☐ No

Range/Multiplier	Reference Setting	"As Found Reading"	Meter Reading	Integrated 1-Min. Count α	Integrated 1-Min. Count β
x 1000	400 Kcpm	400	400	399634	399649
x 1000	100 Kcpm	100	100		
x 100	40 Kcpm	400	400	39964	39965
x 100	10 Kcpm	100	100		
x 10	4 Kcpm	400	400	3993	3993
x 10	1 Kcpm	100	100		
x 1	400 cpm	400	400	399	399
x 1	100 cpm	100	100		

High Voltage	Alpha Source α	Alpha Source β	Beta Source α	Beta Source β	Background α	Background β
1550	1780	1293	1	3838	2	480
1575	2088	1506	4	4504	7	626
1600	2053	1661	6	5040	7	805
1625	2308	1873	5	5320	6	1028

Voltage Plateau



Comments: HV Plateau Scaler Count Time = 1 min. Recommended HV = 1600

Reference Instruments and/or Sources:

Ludlum pulser serial number: ☐ 97743 ☑ 201932 Fluke multimeter serial numbe ☑ 87490128

☑ Alpha Source: Th-230 (s/n 4098-03) 12,800 dpm on 1/4/12 ☐ Gamma Source Cs-137 @ 5.2 uCi (1/4/12) sn: 4097-03
☑ Beta Source: Tc-99 (sn 4099-03) 17,700 dpm on 1/4/12 ☐ Other Source:

Calibrated By: _____ Calibration Date: 11-4-16 Calibration Due 11-4-17

Reviewed By: _____ Date: 11/04/16

ERG Form ITC. 101.C

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997

Certificate of Calibration

Calibration and Voltage Plateau

Environmental Restoration Group, Inc.
8809 Washington St NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224
www.ERGoffice.com

Meter:	Manufacturer:	Ludlum	Model Number:	2360	Serial Number:	193638
Detector:	Manufacturer:	Ludlum	Model Number:	43-93	Serial Number:	PR199836

☑ Mechanical Check ☑ THR/WIN Operation HV Check (+/- 2.5%): ☑ 500 V ☑ 1000 V ☑ 1500 V
☐ F/S Response Check ☑ Reset Check Cable Length: ☑ 39-inch ☐ 72-inch ☐ Other:
☑ Geotropism ☑ Audio Check
☑ Meter Zeroed ☑ Battery Check (Min 4.4 VDC)
Source Distance: ☑ Contact ☐ 6 inches ☐ Other:
Source Geometry: ☐ Side ☑ Below ☐ Other:

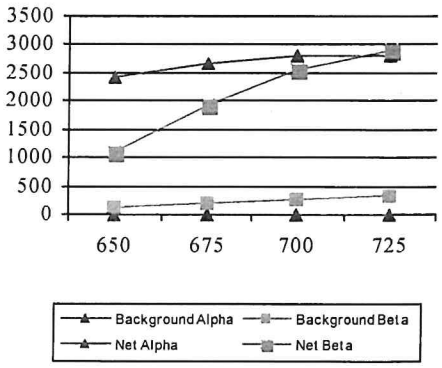
Alpha Threshold:	120 mV	Barometric Pressure:	24.39	inches Hg
Beta Threshold:	4	Temperature:	73	°F
Beta Window:	30 mV	Relative Humidity	20	%

Instrument found within tolerance: ☑ Yes ☐ No

Range/Multiplier	Reference Setting	"As Found Reading"	Meter Reading	Integrated 1-Min. Count α	Integrated 1-Min. Count β
x 1000	400 Kcpm	400	400	397888	397923
x 1000	100 Kcpm	100	100		
x 100	40 Kcpm	400	400	39787	39799
x 100	10 Kcpm	100	100		
x 10	4 Kcpm	400	400	3981	3980
x 10	1 Kcpm	100	100		
x 1	400 cpm	400	400	398	398
x 1	100 cpm	100	100		

High Voltage	Alpha Source α	Alpha Source β	Beta Source α	Beta Source β	Background α	Background β
650	2429	320	4	1255	5	135
675	2687	391	12	2131	3	191
700	2817	539	10	2836	1	270
725	2824	741	7	3269	8	356

Voltage Plateau



Comments: HV Plateau Scaler Count Time = 1 min. Recommended HV = 700

Reference Instruments and/or Sources:

Ludlum pulser serial number: ☐ 97743 ☑ 201932
Fluke multimeter serial number ☑ 87490128
☑ Alpha Source: Th-230 (s/n 4098-03) 12,800 dpm on 1/4/12
☑ Beta Source: Tc-99 (sn: 4099-03) 17,700 dpm on 1/4/12
☐ Gamma Source Cs-137 @ 5.2 uCi (1/4/12) sn: 4097-03
☐ Other Source:

Calibrated By: _____ Calibration Date: 2/7/17 Calibration Due: 2/7/18

Reviewed By: _____ Date: 2 Feb 2017

ERG Form ITC. 101.C

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997

Certificate of Calibration

MSA Lapel Air Sampler Calibration Form

Environmental Restoration Group, Inc.
8809 Washington St NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224
www.ERGoffice.com

Manufacturer: MSA Model Number: Escort ELF Lapel Air Sampler Serial Number: A3-48588

Temperature: 72 °F Relative Humidity: 20 % Barometric Pressure: 24.92 in. Hg

Single point calibration at two different flow rates. Actual flow rate is expressed as average of six tests. Sampler flow rate adjusted to match average.

Digital Flow Run Number	Test 1 (2000 cc/min)	Test 2 (3000 cc/min)
1	2066	2810
2	2071	2957
3	1916	2847
4	2071	2969
5	2083	2901
6	1967	3051
Average:	2029.0	2922.5
Adjustment Set:	☑	☑

Flow Fault Check: ☑

Final Flow Setting: 2.5 LPM

Comments:

Reference Instrument:

Air Flow Calibrator: ☑ MSA DIGICAL Calibrator sn: 020158 ☐ A.P. Buck mini-Buck Calibrator sn: 053058

Calibrated By: Calibration Date: 12/29/16

Reviewed By: Review Date: 12/29/16

#Name?

Certificate of Calibration

Calibration and Voltage Plateau

Environmental Restoration Group, Inc.
8809 Washington St NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224
www.ERGoffice.com

Meter:	Manufacturer:	Ludlum	Model Number:	2221r	Serial Number:	190205
Detector:	Manufacturer:	Ludlum	Model Number:	FIDLER	Serial Number:	010807D

- [x] Mechanical Check
- [x] F/S Response Check
- [x] Geotropism
- [x] Meter Zeroed
- [x] THR/WIN Operation
- [x] Reset Check
- [x] Audio Check
- [x] Battery Check (Min 4.4 VDC)

HV Check (+/- 2.5%): [x] 500 V [x] 1000 V [x] 1500 V

Cable Length: [ ] 39-inch [ ] 72-inch [x] Other: 60"

Source Distance: [ ] Contact [ ] 6 inches [x] Other: 1/2 "

Source Geometry: [ ] Side [x] Below [ ] Other:

Threshold: 10 mV

Window:

Barometric Pressure: 24.42 inches Hg

Temperature: 74 °F

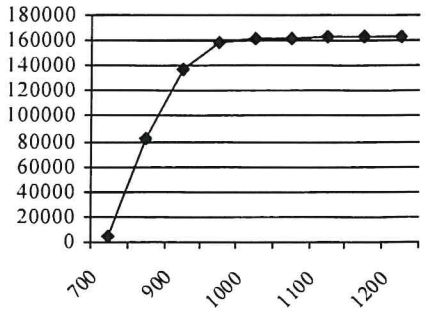
Relative Humidity: 20 %

Instrument found within tolerance: [x] Yes [ ] No

Range/Multiplier	Reference Setting	"As Found Reading"	Meter Reading	Integrated 1-Min. Count	Log Scale Count
x 1000	400	400	400	399325	400
x 1000	100	100	100		100
x 100	400	400	400	39933	400
x 100	100	100	100		100
x 10	400	400	400	3993	400
x 10	100	100	100		100
x 1	400	400	400	400	400
x 1	100	100	100		100

High Voltage	Source Counts	Background
700	4140	
800	82919	
900	136675	
950	157963	
1000	161842	
1050	162184	5070
1100	163399	
1150	163508	
1200	163966	

Voltage Plateau



Comments: HV Plateau Scaler Count Time = 0.5-min. Recommended HV = 1050

Reference Instruments and/or Sources:

Ludlum pulser serial number: [ ] 97743 [x] 201932

[ ] Alpha Source: Th-230 @ 12,800 dpm (1/4/12) sn: 4098-03

[ ] Beta Source: Tc-99 @ 17,700 dpm (1/4/12) sn: 4099-03

Fluke multimeter serial number: [ ] 87490128

[ ] Gamma Source Cs-137 @ 5.2 uCi (1/4/12) sn: 4097-03

[x] Other Source: Am-241 @ 1uCi

Calibrated By:

Reviewed By:

Calibration Date: 7 Feb 2017 Calibration Due: 7 Feb 2018

Date: 2/7/17

ERG Form ITC. 101.A

This calibration conforms to the requirements and acceptable calibration conditions of ANSI N323A - 1997

Certificate of Calibration

Calibration and Voltage Plateau

Environmental Restoration Group, Inc.
8809 Washington St NE, Suite 150
Albuquerque, NM 87113
(505) 298-4224
www.ERGoffice.com

Meter: Manufacturer: Ludlum Model Number: 2360 Serial Number: 220242

Detector: Manufacturer: Ludlum Model Number: Serial Number:

- [x] Mechanical Check
- [ ] F/S Response Check
- [x] Geotropism
- [x] Meter Zeroed
- [x] THR/WIN Operation
- [x] Reset Check
- [x] Audio Check
- [x] Battery Check (Min 4.4 VDC)

HV Check (+/- 2.5%): [x] 500 V [x] 1000 V [x] 1500 V

Cable Length: [x] 39-inch [ ] 72-inch [ ] Other:

Source Distance: [x] Contact [ ] 6 inches [ ] Other:

Source Geometry: [ ] Side [x] Below [ ] Other:

Alpha Threshold: 120 mV Barometric Pressure: 24.6 inches Hg

Beta Threshold: 4 Temperature: 74 °F

Beta Window: 30 mV Relative Humidity 20 %

Instrument found within tolerance: [x] Yes [ ] No

Range/Multiplier	Reference Setting	"As Found Reading"	Meter Reading	Integrated 1-Min. Count α	Integrated 1-Min. Count β
x 1000	400 Kcpm	400	400	400430	400469
x 1000	100 Kcpm	100	100		
x 100	40 Kcpm	400	400	40079	40083
x 100	10 Kcpm	100	100		
x 10	4 Kcpm	400	400	4005	4004
x 10	1 Kcpm	100	100		
x 1	400 cpm	400	400	400	400
x 1	100 cpm	100	100		

High Voltage	Alpha Source α	Alpha Source β	Beta Source α	Beta Source β	Background α	Background β	Voltage Plateau

Comments: HV Plateau Scaler Count Time = 1 min. HV = 500

Reference Instruments and/or Sources:

Ludlum pulser serial number: [ ] 97743 [x] 201932

Fluke multimeter serial number [ ] 87490128

[ ] Alpha Source: Th-230 (s/n 4098-03) 12,800 dpm on 1/4/12

[ ] Beta Source: Tc-99 (sn: 4099-03) 17,700 dpm on 1/4/12

[ ] Gamma Source Cs-137 @ 5.2 uCi (1/4/12) sn: 4097-03

[ ] Other Source:

Calibrated By:

Reviewed By:

Calibration Date: 2/13/17 Calibration Due: 2/13/18

Date: 2/13/17

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